# CONFLUENCES:
# THE HISTORY OF EQUIPMENT FINANCE,
# VOLUME 3, 1841–1849

*Locks & Canals and Philadelphia & Reading*

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# Overview

## Introducing the Rolling Stock Contracts

In June of 1841, amidst of the economic downturn following the Panic of 1837 and Crisis of 1839, the Philadelphia and Reading Rail Road Company was in dire need of funds to purchase English iron rails and complete construction of its system infrastructure to enable commencement of operations by a legislatively imposed date. Bond markets were tight. The P&R had already incurred debilitating amounts of debt, much of which was in default. An 1841 effort to sell stock failed. Six stockholder meetings were held during June to address the impending disaster, the last on June 12. The only feasible alternative was to solicit loans from "friends".

On June 16, Elihu Chauncey, the P&R president, spoke with Patrick Tracy Jackson, treasurer of The Proprietors of Locks and Canals on Merrimack River, regarding L&C participation in new P&R loans. Jackson indicated that L&C and Bostonians were not interested in the loans but had an appetite for P&R stock, but only at half its par value. Chauncy wrote to Jackson on June 21. As a matter of law, the P&R was unable to sell stock below par. However, Philadelphia investors had recently acquired 4,176 P&R shares from the Bank of the United States, the P&R's largest shareholder and principal financier. Those shares might be available to L&C and the Bostonians. Chauncey did not disclose that the shares had been purchased pursuant to a secret scheme, orchestrated by Chauncy through Charles A. Heckscher, to diminish BUS influence on the P&R. Recognizing that stock sale proceeds would go to the sellers, not the P&R, Chauncey renewed his plea for loan assistance. As a teaser, he observed that the P&R would soon need to purchase locomotives and coal cars, intimating that L&C's Lowell machine shop might build that rolling stock if L&C participated in a loan. Chauncey knew the machine shop was underutilized, that Jackson had recently proposed selling the shop or converting it to a twist mill, and, for the first time, L&C had not declared its customary dividend.

Thus began the negotiations of two Rolling Stock Contracts for the building by L&C of rolling stock that would bring the P&R operational. The first was for running gear for wood jimmies: the 1842 Running Gear Contract. The second was for locomotives, tenders, cars, and brakes: the 1843 Engines Contract. The Rolling Stock Contracts were among the first contracts in the developmental lineage of equipment finance.

From the vantage of Jackson and L&C, the immediate question was how to sell equipment (rolling stock) to, and ensure the receipt and retention of payments from, an insolvent railroad (the P&R) that had not yet commenced or had only recently commenced operations, during a severe economic depression and other adverse financial circumstances?

From the P&R vantage, the question was how an insolvent railroad that had not completed construction of its system infrastructure and was overburdened with debt that was already in default could obtain locomotives, cars, and equipment to commence and then ramp up operations and generate revenue?

The question induced inquiries regarding risk assessment and management at the asset and institutional levels. The answers addressed commercial, financial, and legal considerations. And gave rise to a risk management structure that incorporated alignment, control, and influence elements, legal and extra-legal.

## Chapters in this Selection

The chapters included in this selection address the following:

1. the transaction structure developed to finance acquisition of rolling stock in a manner that satisfied the requirements of each of L&C, as seller, and the P&R, as user and purchaser, both at initiation of operations and as fleets were expanded;
2. the institutional and extra-legal arrangements and initiatives devised by L&C to influence P&R operations to (a) obtain payment of, and maintain the value of, the P&R obligations under the Rolling Stock Contracts, and (b) after L&C and Bostonian equity and debt involvements in the P&R increased, to enhance the fiscal responsibility of the P&R to maintain entity value; and
3. the manner in which the P&R addressed its rolling stock funding needs through credit, finance, and financial mediation activities by rolling stock builders.

Chapters omitted from this selection address commercial and financial risk factors relating to completion of construction of P&R system infrastructure and commencement of commercial operations. These factors were considered by Jackson and L&C as decisions were made regarding whether to build the rolling stock, the transaction structure, the nature and extent of equity, debt, and other institutional involvements by L&C with the P&R, and management of the transaction and the institutional involvements.

## Background for Chapters in this Selection

The transaction structure for the Rolling Stock Contracts incorporated the first elements of what has become known as equipment finance. Equipment finance is a harmonized body of structural elements and techniques of implementation for financing the acquisition (by building, manufacture, construction, purchase, or use) of equipment, alone or as a part of a larger project, in which (in the pure case) the source of funds, and recourse, afforded the financier for repayment of the financing are limited to revenues generated by the equipment, either as operating income or disposition proceeds.[1] Equipment finance was developed to protect equipment builders and finance providers while allowing use of the equipment by operating companies for revenue generation. It was used to align the builder (L&C) with the equipment user (the P&R) in user disputes with other creditors, especially construction contractors and laborers.

From an asset perspective, enhancing the availability of financing and managing short-term payment risks were the primary foci in the early phases. To enhance financing availability, the P&R favored builders that provided credit, financing, and financial intermediation services. Payment risks were influenced by lack of experience, introduction of new technologies, concerns regarding equipment performance, and financial and economic factors. As railroads developed and equipment finance techniques were applied in long-term arrangements, risk considerations expanded to preservation of the collateral value of the equipment.

Early innovations focused on two aspects of payments. First, ensuring payment to the equipment builder as early as possible, taking cognizance of existing debt and operational realities. Second, ensuring the builder could realize on the equipment should payment not be made. Innovations addressing payments pertained to payment structures and the method and timing of payments (including acceleration through performance-based mechanisms). Innovations addressing realization pertained to sale structures (absolute sales, conditional sales, and bailments for hire with purchase options), legal structures to retain ownership, avoiding after-acquired property clauses, bolstering the collateral security regime (agency and trust

structures), the nature of collateral security, and legal remedies upon default, among others. For each aspect, mechanisms to induce payment without resort to legal remedies were important.

The principal financial and legal innovations were (a) adoption of a common law trust as the equipment owner and holder of collateral securing payment, (b) mechanisms for control of the trusts, (c) accelerating repayment of the purchase price, and (d) builder involvements in the provision of deferred payment credit, financing, and financial intermediation arrangements. From the collateral security perspective, one transaction introduced a mortgage to supplement customary collateral, such as bonds.

Management, or control, aspects focused on: (i) ownership of equipment; (ii) possession and use and repossession of equipment; (iii) payment structures; (iv) remedies for failure to pay; (v) rights and responsibilities of the trusts and the P&R; and (vi) restrictions on activities of and distributions by the P&R. To obtain greater leverage and control, to align the builder with equity and debt investors having control over the entirety of the assets and business of the railroad, and to participate in the transition of power from water to coal, the builder (L&C) and other Bostonians took equity and debt interests in the P&R.

Immediately upon commencement of operations it became apparent that the P&R had miscalculated the size and power of the equipment it needed. The P&R began purchasing larger locomotives and larger, heavier iron coal cars. Builders of that equipment were paid preferentially. There was increasing likelihood that L&C would not be paid at all for equipment built under the Rolling Stock Contracts: it was comprised of small engines and wood cars.

Table 8: P&R Rolling Stock (coal transported is in long tons)[2]

| | 1842 | 1843 | 1844 | 1845 | 1846 |
|---|---|---|---|---|---|
| Locomotives | | | | | |
| Coal | 16 | 31 | 38 | 45 | 63 |
| Passenger & Light Freight | 8 | 8 | 8 | 8 | 8 |
| Timber Kyanizing | 0 | 0 | 1 | 1 | 1 |
| Total Locomotives | 24 | 39 | 39 | 54 | 72 |
| Cars | | | | | |
| Wood Coal | 1,130 | 1,592 | 1,600 | 1,606 | 1,539 |
| Iron Coal | 0 | 0 | 856 | 1,498 | 3,020 |
| Total Coal Cars | 1,130 | 1,592 | 2,456 | 3,104 | 4,559 |
| Freight | 179 | 208 | 265 | 294 | 482 |
| Passenger | 14 | 14 | 15 | 14 | 14 |
| Baggage | 5 | 6 | 5 | 7 | 5 |
| Total Cars | 1,328 | 1,820 | 2,741 | 3,419 | 5,060 |
| Coal Transported | — | 218,711 | 421,958 | 814,279 | 1,188,258 |

Attempting to induce payments from the P&R under the Rolling Stock Contracts, Patrick Tracy Jackson began with direct admonitions, eventually including soft threats of resort to legal remedies. When those efforts proved inadequate, Jackson aligned L&C with stockholders and bond holders from Boston, London, and New York who initiated an internal investigation of the P&R in 1843. L&C and Bostonians then made equity and debt investments in the P&R. Jackson then expanded his focus to the P&R's financial health, especially elimination of floating debt. In 1845 L&C allied with Robert McCalmont and P&R bond holders to initiate one of the first audits of managerial custodianship in U.S. corporate history. The 1845 Investigations Committee, comprised of four Bostonians and one New Yorker, produced the P&R 1846

Report. The report had the broad purpose of motivating reduction of P&R floating debt. Its methodology was narrow. It examined the accuracy of P&R financial reporting from P&R books and records.

Interventions in 1845 were not limited to audits. A Pennsylvania law was enacted allowing bond holders voting rights on a parity with stockholders and, subject to stockholder acceptance, eliminated graduated stock voting restrictions. While admirable from a fiscal management perspective, the 1845 efforts did nothing to induce payment of the P&R debt to L&C under the Rolling Stock Contracts.

When further efforts at suasion and blandishment failed, L&C determined to rid itself of the P&R debt. It was a drag on the value of the L&C machine shop, which L&C was attempting to sell. Jackson sought legal advice from the eminent Philadelphia lawyer Horace Binney. Binney and Jackson developed an elegant plan to take control of the trusts and equipment debt and neutralize the P&R. The plan derived from contract terms, threats of drastic legal remedies, and the use of extra-legal mechanisms. The plan forced a restructuring of the P&R in 1845-1846. It also allowed L&C to rid itself of the equipment debt through assignment. When the P&R did not fully address floating debt concerns, David A. Neal was appointed to conduct an intensive investigation in 1848 and 1849, leading to a second restructuring of the P&R.

### Remedies and Expectations

Contracts between builders and railroads contained fulsome remedies provisions favoring builders as creditors, often including the right to seize and sell rolling stock and other collateral.[A] However, interdependencies discouraged assertion of creditor rights in default scenarios. At two levels: the initiation of actions; and the types of actions taken.

Financiers were reluctant to initiate actions or seek remedies that might disrupt operations, and thus revenue generation.[B] Especially if there was a perceived risk of pushing the railroad into bankruptcy.[3]

Creditors were also sensitive to the possibility their actions might jeopardize other creditors, especially bond holders. Rolling stock builders were reliant on bond funding for payment. Sensitivities increased as builders began participating in loans, becoming bond holders themselves. Bond holders held more senior liens on assets and greater power over borrower operations and thus greater power in the creditor-debtor dynamic, even in circumstances where the financed assets could be isolated and dedicated to the equipment financing. Because significant portions of bond indebtedness were in default—continuously—bond holders constituted a constant and imminent threat to railroads and non-bond creditors of railroads.

Contractual rights were paper tigers.

Rather than initiating lawsuits or asset foreclosures, creditors of all types, but especially builders, negotiated to restructure payment schedules, accept payments in notes and bonds, or obtain additional bond collateral. Discounts on bonds provided to builders in payment or as collateral were negotiated, with the objective of obtaining greater-than-market discounts. That afforded an opportunity for secondary market sales with effective rates above market rates. As another strategy, builders sought alignment with

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[A] There were restrictions on creditor rights. The LTCB Mortgage was representative. Even after taking possession of collateral upon a default, trustees were required to acquiesce to the P&R's "lawful directions and orders" and rights to use the collateral and the revenues for operations.

[B] Construction contractors, a different creditor class, had near-term objectives, and were more aggressive in actions against railroads and their assets, even when those actions disrupted operations and revenue generation. They seized rolling stock often as it rolled into a station. For a period, the P&R settled contractor debts with payments comprised of 20-30% cash and the remainder in bonds or promissory notes. That approach became less effective with time.

bond holders, which allowed the builder to coattail on bond holder power over, and actions against, the railroad. For railroads, bonds often had distant maturities, postponing payment stresses.

The confluence of these factors established a set of expectations. Whatever the contract provisions, railroads were unlikely to pay in accordance with agreed schedules. Jackson explicitly recognized this probability in a letter to P&R president John Cryder: "I must acknowledge however, that I did not fully expect that the whole would be paid at maturity, but I certainly did & had a right to expect that at least half the amount would be paid by the time the whole became due."[4]

Whatever the circumstances and payment expectations, builders believed rolling stock requirements would increase with operational needs and contracts would be awarded to accommodating builders. That induced builder participation in rolling stock sale transactions and provision of deferred payment credit, financing, and financial intermediation services, even in a depressed economy. For L&C, a further inducement was underutilization of the L&C machine shop.

# Running Gear Contract

## A Running Start

The Philadelphia & Reading opened its road for passengers and freight other than coal on January 13, 1842. Coal transport commenced on May 17, when the road to Mount Carbon was adequately completed. The P&R needed a thousand new coal cars as soon as they could be built, and additional locomotives to pull the cars. Locks & Canals built locomotives, coal cars, running gear, brakes, and parts. Idle capacity of the L&C machine shop had increased since June of 1841 when Elihu Chauncey first alluded to the possibility of L&C building rolling stock for the P&R. For Patrick Tracy Jackson, machine shop needs were determinative in inducing L&C to seek the contracts to build rolling stock for the P&R. L&C investment in stocks and bonds of the P&R supported his efforts to obtain those contracts.[1]

On March 11, 1842, Jackson submitted the Running Gear Contract to the L&C board of directors. The contract was dated March 3.[A] L&C was to build running gear for 600 wood jimmies. The Running Gear Contract was promptly "confirmed & ordered to be recorded" by the L&C board. Car bodies (iron frames encasing wood bodies) were built under a separate contract between the P&R and Davenport & Bridges of Cambridgeport, the D&B Cars Contract (1842), which was executed on March 30.[2]

The Running Gear Contract was the first of a series of P&R coal car contracts in 1842. It was the first to include a trust concept and the first to include a performance based (per-ton-hauled) payment structure. The trust was promptly adopted in contracts with other car builders. The performance-based payment was included in a few contracts with other car builders.

## Urgent Search for Cars

Elihu Chauncey broached the possibility of L&C building locomotives and cars on June 21, 1841, as an element of allure for a $300,000 loan Chauncey sought from Jackson. Chauncey pressed his pleas, and Jackson deftly resisted, until contract negotiations finally commenced in January of 1842. P&R needs, especially for cars, were greater than L&C could meet. Other builders were sought.

The initial P&R solicitation was through newspaper advertisements. The P&R board thought that method unsatisfactory and turned to direct solicitations, sometimes through agents. In February 1842, Wirt Robinson was directed to issue a circular to mechanics and car builders in Reading, Lancaster, Harrisburg, Pottsville, Wilmington, Baltimore "and such other places as you may think will effect the objects". The circular was drafted by the P&R board. It solicited building of 100 trucks for 8-wheeled coal cars, 22-24 feet long, for delivery from March 15 to April 1 of 1842. Payment terms were one-half cash on April 1 and one-

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[A] On March 1, Samuel Bradford, the P&R treasurer, made a notation in the P&R correspondence book, accentuated by three exclamation marks. Pennsylvania Township and Mechanics Bank that day closed its doors "*sine die*" and it was reported that Manufacturers and Mechanics Bank had ceased operations. Other banks were expected to close the following day.

half in 6% P&R bonds payable in five years. Although drawings and specifications had not been prepared, bidders were asked to specify the price. Simultaneously, the P&R requested agents to arrange for car building in Boston, New York, and Wilmington. The agents, working cooperatively, were J. E. Thayer & Brother[B] and Albert H. Dorr. Each of Thayer and Dorr was a shareholder in the P&R.[3]

A stream of letters between the P&R and Dorr and Thayer ensued. Structural concepts evolved with each letter. On February 9, Emlen informed Dorr of the P&R board's rejection of a car pricing proposal Dorr presented days earlier. Emlen felt cars could be "obtained readily" for one-half cash and one-half bonds maturing in four or five years. Dorr presented another proposal on February 26. Like the first, it probably derived from discussions with Patrick Tracy Jackson and John E. Thayer. It included performance-based payments. "The cars to be paid for out of the earnings of the cars themselves within 18 months, by setting aside 60 to 80 cents per ton and the same rate per ton to be continued until the car builders receive for putting on the Road the same allowance 30 cents per ton."

The P&R board was puzzled by the formulation. George W. Edwards responded on February 28: the P&R directors "don't exactly understand this proposition".[4]

> If therefore you could contract for 2, 3, 4 or even 500 cars exactly similar to those now on the Roads, at $250 each, delivered at Richmond complete for running, the following terms would be agreed to.
>
> The ownership to remain in those putting the cars on the Road until paid for – payments to be made monthly – the whole to be paid for within an average of 12 months from the date of delivery – the monthly payments to be 45 cents per ton on all coal transported in the said cars until the whole cost is paid. Each car can be depended on to deliver at least 365 tons in 12 months, which would at 45 cents per ton be $273.75 or more than the amount to be paid for the cars. Instead therefore of its requiring an average of 12 months, they would be paid for within 12 months making the average credit only 6 months.
>
> Interest on $250 the cost of car to be allowed from the date of delivery until paid for, at 6 per cent, and interest to be allowed upon payments made monthly on account until the whole is settled.
>
> Should you be able to make the contracts for cars on these terms, which I consider good for the car builders at the same time they are good for us, I should be much pleased.
>
> I need not urge upon you how important it is that they commence work upon them at once.

Approval of those terms was confirmed to Thayer on March 3 and 12. By then the Running Gear Contract had been executed. It included a fixed payment twelve months after delivery of all cars and a continuing per-ton-hauled provision. It also included a trust concept. L&C's purchase price was payable "as fast as the said Car Bodies shall be finished and attached in a workmanlike process to the running gear or iron". The D&B Cars Contract (1842) for car bodies included a fixed payment schedule, but neither a performance payment nor a trust.[5]

The P&R's March 3 letter requested Thayer to pursue contracts for additional cars. Anticipating that request, Thayer had begun discussions with L&C, in January, for building engines, tenders, and 450 cars.

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[B] John E. Thayer, the son of a Unitarian minister, opened a private banking and brokerage office in Boston in 1824. He moved to 47 State Street in 1826, where he remained until his death on September 29, 1857, leaving an estate valued at $3 million. Thayer was a founder of the Boston Stock Exchange in 1834 and assisted in organizing the Boston Board of Trade. John admitted his younger brother, Nathaniel, to the business in 1839. The banking firm of Kidder Peabody & Co. was founded on April 1, 1865 when Henry P. Kidder, Francis H. Peabody, and Oliver W. Peabody reorganized J. E. Thayer & Brother upon the retirement of Nathaniel Thayer. All three had been clerks at J. E. Thayer & Brother.

The March 3 letter was the first express reference to an L&C contract, characterized as being for coal cars. Emlen confirmed the arrangements as incomplete on March 8. A March 12 letter referenced an additional 400 cars.

To secure more wood coal cars, Thayer and Dorr negotiated contracts with Davenport & Bridges and Bradley & Rice. On March 16, the P&R approved the D&B Cars Contract (1842) for 200 cars and authorized an additional 200. The B&R Cars Contract (1842) for 200 cars was approved by the P&R on March 19 and executed on March 30. Thayer had anticipated P&R approval. The D&B Cars Contract (1842) was increased to 600 car bodies at $75 each delivered at Port Richmond. The Running Gear Contract already provided for running gear for the 600 cars.[6]

Further anticipating P&R approval, Thayer negotiated a second Davenport & Bridges contract. Because of the volume and expedited delivery requirements, Albert Fuller of Providence was added as a builder. The D&B-F Cars Contract (1842) was executed on March 30 for 200 cars, at $250 per car, plus interest, delivered at Port Richmond. The price was payable eighteen months after delivery of all 200 cars. Emlen and McKee, as trustees, took possession of each car upon delivery. The P&R was to withhold 75¢ per ton of coal transported in the cars and, when accumulated withholdings reached $2,000, pay withheld amounts in reduction of the unpaid purchase price.[7]

Because of the immediacy of P&R needs and its inability to pay, Dorr and Thayer agreed to purchase $60,000 of P&R bonds to enable the P&R to make payments under the D&B Cars Contract (1842) and the D&B-F Cars Contract (1842). None of those funds was made available to pay L&C under the Running Gear Contract. The P&R continued to dangle the possibility of the Engines Contract before Jackson and L&C.[8]

On July 5, 1842, the P&R consummated the BH&H Cars Contract (1842) with Mahlon Betts, Samuel Harlan, and Elijah Hollingsworth of Wilmington for six double-lever drop-bottom coal cars painted in lead colors, branded "Mr. Betts" on the bottom sill. The $1,664 price was paid with four $416 negotiable drafts, each dated June 22, 1842 (numbers 273 through 276), due in 4, 8, 12, and 16 months. The cars were delivered to Emlen and Thomas George, as trustees, to secure payment of the drafts. The trustees were required to keep the cars in use on P&R roads until full payment, whereupon title transferred to the P&R. If the P&R defaulted in payment, any draft holder could require the trustees to sell the cars at public auction to pay amounts due (plus expenses), with any surplus to the P&R.[9]

### Terms

The Running Gear Contract consisted of three parts. The first specified terms of building and delivery and a general payment obligation. The second addressed the transactional structure, including collateral security. The third provided for performance-based payments.[10]

L&C undertook to build running gear for 600 cars within six months of the contract date (that is, by September 3, 1842). The price was $120,000 ($200 per car), plus interest. The P&R was responsible for building the bodies and frames to agreed specifications, delivering them to Port Richmond, attaching the running gear to the bodies and frames, and putting the cars in use "with all practicable despatch". Davenport & Bridges became responsible for the P&R obligations under the D&B Cars Contract (1842) (at $75.00 per car). The immediate assembly and use requirements triggered commencement of performance payments.

Payment terms were: "the average payment thereof to be made in twelve months from the time said running gear shall have been fully delivered at Richmond aforesaid, interest to be allowed on said running gear, from the time the same or portions thereof arrive at Richmond". No interest rate was specified, but

correspondence implies it was a customary 6% per annum. The payment date was later extended a year by amendment.[11]

As the cars, with running gear attached, were completed, they were assigned and delivered to two trustees, who held title until full performance of the contract. The trustees were John A. Brown, a P&R manager, and William F. Emlen, the P&R president. The trustees delivered possession of the cars to the P&R for its use during the payment period. As further collateral, the P&R deposited a $240,000 bond with the trustees: No. 1141 from the 1839~1850 issuance.[C] The bond amount represented the customary 50% discount on bonds used as collateral.

Upon a P&R default in performance of any of its undertakings (including payment), L&C, in its discretion, was entitled to direct the trustees to sell and dispose of either or both the cars and the bond within sixty days at public sale. After payment of trustees' expenses and amounts owed to L&C, surplus sale proceeds, if any, were to be paid to the P&R.

The performance-based payment was 22½¢ per ton for coal carried in the 600 cars to which the running gear was attached. The amount was to be continually reserved and paid to L&C periodically each time accumulated reserves reached $2,500. Performance payments were to be applied in reduction of the $120,000 purchase price.

The performance-based payment arrangement had not been used previously in railroad rolling stock contracts. It had been in use, since 1833, as an element of installment sales of boats to boatmen on the Delaware Canal and, a bit later, on the Lehigh River, the Delaware and Hudson Canal, and the Erie Canal. In addition to the Running Gear Contract, the performance-based payment concept was introduced into the D&B-F Cars Contract (1842). Each contract was arranged by Thayer and Dorr.

As a payment arrangement, it was (and is) not a fundamental structural element of equipment financing. However, this feature was (and is) used where appropriate because of the nature of the equipment and the credit of the parties.

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[C] The collateral arrangements were later modified by the Engines Contract and LTCB Mortgage. After full payment, collateral securing the Running Gear Contract became collateral securing the Engines Contract.

# Engines Contract

## Engines and Cars Arrangement

The Philadelphia & Reading had its eyes on the prize: stone coal. One thousand coal cars—600 from Davenport & Bridges and Locks & Canals, 200 from Davenport & Bridges and Albert Fuller, and 200 from Bradley & Rice—was a first step in realizing the prize, but inadequate to the vision. The P&R needed a larger fleet of locomotives and cars.

By January of 1842 discussions commenced with L&C for the building of locomotives, tenders, and additional coal cars. J. E. Thayer & Brother and Albert H. Dorr conducted the discussions on behalf of the P&R. Moncure Robinson met in Boston with Patrick Tracy Jackson to discuss the engines on March 31, 1842, after failure to agree terms resulted in limiting the initial contract to running gear. Even after Robinson's trip, the P&R had not decided on a model for the engines. On April 1 Jackson reported to the L&C board that a contract "might be obtained" for ten engines. The board authorized him to conclude a "contract on such terms and with such security as he may deem expedient". Thayer proposed appointment of Jackson to the P&R board of managers. That appointment was never made.[1]

On September 20, 1842 Jackson reported to his board that agreement had been reached on basic terms for building 450 wood jimmies. Discussions continued regarding ten to twelve locomotives, with tenders. Jackson observed that approximately one-third of all L&C profit ($105,744.40) for the year ended July 31, 1842 derived from building 450 of the 600 sets of running gear under the Running Gear Contract. All 600 were delivered by September.[2]

The L&C profit rate on the running gear was approximately 35%. It was accrued profit. Because one year deferred-payment credit had been provided, no cash had been received and a dividend could not be paid on L&C stock. In recognition of the difficult times and the necessity of providing credit, Jackson predicted L&C would likely have to take a loan to enable performance of the Engines Contract. He described the object of the Engines Contract as being "to give profitable employment of our shop and foundry at a time when we have little else to do." Immediately after outlining the potential arrangement, Jackson briefed the board on his analysis of the requirements for, and cost of, converting the L&C machine shop to a twist mill, opining that conversion still seemed appropriate.[3]

The L&C board considered a more definitive Jackson report on October 22, 1842. Jackson raised the terms of the contemplated Engines Contract with the board because it was "a bargain so important in amount and on so long a credit, I have thought it proper to submit it to the decision of your board before I conclude it." This seems a bit late in the game for such a statement; he had been raising the matter with the board since March, when he became concerned about machine shop utilization. However, the credit period under discussion (two years) was longer than L&C had afforded other customers.[4]

The P&R proposed to purchase 450 coal cars (at $265 each) and 12 engines-with-tenders (at $7,500 each) at a total amount of $219,250. Payment was to be made in two years. The board authorized Jackson

to "conclude the contract ... on the terms specified in said communication" (referring to the P&R proposal). The terms of the proposal, as presented to the L&C board, were (paraphrasing):[5]

- the 450 cars and 12 engines were to be held in a trust until full payment of both Rolling Stock Contracts;
- the 600 cars for which running gear was furnished under the Running Gear Contract—not just the running gear—were to be held in the same trust as rolling stock built under the Engines Contract;
- in addition to equipment built under the Rolling Stock Contracts, additional rolling stock collateral would be conveyed to the trust by the P&R, the additional collateral to be 15 locomotives, 110 coal cars, 14 passenger cars, and 180 freight cars, with an approximate total value of $200,000 and constituting all locomotives and cars of the P&R at July 31 and December 31, 1842, other than some cars being built under 1842 contracts);[6]; and
- collateral was to include P&R bonds, of $200,000 face amount, secured by a mortgage on the Reading to Pottsville road, which was additional to the $240,000 bond under the Running Gear Contract.

Jackson informed the board that he had just returned from discussions with Philadelphia legal counsel regarding collateral security. He noted that "there are some legal difficulties in making the trust property secure", which he thought might be resolved. While the minutes do not describe the difficulties, they likely related to (a) a pre-existing P&R mortgage and (b) legislative consent rights afforded contractors over any mortgage to L&C. The 1836 Mortgage securing the 1836~1860 bonds was the only prior mortgage on the road and covered the entire Philadelphia-Pottsville road. That mortgage did not prohibit subsequent mortgages, although it would be a lien superior to any provided to L&C.[7]

On December 7, at the first board meeting after the October 22 meeting, the L&C board approved the arrangement for building engines, tenders, and cars as set forth in the October 22 proposal.

Apparently, difficulties with the mortgage were not so easily resolved. After further consideration, on January 23, 1843 the L&C board approved the arrangement without a mortgage, although Jackson was directed to discuss the mortgage with Philadelphia legal counsel. Eventually the legal difficulties were addressed by the Pennsylvania legislature and execution of the LTCB Mortgage securing the Engines Contract, which covered the road between Philadelphia and Reading.[8]

### Collateral Package Strategy

The collateral package offered to L&C casts light on the positions and objectives of each of the P&R and L&C and the intricacy of negotiations. It reveals the extent of P&R desperation, but also a canny strategy to align L&C with the P&R in resisting efforts of unpaid contractors to seize, attach, and sell rolling stock to satisfy unpaid obligations and judgments.

P&R rolling stock was continually being seized and attached by unpaid contractors and suppliers. Leaving title to rolling stock in L&C or a trust under which L&C was the sole beneficiary, and granting L&C a mortgage over rolling stock, each ensured L&C would be aligned with the P&R in disputes with contractor and supplier creditors, even if L&C did not have a claim prior to those creditors. Like the plan of Charles Howard of the Baltimore & Susquehanna, it kept ownership outside the P&R (in a trust, rather than an agency, or with a prior lien) beyond the reach of the 1836 Mortgage or a subsequent mortgage. [A]

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[A] The 1836 Mortgage encompassed chattels (engines and cars) owned by the P&R at its execution. Its after-acquired property clause did not apply to chattels. All P&R rolling stock was acquired after 1836. Thus, the P&R could move the engines and cars into the trust if it desired. See Chapter Seventeen, under the heading "Superior 1836 Mortgage".

The structure of the collateral package also illustrated Jackson's caution and resolve as he sought to (i) overcollateralize the P&R payment obligation to L&C with critical assets (the entire P&R fleet and a road segment) and (ii) use bonds as collateral to establish a claim on the P&R's assets and general credit. It ensured L&C had a seat at the table with the most powerful group of P&R creditors—the bond holders.

### Engines Contract, Mortgage, and Bond

The Engines Contract and LTCB Mortgage were executed on March 9, 1843. The related LTCB Bond (1843) was executed the next day.[9] The LTCB Mortgage and the LTCB Bond were from the P&R to three trustees: Nathan Appleton, William Sturgis, and William McKee. Appleton and Sturgis were L&C board members and McKee was a P&R manager. Jackson was no longer comfortable with all trustees being P&R officers, as under the Running Gear Contract.[10]

The Engines Contract was for the building of 12 locomotives, 12 tenders, 450 coal cars, and 150 brakes, all delivered at L&C risk to Port Richmond. Specifications of each, other than brakes, were detailed in the contract. The running gear was the same as under the Running Gear Contract, except that axle diameters for 407 cars were 3½ inches instead of 3¼ inches and "except also such alterations as have been agreed in writing by the parties", which captured the use of Ray's springs and Babbitt's boxes. Increased axle size was responsive to the P&R realization that its original specifications were inadequate for the loads carried.[11]

Cars built under the Engines Contract were among the last wood coal cars built for the P&R until 1864, excepting approximately 100 built in 1853. In 1844 the P&R owned 1,600 wood coal cars and began purchasing four-wheel iron coal cars (856 cars). In subsequent years, the P&R, the Central Railroad Company of New Jersey, the Lehigh Valley Railroad Company, and the Delaware, Lackawanna & Western were the largest owners of four-wheel jimmies. In 1875, at peak use in the U.S., over 55,000 jimmies were in service; 5,434 were in the service of the P&R, despite its shift to iron cars starting in 1844.[12]

Under the Engines Contract, the first engine and tender, and all 450 cars, were to be delivered by June 1, 1843. Thereafter, two engines with tenders were deliverable each month. The price for cars and brakes was $122,635, plus interest. The price for engines with tenders was $90,000, plus interest. L&C was responsible for paying Betts, Harlan & Hollingsworth for building the tenders pursuant to a subcontract between L&C and BH&H that was approved by the P&R's Wirt Robinson.[13]

Payment to L&C was to be made within two years from the delivery of the locomotives, tenders, cars, and brakes to Port Richmond, "determined by the average delivery of the same". That formulation later gave rise to disagreements regarding payment dates and interest calculations. The P&R indemnified L&C for all costs, charges, suits, damages, judgments, executions, and expenses relating to the equipment, including patent infringements. Port Richmond was made available for assembly of the equipment and the P&R provided hoisting equipment for assembly.

All twelve engines under the Engines Contract were modeled on the 11-ton *Gowan & Marx* "in all respects except in the arrangement for staying the cylinders and the weight of the Truck Wheels in which the pattern of the Engine called the *Pottsville* is to be taken and followed." See Figure 13. The *Pottsville* was built by New Castle Manufacturing. It was delivered to the P&R in September 1842.[14]

The *Gowan & Marx*, configured with a horizontal boiler and Bury dome firebox, was built by Eastwick & Harrison of Philadelphia in 1838, possibly as an experiment in using anthracite coal as fuel. It burned coal and wood at different times. Understandably, the P&R desired to use anthracite, despite its inefficiency. The P&R began experimenting with anthracite fuel in 1842, altering a new engine for that purpose.

Simultaneously, it began experimenting with sheet iron cars of 5 tons capacity (rather than 3¼ tons, the capacity of wood cars). Use of iron cars necessitated more powerful engines. The P&R rebuilt engines to increase their power and began ordering larger 18-ton and 20-ton engines, although not from L&C.[15]

The *Gowan & Marx* made its trial run on the Reading-Philadelphia segment on December 5, 1839.[16] It pulled a train of 368 tons comprised of 80 cars, including 60 people, 6 tons of coal, 1,600 barrels of flour, 73¼ tons of blooms, and two hogsheads of whiskey. The run was aborted when a water pipe arrested eight miles out of Reading. The *Delaware* completed the run. A full run of the road was made on February 20, 1840. The P&R ran the engine until 1860, when it was exchanged with M. W. Baldwin & Co. in partial payment for a new engine, the 14.4-ton 2-2-0 *Active*. The *Active* was the 942nd locomotive built by the Baldwin Locomotive Works and numbered 61 by the P&R.[17]

It is unclear just when the brakes were added to the Engines Contract. They were not mentioned in L&C board briefings or approvals or in P&R documents. They were first discussed in June 1842, three months after execution of, and in connection with, the Running Gear Contract. The P&R specifications, upon which the price was agreed, did not include brakes. Jackson requested an additional $12 per car for brakes. The request was conveyed to Thayer & Brother, who conveyed it to Emlen at the P&R. Emlen responded: "I feel great anxiety about the breaks [stet] as without them the cars are useless." He felt the cost excessive ("out of all reason"), indicating that brakes could be built in Reading for $7, although they would then have to be attached to car bodies, which would entail additional costs and delay. Emlen's solution was to compromise at $9, foregoing the $9 per car deduction agreed with Jackson for substitution of Ray's springs (discussed *infra*). That left the original price unchanged. Within the P&R, Emlen expressed concern about cars designed without brakes. The following day he wrote to Wirt Robinson seeking prompt discussion: "I wish to call our particular attention to the necessity of our breaks [stet] being so contrived that one man can manage at one motion 8 or ten cars…."[18]

The performance-based payment mechanism in the Engines Contract required the P&R to reserve 22½¢ per ton of coal transported in the 450 cars built under that contract. Upon accumulating to $2,500, reserved amounts were to be paid to L&C to reduce, first, unpaid amounts (including interest) under the Running Gear Contract. After full payment of the Running Gear Contract, the per-ton reserve decreased to 15¢, determined on coal transported in any of the 1,050 cars under both Rolling Stock Contracts, and was applied to payments due under the Engines Contract.

As each item of equipment under the Engines Contract was completed it was assigned to Appleton, Sturgis, and McKee, as trustees. The trustees were required to place each item on P&R roads immediately upon delivery and continually use the equipment until the Engines Contract was fully paid and performed. Only then did the equipment became property of the P&R.

If a default occurred, the trustees were to sell the equipment at a public sale within sixty days of being so required by L&C. That customary provision was supplemented by a provision mandating the trustees to take possession of the equipment upon a P&R default. Sale proceeds were to be applied to pay L&C and costs of the trust, with any surplus payable to the P&R.

The Engines Contract also contained two collateral security requirements. The first was a modification of Running Gear Contract provisions. Upon full payment of the Running Gear Contract, collateral securing that contract held by Brown and Emlen as trustees (600 cars and $240,000 of bonds) was to secure the Engines Contract. The second was a new mortgage from the P&R to L&C (the LTCB Mortgage), a unique requirement for a contract to build rolling stock.

# Jackson's Mortgage

## LTCB Mortgage

Having absorbed lessons learned from the Pensacola Railroad and Baltimore & Susquehanna transactions, Patrick Tracy Jackson believed the Locks & Canals position under the Running Gear Contract to be adequately protected by three structural elements: trust ownership of the equipment; equipment title retention until payment in full; and performance-based payments calculated per ton of coal transported. Experiences during the first year of the contract caused Jackson to reassess the contractual protections. The P&R failed to make performance payments as agreed. The economy fell into the Collapse of 1842. Competing claims on the P&R and its assets mounted, jeopardizing L&C's position. A more robust collateral security structure was needed for the Engines Contract.

Jackson presented a revised security structure to his board of directors on October 22, 1842. He proposed that the P&R convey essentially *all* its rolling stock into the trust securing the Engines Contract, not just equipment built under the Engines Contract. He demanded an additional $200,000 of bonds as collateral. And he thought it necessary to obtain a mortgage on P&R assets. The P&R resisted the mortgage request, although not with the same umbrage as the Thompson & Forman request for a mortgage to secure their "trifling" iron contract. At the time, the only P&R mortgage was the 1836 Mortgage. Meaning, L&C would obtain a first lien on all rolling stock (it was not captured by the 1836 Mortgage) and a second mortgage lien over other P&R property: still a favorable position as a creditor.[1]

Two events in early 1843 caused an abrupt reassessment of what constituted adequate collateral security. First, PA Resolution (1843) No. 1 was passed on January 21, 1843 to protect unpaid contractors, laborers, and workmen, affording them a consent right over any lien on P&R assets that was superior to their claims. Second, the P&R experienced difficulties in selling new 1843~1860 bonds. To enhance sales, the P&R decided to grant an additional mortgage over all its properties. Jackson's assessment was that L&C's ability to protect its creditor position was eroding rapidly.[2]

Jackson's desire for a mortgage caused tensions with the L&C board of directors. The board was more concerned with establishing a source of revenue than ensuring security for realization of that revenue. Because of the dearth of work for the L&C machine shop, and over Jackson's objections, the board, on October 22, 1842 and January 23, 1843, acquiesced to concluding the Engines Contract without a mortgage. In deference to Jackson's continuing objection—or as mollification—at the January 23 meeting the board authorized, but did not require, the LTCB Mortgage.[3]

Jackson was not easily dissuaded. He persisted in seeking a mortgage on the P&R road. Ultimately, he prevailed. Not just any mortgage would suffice, however. It had to satisfy Jackson's requirements. That entailed extensive negotiation with the P&R. The LTCB Mortgage was not executed until March 9, 1843, and delayed execution of the Engines Contract.

### Contractor Consent

PA Resolution (1843) No. 1 was adopted on January 21, 1843. It provided that, from that date[4]

> it shall not be lawful for any company incorporated by the laws of this Commonwealth and empowered to construct make and manage any Rail Road Canal or otherwise public internal improvement while the debts and liabilities or any part thereof incurred by the said company to contractors, laborers and workmen employed in the construction or repair of said improvement remain unpaid to execute a general or partial assignment conveyance Mortgage or other transfer of the real or personal Estate of the said company so as to defeat postpone endanger or delay their said creditors without the written assent of said creditors first had and obtained. And any assignment conveyance Mortgage or transfer shall be deemed fraudulent null and void as against any such contractors laborers and workmen creditors as aforesaid.

Many P&R contractors were unpaid as of March 9, 1843, especially on the still-incomplete Reading-Pottsville segment, at Port Richmond, for construction of the second track, and for upgrading facilities to accommodate second track usage. There is no evidence that any contractor assented to the LTCB Mortgage or that a request for assent was made. The likelihood of assent was low given the magnitude and persistence of claims and judgments for unpaid work. Thus, the LTCB Mortgage would be unlawful.

L&C ultimately accepted the infirmity. The LTCB Mortgage expressly recited that it was subject to PA Resolution (1843) No. 1, setting out the resolution in full. Despite language in the resolution saying such a mortgage would be unlawful, and thus not valid against contractors, there was an argument that it would be valid as against other creditors, at least those not secured by another mortgage or security instrument having priority over the LTCB Mortgage, which was then only the 1836 Mortgage. Jackson knew a mortgage to secure the 1843~1860 bonds (the 1843 Mortgage) was imminent, and it too would be senior to any mortgage granted to L&C. L&C needed to move swiftly.

The LTCB Mortgage was granted on March 9, 1843. On May 1, 1843, the P&R granted the 1843 Mortgage over the Philadelphia-Pottsville segment and associated revenues in the amount of £225,000 and $600,000. Jackson's demands for a mortgage were prescient, though not preclusive of competing claims.[5]

Acceptance of the infirmity was practical in the circumstances and sanctioned by Jackson. L&C obtained other collateral security (including additional bond collateral) and, through the trustees, retained title to the equipment until full payment, isolating the equipment from contractor claims.

And Jackson had other ideas. Ever cognizant of opportunities, he argued that L&C, by building rolling stock, may have qualified as a protected "contractor" under PA Resolution (1843) No. 1. On January 23, 1843, the L&C board directed him to explore that interpretation with Philadelphia legal counsel (probably Henry Chester).[6] Counsel's advice is unknown. However, rather than a mortgage on the Reading-Pottsville segment, Jackson's focus shifted to the Philadelphia-Reading segment, where most construction was complete and fewer contractors were unpaid. The Philadelphia-Reading portion was subjected to the LTCB Mortgage.[7]

### Mortgage Terms

Pursuant to the Engines Contract and LTCB Mortgage, each item of equipment (locomotives, tenders, cars, and brakes) built by L&C was delivered to a trust, with Appleton, Sturgis, and McKee as trustees. The arrangement was a conditional sale. Title was not conveyed by the trust to the P&R until full payment of the purchase price. Notwithstanding that title resided in the trustees, the locomotives, tenders, and cars

were listed as assets of the P&R on its financial statements from 1843 onward. That common practice rendered analysis of P&R financial statements murky, misleading, and inexact.[8]

Like the Running Gear Contract, title retention by the trustees was for collateral security reasons, rather than facilitation of sales of bonds or notes to investors, a practice that developed later as financing arrangements evolved into the "car trust" and "equipment trust". Title retention enhanced the position of L&C vis-à-vis creditors, including contractors. It also aligned L&C with the P&R in disputes with contractors. Under the Engines Contract, L&C appointed the majority of trustees. That assured L&C control of the trust, subject to fiduciary obligations of the trustees.[9]

The granting clause of the LTCB Mortgage illustrates what a mortgage on the "road" meant to Jackson. The property granted as security was the entirety of the road, including bridges, wharves, and other real estate, as well as income and profits derived from any of that property, including through sale, lease, or conveyance. The grant was not limited to amounts derived from coal transport in cars built by L&C used on the road. The only exclusion was for income necessary for expenses and repairs.[10]

The LTCB Mortgage did not cover locomotives, cars, and other equipment running the mortgaged road even though the arrangement presented to the L&C board on October 22 had proposed transferring to the trust essentially *all* P&R locomotives and cars. L&C had forsaken a claim against other rolling stock. It was unnecessary to include rolling stock built under the Rolling Stock Contracts in the LTCB Mortgage because, under the conditional sale, title would not pass to the P&R until full payment.

Remedies provisions of the LTCB Mortgage favored L&C, but also contained provisions impeding L&C's exercise of discretion. Three elements stand out, the first of which (buttressed by the imperative of the second and the threat of the third) was used by Patrick Tracy Jackson and L&C legal counsel, Horace Binney, when they launched their 1845 attack on the P&R.

First, the trustees had a mandatory, non-discretionary, obligation to demand *possession* of the collateral if the P&R defaulted (thereafter, the trustees were required to *sell* collateral when directed by L&C). The trustee demand for possession was required within six months of a default. This provision provided the basis for the Trustee Liability Agreement (1845), the first shot in the 1845 attack on the P&R.

Trustee possession was subject to one qualification. The trustees had to conform to lawful directions and orders of the P&R in management of the collateral. This provision evolved from 1843 to 1848 to ensure the P&R (a) could direct management of rolling stock held as collateral, even after delivery of possession upon a default, and (b) had priority in the use of revenues for management and operations, including after default and transfer of possession.

Trustee rights were buttressed by a strong further assurances clause. The P&R was required, upon a request by the trustees or their "counsel learned in the law", to do, execute, deliver, and acknowledge all such acts, matters, things, deeds, conveyances, and assurances to better effectuate the LTCB Mortgage and its intents. This rather customary provision was also used by Jackson and Binney in their 1845 attack on the P&R.

Another possession-related provision, supplemental to standard clauses, provided an enhanced threat. The P&R agreed to deliver actual possession of collateral to the trustees whenever the trustees "deemed [such delivery] expedient or necessary for better effectuating the security of this Mortgage". Read literally, delivery of delivery was not dependent upon a P&R default.

**Superior 1836 Mortgage**

The second infirmity to which Jackson acquiesced was the pre-existing 1836 Mortgage, which was superior to the LTCB Mortgage. The executive statement (but not the financial statements) of the P&R annual report for 1843 disclosed two mortgages. The 1836 Mortgage. And a "temporary mortgage [the LTCB Mortgage] … to cover the amount of $212,635 which will be due in June, 1845, for the 450 coal cars and 12 locomotive engines furnished" by L&C. It did not disclose the May 1, 1843 mortgage securing 1843~1860 bonds.[11]

The trustees under the 1836 Mortgage were Samuel Jaudon, Thomas A. Biddle, and Robert Ralston. It was granted on October 22, 1836 to secure 1836~1860 bonds in the amount of $1 million, the P&R's first international loan. The loan was still outstanding, with the 1836 Mortgage in effect, at execution of the Engines Contract and long thereafter. The 1836~1860 bonds and the 1836 Mortgage were in default at the time the LTCB Mortgage was granted.[12]

The grant under the 1836 Mortgage was expansive. It covered essentially all P&R property, including some after-acquired property. It covered all chattels (including rolling stock) to which the P&R had title at the time the 1836 Mortgage was granted. Which was none. It covered all tolls, income, profits, rents, revenues, and payments relating to real property or its use, then or in the future. There were a few exceptions; two were material. Those related to amounts necessary to pay operational expenses and amounts from sale or other disposal of real estate.[13]

A comparison of the LTCB Mortgage and the 1836 Mortgage provides a glimpse of Jackson's thinking about the L&C collateral security package. The 1836 Mortgage covered the P&R road as of October 22, 1836. The real property grant under the LTCB Mortgage was limited to the road and attendant property between Philadelphia and Reading as of March 9, 1843. The after-acquired property clause of the 1836 Mortgage did not apply to chattels or lands acquired after its date or rolling stock. It did apply to improvements, buildings, tolls, rents, income, issues, and profits.[14]

Jackson desired to control L&C's collateral, the ability of the P&R to affect that collateral, and the P&R's asset position. He targeted dispositions of P&R real estate. Unlike the 1836 Mortgage, the LTCB Mortgage provided no exception for dispositions of real estate. Trustee consent was required for all dispositions.

The 1836 Mortgage excepted out of the grant expenses of asset administration and amounts paid as dividends out of surplus profits, after providing for payment of bond interest and funding the sinking fund. The LTCB Mortgage excepted out "only so much [of tolls, income, issues, and profits] as may be necessary for expenses and repairs". It made no exceptions for dividends from surplus profits. Buttressing asset disposition restrictions, Jackson would not allow funds to leak out of the P&R until L&C was paid in full.

The 1836 Mortgage contained no provisions allowing the trustees to take possession of or sell the collateral. Common law principles governed remedies. The LTCB Mortgage required the trustees to take possession of the collateral upon a default. It gave L&C the option of requiring sale of the collateral.

Unlike the 1836 Mortgage, the LTCB Mortgage addressed liabilities of trustees. No trustee was liable for acts, omissions, or defaults of any other trustee or the P&R. A trustee was liable only for his or her own acts, omissions, and defaults. A trustee had no liability if that trustee conducted his or her activities with "good faith and intention" and with "fair and reasonable skill and judgment in the general management of the trust". The potential personal liability of trustees was a critical concept used forcefully by Jackson and Binney to L&C's advantage in the Trustee Liability Agreement (1845).

Other provisions in the LTCB Mortgage addressed appointments of successor trustees, with L&C having the right to appoint two and the P&R the right to appoint one. That gave L&C control over the trustees (subject to fiduciary obligations), which was important to Jackson and Binney in fashioning the Trustee Liability Agreement (1845).

The 1836 Mortgage was the first and only mortgage granted by the P&R over its property at the time the LTCB Mortgage was granted.[15] It did not prohibit subsequent mortgages. But issues regarding the relative priorities of the two mortgages were discussed with L&C's Philadelphia legal counsel and reported to the L&C board on October 22, 1842 and February 23, 1843.[16]

# Patterns

## Uses of Bonds and Loans

Investigations of the Philadelphia & Reading's debt issuances revealed patterns of practices. Jackson surmised—correctly—that the practices would persist. Some affected Locks & Canals. Six facets stood out. All are apparent in the discussions of P&R finances. The six related to:

(1) delayed recognition of discounts, commissions, and charges, including fees, and losses from early operations, which artificially increased asset values by their respective amounts;

(2) determinations of when bonds held in the treasury or posted as collateral security were considered "outstanding", thereby constituting liabilities;

(3) use of bonds to pay interest on other bonds, which avoided cash payments, infused equity risk characteristics into bonds, facilitated compounding of bond interest, and provided bondholders with arbitrage opportunities;

(4) use of bonds to pay other obligations and liabilities, which delayed cash payments, allowed creditors to realize a portion of their receivable, presented some payees with lesser arbitrage opportunities, and, in the case of contractors after January 21, 1843, circumvented statutory lien consent rights;

(5) exchanges of bonds of one issuance or tenor for other bonds, notes, and obligations, including those of a different issuance or tenor, with changes in the security afforded the recipient, which included enhanced security (and less risk) for influential sophisticated creditors and diminution in security (and greater risk) for other creditors, sometimes circumventing a creditor's statutory lien priority consent rights; and

(6) use of bonds as collateral, with significant discounts (usually 50%) on those bonds and consequent increases in undisclosed liability exposures.

Also notable was how bond convertibility traits influenced uses of bonds. Convertible bonds were used to make payments to influential and sophisticated creditors desiring the option of equity or debt. Non-convertible bonds were used for payments to other parties, especially those desiring or amenable to immediate discounted sales in secondary markets. Convertibility was an important consideration for some creditors, such as Locks & Canals, but of little importance for others, such as contractors. Some parties, including L&C and others with a preference for equity, would only accept convertible bonds.

## Discounts, Commissions, Charges, Losses

Sales of bonds at original issuance were at discounts to face amount. In the earliest years, the discount hovered around 20%. Larger discounts accompanied increases in the P&R's debt overhang, payment failures, and other difficulties. Discounts were 30% by 1847. They increased to 50% and 60% in late 1847 and into 1848. By late 1848 and through 1849 discounts reached receivership percentages. Because of discounts, the outstanding principal amount of bonds on financial statements was always greater—often significantly—than the amount of sale proceeds.

Discounts on bond issuances raised two considerations. One was the timing of loss recognition. The second related to artificial increases in asset values by discount amounts. The same considerations applied to commissions and charges, including placement fees, early operating losses, and some interest payments.[1]

A discount, commission, charge, or loss on bonds or other debt was not recognized as a loss in the year of issuance. That was acceptable accounting practice at the time. Financial statements did not specify the dollar amounts of discounts, commissions, charges, or losses at either incurrence or recognition.

Loss recognition for discounts, commissions, and charges was complex. The same complexities applied to losses from early operations. Treatment of discounts pertaining to the 1843~1850 non-convertible bonds is illustrative. The bonds were sold at a 20% discount. Holders were given bonds in a face amount 25% greater than the amount of cash and notes contributed. There were concerns that the discounts rendered the bonds violative of Pennsylvania usury laws. Some holders refused receipt of the bonds until a law was passed legalizing the arrangement. Pending passage of the law, holders were given promissory notes equal to the amount of the holder's cash-plus-notes subscription and, as collateral, 1843~1850 bonds in amounts determined after application of the 20% discount.[2] After the legitimizing law was enacted in 1845, the holders returned the notes and retained the bonds. At some time thereafter, the P&R recognized the loss as a deduction from the revenue account, without reference to the discount. Another example involved commissions and charges on the 1847 bond issuance which "cannot be regarded as an item of current annual expense, and, therefore, not properly to be deducted from the revenue account of this year".[3]

Discounts on notes and other obligations were treated in the same manner as bond discounts. Given their shorter tenors, lags in loss recognition were not as pronounced as for bonds. Notes and other obligations were paid with bonds if the P&R could so arrange, which increased the outstanding principal amount of loans on P&R books in years after original incurrence and converted floating debt into bonded debt, such as in 1843.

Another common nineteenth century accounting practice was to increase the asset value of the road by three significant undisclosed amounts: (a) discounts, commissions, and charges; (b) interest paid on debt; and (c) losses during early operations. Discounts, commissions, and charges were 34.48% of the face amount of loans issued between 1844 and September 1849. For the 1844~1860 convertible secured issuance, they were approximately 39%. Discounts on bonds sold in 1849 to pay floating debt were 43.11% ($1,260,600 on loans of $2,924,000). These figures do not include interest payments, operating losses, or discounts, commissions, and charges on non-bond debt. The practice prompted one scholar to characterize nominal investment in P&R properties as "already more than 50 per cent water" by 1848. Due to murky disclosure, it is difficult to assess the extent to which interest payments and early operating losses inflated asset values. However, of the $2,151,685 added to balance sheet assets in 1848, only $9,343 was for new asset purchases.[4]

### After Original Issuance

The principal amount of a bond issuance at original sale was not necessarily—not even usually—the only outstanding principal amount for that issuance. The outstanding principal amount of an issue on the P&R books increased after original issuance—sometimes years later—as bonds of that issue were sold or distributed for various purposes.

Frequently, the entire authorized principal amount was not (often could not be) sold in the initial offering. Unsold bonds and reacquired bonds were retained in the P&R treasury and then sold or distributed in subsequent years as funds were needed or obligations had to be satisfied. Bonds held in the treasury were

not recorded as outstanding liabilities. When treasury bonds (including unsold bonds) were used to pay an obligation, they were recorded as a liability.[5]

More questionably, bonds provided as collateral were not considered to be outstanding and were not recorded as liabilities until sold in connection with a default. Customarily, a 50% discount was applied to bonds provided as collateral. In times of stress, significantly higher discount rates were applied. For example, John Gihon was afforded a 75% discount on bonds used as collateral for the Gihon First Loan and about 70% on bond collateral for the Gihon Second Loan.

Occasionally the P&R was candid about holding bonds in the treasury for later use. For example, its report for 1843 stated that £68,000 of sterling bonds and $348,500 of dollar bonds from the 1843~1860 issuance were "on hand, in possession of the Treasurer … for any purpose which may be required." The P&R usually did not identify the quantity or value of bonds provided as collateral, although the Neal Report (1849) did identify that quantity and value.[6]

**Interest Payments**

The P&R was cash poor. Using bonds, notes, or other obligations as payment currency allowed allocation of cash to pay expenses of construction, operations, and equipment purchases. The P&R seized every opportunity to make these substitutions.[7]

The P&R regularly issued unsold bonds and other treasury bonds to pay accrued interest on debt. Accrued interest was rarely "fully brought up" on financial statements, thereby understating liabilities, although annual reports occasionally mentioned unquantified exposures. Bonds distributed to pay interest were reported as liabilities when distributed. The P&R also reported other "obligations" issued to pay interest, although they were identified separately, not as bonds. Use of bonds to pay interest was acknowledged explicitly from time to time, such as in the financial statements for 1844.[8]

Using bonds, notes, and other obligations to pay interest (and other obligations) extended payment periods significantly and also altered the nature of the bond obligations. Depending upon which bonds were issued, the practice converted some unsecured loans into secured claims, even preferred claims as mortgages of different priorities were sequentially granted to secure issuances that, in turn, were used to pay interest. The practice was a *de facto* infusion of equity characteristics, including ownership risks, into bond holdings in a manner that preserved payment preferences ahead of stock. Bond holders had a preferential claim on cash ahead of equity if the railroad were successful and to the extent free cash became available.

For some issuances, the movement toward equity was clear: the holder had a right to convert bonds into stock. Bond holders with conversion rights had the best of both worlds. Especially if the bond was secured by a mortgage. The bond afforded fixed periodic returns as interest payments and assurance of a return of principal. Those rights were senior to uncertain dividend payment rights of equity holders, and often senior to other creditors. The convertible bond provided a risk floor to the investor. The holder had a call option on equity (common stock) and the railroad's prosperity, providing significant upside if the railroad was successful. If the railroad went into bankruptcy, the equity call would not be exercised; the senior bond position would be retained. Claims of senior secured bonds remained senior even in a bankruptcy.

Often, the decision to convert did not have to be made until shortly before bond maturity. That allowed holders to own the bonds, and preserve priorities, until the last moment. At that time, the holder could assess whether to convert to equity or roll into a new bond issuance. Although there was no contractual

right or obligation to roll into a new bond issuance, the practice was common. The P&R encouraged roll overs because they deferred cash payments.

Payment of interest with bonds increased the rate of return (effective interest rate) on the underlying bonds to the extent and as a function of the applicable discount rate on bonds used to pay that interest and the amount of that interest. Frequently (especially for large holders), a 20%-50% discount applied to bonds distributed to pay overdue and accrued interest. Of course, distributed bonds bore interest (usually 6%) on the bond's face amount, thereby compounding the interest rate, and capitalizing the unpaid interest. When the bonds were eventually paid, the holder was paid 100% of the undiscounted face amount of both the bonds issued to pay interest and the underlying bonds. The difference between the face and discounted amounts of the bonds used to pay interest became additional return, which bore interest. Because of the dearth of cash, payment with bonds was frequent, resulting in a notable increase in effective interest rates.[9]

Payment of overdue or accrued interest with bonds also presented the holder with a pregnant arbitrage opportunity. If the holder could negotiate a discount on bonds used to pay interest that was greater than the market discount, the holder could sell the bonds in secondary markets at immediate gain. Because the bonds were already in default and holders had the right to initiate remedies at any time, the negotiating power of holders was significant. Bond holders were the last bastion against the P&R's total failure and had absolute discretion to remove all protections at any time. As a result, large, powerful, or influential holders could negotiate greater-than-market discounts readily, giving full bloom to the arbitrage opportunity (as well as the opportunity to increase effective interest rates). The holder would also recoup the aggregate amount of the unpaid interest through that sale.

### Payments of Obligations

Examination of P&R financial statement liabilities highlighted a pattern that mirrored the use of bonds to pay interest, with somewhat different consequences. Unsold and other treasury bonds (and newly issued bonds) were distributed to pay obligations other than bond interest, often at the face amount, without discount, of the bonds used in payment. As one example (among many), the patent rights licensing fee for Isaac Babbitt's boxes for railroad cars was paid with a $1,500 bond, dated April 23, 1842 payable April 23, 1843.[10] Undiscounted bonds were paid in settlement of a range of different claims, including for contract obligations, damages, judgments, and settlements, and to secure stays in court proceedings.[11]

Payment deferral gave the P&R a benefit calculated by reference to the applicable net present value factor (usually 6%). It did not increase return to the holder (creditor) or create a discount arbitrage opportunity (unless the creditor could obtain bonds in a face amount greater than the liability or judgment amount). Obtaining such a discount was uncommon for most creditors, especially contractors. However, some creditors, such as McCalmont Brothers, Morrison Sons, and large or influential financiers, did negotiate larger discounts. For creditors that could not arrange significant discounts, the arbitrage opportunity was nonexistent or small, and a function of the bond-to-market discount differential. The practice did allow the creditor to sell in secondary markets at the market discount, thereby immediately realizing a discounted recovery on the liability, judgment, settlement, or other claim and avoiding ultimate and delayed settlement risks.

### Exchanges

Bonds of one issuance were frequently exchanged for bonds of a different issuance. For example, $444,000 of 1839~1850 convertible sterling bonds were exchanged for 1840~1850 convertible U.S. dollar bonds,

although the applicable exchange rate is unknown.[A] In other cases, bonds were exchanged for bonds of a longer tenor. A prominent example was conversion of 1839/40~1850 bonds into 1849~1870 bonds.[12]

The exchanges provided the P&R with obvious payment deferral benefits. They provided some holders with exchange rate benefits. If secured bonds were issued for unsecured bonds, notes, or claims, the holder's priority position was improved. It seems secured bonds were issued, preferentially, to note holders who were also bond holders, such as McCalmont Brothers, Morrison Sons, and John Gihon. Additionally, those holders often demanded the option of upgrading unsecured bonds to secured bonds later issued. Unsecured bonds seem to have been issued to note and claim holders that were contractors and other creditors that were not bond holders.

In some circumstances, use of bonds to pay contractors after January 21, 1843 circumvented statutory lien preference consent rights under PA Resolution (1843) No. 1. The P&R paid contractors with bonds issued before that date and issued secured bonds after that date for payment of other creditors, without obtaining the consent of contractors to the new secured bond issuance. Presumably, and as a somewhat strained reading of the law, the argument was that the new secured issuance did not "defeat, postpone, endanger or delay" the claims of contractors and thus their consent was not required.[13]

**As Collateral.**

Finally, but importantly, and on a large scale, unsold and other treasury bonds were used as collateral for other loans, notes, debts, and obligations, usually with a 50% discount applied to the collateral bonds. Bonds held as collateral were not recognized as liabilities until sold in connection with a default. Upon sale, the bond obligation was booked at its face amount, and the secured liability was paid to the extent of available sale proceeds after payment of discounts, commissions, and expenses. The P&R 1846 Report noted that, as of November 30, 1844, $1,443,800 of bonds were held as collateral as determined from the P&R account books. Of that, at least $674,800—more probably, $903,000—was for liabilities already payable on demand in 1844. These amounts did not include bonds issued as collateral to secure other bonds then in default and also payable on demand.[14]

Jackson and L&C took advantage of this practice in the Running Gear Contracts, holding $340,000 of bonds as collateral for the debt. Another rather dramatic example was the pledge of £27,500 of 1836~1860 and 1843~1860 convertible bonds to secure bearer notes issued to Robert McCalmont, Robert Tyrrell, and Robert Hichens on May 31, 1844 pursuant to the London Indenture (1844). The notes were issued to secure £107 6*s*. of unpaid interest accrued since the January 1, 1841.

From the P&R correspondence, it seems some parties holding collateral bonds collected interest on those bonds, although there is no confirmation in the P&R's financial statements.[15] The secured party was paid interest on the secured loan and some or all collateral bonds (usually at 6% per annum). Collateral bonds were discounted at 50%. These arrangements significantly boosted the effective interest rate.[16]

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[A] Exchange rates varied, often between £4.80 to $1 and £4.40 to $1.

Chapter Twenty-Five

# Machine Shop and Debt

## The Inquiry

In November of 1843, probably on Monday the 13th, when the moon was at its quarter, Patrick Tracy Jackson received the inquiry. It was from Abbott Lawrence, William Appleton, and Thomas B. Wales. Each had intimate knowledge of the progressive development of the Locks & Canals machine shop since 1813. They knew of its expansion from building textile machinery to building locomotives, rail cars, running gear, brakes, and other equipment. They knew of the shop's other activities, including the building, and supervision of the building, of canals, locks, waterwheels, power transmission elements, dwelling houses, mill buildings, streets, bridges, and a hotel. They knew of its technological advances in fire protection, mill heating, lighting, and sanitation. Each was aware of how Jackson and Paul Moody developed the machine shop to preeminence.[1]

The three men making the inquiry knew, as only insiders could know, of Jackson's continuing belief that the machine shop should be converted to a twist mill or sold. They were fully apprised of L&C's vacillation regarding sale or conversion, of the many board meetings that authorized sale, then conversion, and then suspended all consideration. They closely monitored Jackson's travail in determining an acceptable price for the shop. A price Jackson considered fair. Which meant not what the market might bear, but a price that reflected investment in the shop as well as future worth. They knew that, as early as October 28 of 1841, and as recently as October 14 of 1842, Jackson had opined to the L&C board of directors that, to realize a higher price, excess waterpower capacity at Lowell should be reserved for the shop after its conversion to a mill.[2]

Throughout the sell-or-convert debate, and despite Jackson's misgivings and those of the L&C board, Jackson sought to sell the machine shop and the board continued to debate sale and conversion. L&C continued to build rolling stock and parts, if only until the shop could be transitioned out of L&C. Orders were limited. But Jackson strove to maximize shop use and search for opportunities to build equipment. The principal initiatives were the Rolling Stock Contracts with the Philadelphia & Reading. Revenues from, and the indebtedness under, those contracts were a critical factor in L&C's ability to sell the machine shop at a price that Jackson and the board thought appropriate. Those making the inquiry knew that P&R revenues available to service debt were limited and P&R debts were large and problematic.

Lawrence, Appleton, and Wales may have been induced to make the inquiry by the results of L&C's analysis of converting the machine shop to a twist mill. The analysis was briefed to the L&C board on October 7, 1843. Whereupon the board promptly reversed course and determined to sell the shop.[3]

The inquiry hinted at no terms or parameters. It was an open-ended probe, not a proposal. On what terms would L&C sell its machine shop? Jackson would respond, but only after consultation with the L&C board.

Jackson reported the inquiry to the board at its November 20 meeting. The board voted "That it was not expedient at present to sell the Machine Shop & Foundry" and directed Jackson to suspend further activities for conversion to a twist mill. On November 29th, the 333d day of the year, when the moon was at its half, Jackson so informed the three inquirers.[4]

L&C business suffered during and after the Panic of 1837, Crisis of 1839, and Collapse of 1842. The low point was mid-1843, during building under the Engines Contract. Business began to revive thereafter. By November 1843, L&C was so immersed in building activities that it would not guarantee delivery of textile machinery within six months of an order. On December 9th the board declared a $50 per share dividend. Total 1843 dividends were $150. That was surpassed only twice in L&C's history: in 1832 and 1836. L&C dividends in 1844 were $75. The average annual rate of return from 1825 through 1844 was 15%.[5]

The economic resurgence was evanescent; another slump soon ensued. On September 25, 1844, Jackson was directed to sell the machine shop and foundry, with two mill powers, for $200,000. The direction came after the annual meeting of Proprietors on September 19th, at which the Proprietors requested sale of all L&C assets. Proprietors had different motivations for selling assets. Some were taking profits. Others saw advantage in separating water power and building functions, believing the value of each would be enhanced. Others had personal reasons. Jackson prepared an offering circular, dated October 9, 1844. As of July 31, 1844, the book value of the machine shop was $123,340.91, the foundry was valued at $29,134.34, the buildings at $106,236.29, and the land at $622,247.72.[6]

A year after the initial inquiry, in the first days of December 1844, Abbott Lawrence again wrote to Jackson. He offered to purchase the machine shop, land lots, and mill powers for $175,000. Jackson read the letter to the L&C board at its December 6 meeting. The board authorized Jackson to contract for sale of the assets described in the offering circular "on such terms as he may think expedient." Jackson thought Lawrence's offer inexpedient.

Anticipating a different determination, on December 7, before the rejection was conveyed to Lawrence, a group of thirty-seven prominent investors executed a subscription agreement to form a company for acquisition of the machine shop, foundry, sawmill, and related land, buildings, tools, and patterns, and some water power rights. The company was to be capitalized at $100,000. Abbot Lawrence was the lead investor, subscribing for $35,000, followed by John A. Lowell at $25,000, William Appleton at $20,000, and Nathan Appleton and William Sturgis at $15,000 each. The smallest subscriptions were for $500 (one share).[7]

The potential purchasers were not dissuaded by the L&C rejection. On March 8, 1845 Lawrence made another offer of $175,000, in cash. Jackson presented the offer to the L&C board on March 10. That offer was rejected. The board maintained an asking price of $200,000. Soon thereafter Jackson reached agreement with Lawrence at a price of $175,000, cash.[8]

Jackson's determination that the amount was expedient after all may have been influenced by knowledge of the subscription agreement. All subscriptions were conditional upon the acquisition price being no greater than $175,000. That would have to be the price.

But that did not mean Jackson had capitulated. Jackson turned to determining exactly which assets would be purchased for that price. There was room for maneuver. Not all assets included in the original offer were included in the final purchase. And the land and tenements cost an additional $50,000.[9]

The suitors then formed a new company to acquire the machine shop, foundry, and other assets. Jackson learned of establishment of the company only moments before its formation. From Nathan Appleton. Another date that would stay in Jackson's mind: December 7, 1844.

The Lowell Machine Shop was chartered when Governor Briggs signed enabling legislation on January 29, 1845. The identities of three incorporators became known: Abbott Lawrence, John A. Lowell, and Nathan Appleton. On March 12, at the first stockholders' meeting at the offices of Merrimack Manufacturing at 11½ Tremont Row, the identities of the other sponsors were revealed. These were the thirty-seven signatories to the subscription agreement: prominent and wealthy—Gibb says "regal"—persons from Boston and New England with connections in every nook and cranny of the business, banking, and financial worlds. The purchase of L&C assets by the Lowell Machine Shop occurred on April 1, 1845.[10]

A year later, the Lowell Machine Shop and a group of mills were authorized to purchase and hold the stock of L&C. The primary objective was ownership and use of waterpower and water rights. In October of 1848 the Lowell Machine Shop employed 800 people and consumed 4,000 tons of iron annually. It was increasing its authorized capital stock to facilitate investment in more properties.[11]

### P&R Debt

What became of the outstanding indebtedness of the Philadelphia & Reading to Locks & Canals under the Rolling Stock Contracts? Did the receivable become property of Lowell Machine Shop, or remain with L&C?

The transaction for disposition of the machine shop, foundry, and other assets was structured as an asset sale. The April 1, 1845 schedule listing L&C assets *not* sold, with a total value of $302,989.30, included the "Bal^c due from Phil^a & Reading Rail Road" of $192,597.77. The P&R receivable remained with L&C.[12]

The Neal Report (1849) stated the amount due as of November 30, 1844 as $163,944.75. The P&R 1846 Report specified the amount due as of July 31, 1845 as $221,481.95 and correctly noted that it was payable on demand at the discretion of L&C. The P&R annual report for the year ending November 30, 1845 showed the amount due as $183,981.95, down from $238,944.75 a year earlier. The L&C internal account ledger showed $189,206.32 outstanding at November 15, 1845 and $190,183.88 as outstanding at December 15, 1845 before a $7,500 principal payment on that date.[13]

From the L&C vantage, the machine shop sale was part of a broader reorganization transaction. L&C sold approximately $600,000 of real estate to other Lowell companies, called in its own stock, liquidated assets, and reorganized its business to concentrate on waterpower and water rights. At a November 19, 1845 meeting of the L&C board of directors, the Proprietors were directed to attend a meeting on November 29th, and to bring their share certificates. L&C paid $540 per share for L&C's capital stock. Each shareholder was provided a receipt indicating a right to a fractional undivided interest (x/1200) in the real and personal assets.[14]

# Capitulation and Restructuring

## Reporting

Returning from his visit with Horace Binney, Patrick Tracy Jackson arrived in Boston late Friday night, December 12. Travel time from Philadelphia was more than 15½ hours, not including the overnight stay in New York. Results of his visit with Binney being of urgency, despite the bite of 10˚F at sunrise and a high of 22˚F at mid-day, the Locks & Canals board of directors assembled at 7½ Tremont Row, Jackson's office, at noon on Saturday.[1]

Two matters were addressed during the Binney consultation. Each was reported to the board on December 13. The second rendered the first anticlimactic and the first went unmentioned in the minutes.

The first matter, and the purpose of the Binney meeting in the minds of L&C directors, pertained to assignment of the P&R debt to a third party. That matter was resolved. The debt and related rights would be assigned to a third party.

The second matter began as an inquiry regarding how L&C might force payment of the P&R debt under the Rolling Stock Contracts and expanded to an investigation of how P&R floating debt could be eliminated. Jackson, on his own initiative, raised the second matter with Binney. Jackson desired complete, uncontestable payment of the P&R debt and a financial restructuring of the P&R to eliminate all floating debt.

Jackson was present at the December 13 meeting: as a director. Adhering to protocol, the results of Jackson's visit with Binney were presented by the new treasurer, John T. Morse, who acted under Jackson's continuing direction on matters pertaining to the P&R debt. Three documents were read to the board. Two were obtained by Jackson in Philadelphia.

## Trustee Liability Agreement (1845)

The first document was an agreement drafted by Binney during the December 10 meeting: the Trustee Liability Agreement (1845). It bore the signature of William McKee, the P&R-appointed trustee under the Engines Contract and LTCB Mortgage. It also bore the P&R's signature. Each was obtained on December 10, whilst the ink was wet. Appleton and Sturgis signed at the Saturday L&C board meeting. An end run had occurred and was then a *fait accompli*.[2]

The ostensible purpose of the Trustee Liability Agreement (1845) was to address a technical aspect of the LTCB Mortgage. On its face it did nothing more. In so doing, however, it left in L&C all decision-making regarding, and control of, defaults and remedies under the LTCB Mortgage and Engines Contract. It would have had that effect even if not executed by the P&R. Quite intentionally, and *sub silentio*, it did a good deal more. It came with conditions not evidenced in the text.[3]

The LTCB Mortgage required the trustees to demand delivery of the collateral within six months of any P&R default under the Engines Contract. Neither demand nor taking of possession was discretionary. By

December 1845, with L&C acquiescence, the P&R was in default for years beyond the six-month period, no demand had been made, and the trustees had not taken possession of any collateral.

Binney immediately identified the pressure point—the point of initial attack—in the mundane provision requiring demand and delivery of the collateral. The trustees were indisputably in default for failure to demand and take possession. The trustees were vulnerable, with potentially grave consequences. Each trustee was personally accountable for his omission: a significant liability exposure. No trustee would be saved by the provision excusing omissions and defaults in the exercise of fair and reasonable skill and judgment conducted in good faith and intention. Despite acquiescence to defaults, L&C was without risk for the failures.

Pursuant to the Trustee Liability Agreement (1845), each signatory trustee was exonerated and released of his duty to make the required demand "and from all claims and demands in consequence of having failed to make it, if such omission has occurred." It allowed each trustee to save face, and avoid liability, without admission of error. Relief from liability was beneficial to the trustees. And to L&C and the P&R because the trustees were officers of these entities. As anticipated, there was no resistance to the agreement. It was signed by McKee on the date it was drafted.

Binney's wise and firm counsel is evident throughout the agreement. It enlisted trustee support and ensured the P&R had no involvement in actions taken under the LTCB Mortgage, the Engines Contract, or related documents. The P&R was neutralized. All rights of L&C were unequivocally preserved. Including absolute and unfettered discretion to direct delivery of the collateral and exercise remedies in respect of any collateral, at any time. No concessions were made to the P&R. The P&R gained nothing beyond liability relief for the trustee appointed by it. The P&R was left to the good will and unfettered discretion of L&C in all matters.

The P&R was a party to the Trustee Liability Agreement (1845). It was not a necessary party. Accession of the trustees alone was sufficient to obtain the desired benefits for L&C. Inviting P&R joinder was a courtesy, albeit one thrust forcefully upon the P&R. Jackson had another courtesy to extend. And he was not averse to thrusting that courtesy upon the P&R to full effect.

### Payment Amendment (1845)

The second document read by Morse was a letter from John Tucker, the P&R president. Tucker was a partner of the New York mercantile and financial firm of Gihon & Company, which held significant equity and debt of the P&R. Gihon & Company was the New York correspondent for McCalmont Brothers and maintained an office in Philadelphia. Tucker was placed by Gihon & Company with the P&R to become its president. Tucker executed the letter before Jackson left Philadelphia on December 10.[4]

Tucker, with hat in hand, penned a capitulation styled as a proposal. The capitulation was to terms attendant upon, but not specified in, the Trustee Liability Agreement (1845). It embodied half of the second step in the plan. Likely the terms and language were dictated to Tucker. The formal legalistic language, which was uncharacteristic of Tucker, derived from the meeting with Binney.[5]

> So long as you do not deem it necessary for the payment of your whole demand under the agreement, bond & mortgage of 1843 (dated March 9), this company [the P&R] mean and agree to reduce your claim immediately to one hundred & fifty thousand dollars, and to pay you seventy five thousand dolls. more at the expiration of two years, and the balance of seventy five thousand at the end of three years. The interest on the same to be paid semi-annually. But they express understand and agree that neither this promise nor the performance by it on their part by payments from time to time, shall be deemed to restrain you

> from proceeding at any time or for any reason whatever, to inforce [stet] your legal rights in every lawful way for what may be due you by the Company [the P&R], it being the clear intention of both of us, that there be no change, suspension or delay of your right to proceed immediately to use all your remedies for what at any time may be due to you, and without let or hindrance by us on this or any other account, the not so proceeding being at all times to remain a matter for your own will and determination, as heretofore.
> I remain Dear Sir Y^r obt svt, John Tucker Pres^t

Jackson and L&C had been accommodating in the past. And Jackson, L&C, and Morse were willing to accommodate in December of 1845. The outstanding principal amount of the P&R debt to L&C had been reduced somewhat (to $183,000 on April 15th, down from $234,134.29). Binney's advice had borne fruit.

Accommodation did not mean relinquishment of any right, however. Although capitulation was evident, the L&C board maintained its resolve and the pressure on the P&R. At its December 13 meeting the board prepared a response to Tucker, over Morse's signature, acknowledging receipt of Tucker's letter[6]

> as evidence of the Rail Road C!s disposition to liquidate its debt to us, but on no account can we agree to change the nature of the agreement and securities made and given by the instruments of the 9th of March 1843 – nor to suspend delay or postpone for any time whatever our right to proceed immediately in all lawful ways for our entire demand, and this we understand to be your meaning. ... we hold to our right of proceeding for the whole debt due at any time we may see fit, and for any reason satisfactory to us, either before or after such payments on account.

That response completed the second of the four steps in the Binney-Jackson plan. Tucker's letter and the response amended the payment terms of the Rolling Stock Contracts and constituted the Payment Amendment (1845). There was much more to come.

### Settlement Agreement (1846)

Morse sent a second letter to Tucker on December 13. It recited execution of the Trustee Liability Agreement (1845), joinder in the Payment Amendment (1845), and acceptance and approval of the oral agreements between Jackson and Tucker. "We are now ready to proceed to close the agreement to be made between you and Mr. Jackson respecting the future payments on said debt pursuing the course pointed out by Mr. Binney, [and] it is necessary that you should" take five actions. Paraphrasing, those actions were:[7]

1. satisfy L&C that all P&R floating debt has been paid in full;
2. deposit with Brown and Emlen as trustees under the Running Gear Contract, in substitution for the single $240,000 bond held as security, twenty-four $5,000 bonds and twelve $10,000 bonds;
3. forthwith reduce the aggregate outstanding debt under the Rolling Stock Contracts to $150,000;
4. provide a certificate, recordable in official records, stating that the P&R owed $150,000 to L&C under the Rolling Stock Contracts, subject to no set-off or demand of any type, and unequivocally confirm that the P&R had no demand of any type against L&C for any defalcation; and
5. agree to execute any papers necessary for the valid assignment of the P&R debt, and related security, "to the party to whom we [L&C] have agreed to sell the same."

Morse requested that Tucker establish a date for the payment reducing the debt to $150,000, whereupon L&C would prepare the agreement embodying the five requirements "under the direction of Horace Binney Esq." The final sentence was terse: "I shall draw on you as usual on Monday next for $7,500."

Morse's letter went unanswered, prompting another from Morse on January 16, 1846, pressing for the payment date. Tucker responded on January 19. The response was wanting. The L&C board promptly appointed Jackson a committee of one for another visit to Philadelphia to "attend to settlement of the

accounts". Tucker was directed to "have every thing in readiness to close the business at once." Jackson would not leave Philadelphia without contractual resolution.[8]

### Reallocating Collateral

To satisfy Jackson's requirements, the Settlement Agreement (1846) was finalized on February 9, 1846, while Jackson was in Philadelphia. It addressed floating debt reduction, restructuring of collateral security for the Rolling Stock Contracts, and assignment of the P&R debt.[9]

Horace Binney penned a second agreement, the RG Collateral Assignment (1846), on February 9th. Its purpose was to give effect to parts of the previous understanding between Jackson and Tucker. There were three sets of parties: the trustees under the Running Gear Contract (Brown and Emlen);[A] the trustees under the Engines Contract and LTCB Mortgage (Appleton, Sturgis, and McKee); and L&C. The courtesy of signing was not extended to the P&R.

Under the RG Collateral Assignment (1846), the 600 coal cars and $240,000 bond held by Brown and Emlen to secure the Running Gear Contract were assigned as additional collateral to the trustees under the LTCB Mortgage and Engines Contract. The LTCB Mortgage also included, as collateral, $300,000 of P&R bonds, the road, rails, bridges, wharves, fences, franchises, and real estate of the P&R line, and the tolls, income, issues, and profits from any of the foregoing. To maintain, and be able to escalate, pressure on the P&R, the single $240,000 bond was exchanged for bonds in more marketable denominations: twenty-four $5,000 bonds and twelve bonds of $10,000 each.[10]

To implement the Payment Amendment (1846) concurrently with the RG Collateral Assignment (1846), Jackson required that the P&R pay $41,977.77 to reduce the outstanding debt to $150,000. Jackson gave the P&R one week (until February 16) to make payment. He also required the P&R to certify that all floating debt had been paid in full and that the P&R had no claims against L&C.

Characteristically, Tucker and the P&R failed to consummate matters by February 16 and defaulted on the scheduled monthly payments. By March 5, Jackson had become ill and Morse, at Jackson's request, wrote a stern letter demanding consummation of the arrangements. Delays were costing L&C $25 per day in interest, which was unsatisfactory to the still-ill Jackson. Tensions escalated yet again.

The outstanding amount as of March 6 was $192,506.06, including two overdue monthly payments and unpaid interest. On March 6, Thayer & Brother made two payments to L&C ($15,000 and $27,506.06), reducing the debt to $150,000. Morse promptly wrote to Tucker requesting fulfillment of the unsatisfied terms of the Payment Amendment (1845).[11]

There was more at issue than outstanding amounts. The unsatisfied terms included elimination of the floating debt, confirmation of amounts owed to L&C, waiver of claims and defenses, and agreement of Brown and Emlen to assignment of the P&R debt by L&C to an unnamed individual.

### Financings to Reduce Floating Debt

Jackson's imperative that the P&R reduce its floating debt begat four initiatives in 1845, in addition to the various agreements embodying the Binney-Jackson plan. The 1845 Investigation Committee was convened

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[A] Brown resigned as a P&R manager at the annual stockholders meeting on January 12, 1846 but retained stock in the P&R and continued as trustee.

and a stock issuance and two bond issuances were forced upon the P&R. Those were inadequate for elimination of the floating debt, necessitating bond issuances in 1847 and 1848.

At the direction of the Boston interests, the P&R undertook a subscription of stock and bonds. Most subscribers did not designate whether they would purchase stock or bonds, only the amount of each subscription. Philadelphia investors committed $103,600, with John A. Brown committing $50,000 and each of George W. Edwards and Harris & Co. committing $21,000. New York investors subscribed for $54,000. The remainder was taken by Boston investors and a few other large investors. J. L. Stackpole took $25,850, J. E. Thayer & Brother and John M. Forbes each took $20,000, J. L. Mobley subscribed for $13,600, and Milton J. Slocumb took $10,000. Morrison Sons subscribed for $150,000 of bonds. McCalmont Brothers subscribed for $125,000 of bonds and $300,000 of stock. Gihon & Company subscribed for $125,000 of bonds and $345,450 of stock. And Locks & Canals subscribed for $150,000. The need for cash was sufficiently urgent, and the objective of removing the floating debt so important, that L&C did not subscribe by assignment of its P&R receivable under the Rolling Stock Contracts. The L&C focus had shifted from the Rolling Stock Contracts: L&C was prepared to contribute cash. Subscriptions totaled $1.5 million.[12]

In 1845 the P&R issued $1.1 million of stock and incurred two $75,000 loans. One loan was due January 1, 1848 (1845~1848) and the other on January 1, 1849 (1845~1849). Each was convertible into stock, held predominantly by Boston investors, and secured by a mortgage. Convertibility was a requisite of Boston investors, whose primary interest was stock.

Neither loan was referenced in P&R financial statements for 1845. The two loans and their mortgages were included in statements for 1846 and 1847, probably because funding of the subscriptions occurred in early 1846. The loans were paid in some manner, possibly with other bonds, by 1849. Thus, neither the loans nor the related mortgages were referenced in the Neal Report (1849). To reduce floating debt, $1.4 million (before discounts, commissions, and charges) of 1847~1856 bonds were issued in 1847. No proceeds were applied to payment of the P&R's debt under the Rolling Stock Contracts. As of November 30, 1848, total P&R liabilities were $9,585,245.29.[B] Floating debt was reduced to $1,494,651.93.[13]

### Summary of Binney-Jackson Four-Step

The Binney-Jackson four-step plan began as a tiptoe. It was uncontroversial and, on its face, without apparent portent for the direction of future actions. Each subsequent step was more expansive and consequential. With each step the options available to the P&R became more constricted. The iron was hot. Implementation of the plan began on December 10, 1845. All four steps were contractually consummated within two months, by February 9, 1846, and are summarized in this section.

The Binney-Jackson plan was a work of art and elegance. Binney identified the critical factors and conceived the plan within minutes, resolving issues that had bedeviled Jackson for years. Horace Binney was Wolfgang Amadeus Mozart, in terms of insight and creative genius, though not temperament.[14]

The first step implemented a technical correction. The Trustee Liability Agreement (1845) protected the trustees from liability for their continuing and unexcused failure to demand and obtain possession of collateral under the LTCB Mortgage. It absolved the trustees of all claims. In so doing, the agreement shifted

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[B] Before deductions for cash, bills receivable, and sundry accounts due, and adjusted for disclosed losses on suspended debts that were deducted ($781,871.79).

all decision making and all control in respect of defaults and related remedies to L&C. Immediately, L&C's negotiating leverage was significantly enhanced, with a corresponding diminution in the P&R's leverage.

The second step also honed closely to specific issues under the Rolling Stock Contracts. The Payment Amendment (1845) established the definitive payment schedule. Its essential terms had been previously agreed with Jackson by the P&R and John E. Thayer. Jackson remained true to past agreements, although he sought concrete commitment to terms. The terms were generous to the P&R, considering that the P&R had been in default under the Running Gear Contract for almost four years and under the Engines Contract for almost three years; and was still not paying. The P&R would make payments to reduce the outstanding debt to $150,000 by a date to be agreed (establishing the principle and deferring on a definitive date). Thereafter, the P&R would make two annual payments of $75,000, and semi-annual interest payments, ensuring full payment in three years (in 1849).

The third and fourth steps gave full vent to the conception of the Binney-Jackson four-step. Tarry not. After some foot-dragging by the P&R, the third and fourth steps were implemented, concurrently, on February 9, 1846 during Jackson's visit to Philadelphia.

The Settlement Agreement (1846) first established the date on which the debt was to be reduced to $150,000. It then enhanced the liquidity of the L&C position, allowing it to increase pressure on the P&R by sales of bond collateral. The single large bond was exchanged for smaller, more marketable denominations. Next, the Settlement Agreement (1846) required recordation of a P&R instrument waiving all claims the P&R might have against L&C, leaving L&C unthreatened, unfettered, free of any potential interposition of defenses, and without risk of set-off of the debt against any other obligation.

Two aspects of the Settlement Agreement (1846) moved beyond the Rolling Stock Contracts. The P&R agreed to execute any documents and instruments that L&C desired to allow assignment of the P&R debt. L&C was cleaning house, preparing to rid itself of involvement with the P&R debt. The second aspect moved beyond any tether, however tenuous, to the Rolling Stock Contracts. It was directed at the P&Rs' financial management practices. It required the P&R to eliminate its floating debt in its entirety.

The plan's fourth and final contractual step—the RG Collateral Assignment (1846)—consolidated the L&C position by assigning all collateral under the Running Gear Contract to the trust under the Engines Contract and LTCB Mortgage. That ensured that L&C (or its assignee) had direct and complete control of all matters relating to collateral, defaults, and remedies under both Rolling Stock Contracts. It facilitated procedural efficiencies in administration of the P&R debt, in any pursuit of remedies, and in respect of any assignment of the debt. The P&R was forced to confirm that it was in continuing default under the Rolling Stock Contracts, subject to no defenses of the P&R, and that L&C (or its assignee) was entitled to exercise remedies as and when it desired, against any collateral, without let or hindrance. The RG Collateral Assignment (1846) moved the smaller denomination, more marketable bonds held as collateral under the Running Gear Contract into the control of the trustees under the LTCB Mortgage and Engines Contract. The bonds were then sold: deliberately and incrementally.

In sum, the value of the P&R debt was increased significantly. The drag on its assignment to a third party was markedly reduced.

### Assignment of P&R Debt

The importance of contractual consummation of the Binney-Jackson plan was apparent two days after execution of the Settlement Agreement (1846) and the RG Collateral Assignment (1846). On February 11,

the L&C board read and approved, and L&C and John Amory Lowell executed, the L&C-Lowell Indenture (1846) relating to the P&R debt under the Rolling Stock Contracts. The debt was then $183,981.95 (a decrease of $8,615.82 from November 19, 1845).[15]

The entire P&R debt was assigned to Lowell, together with all collateral and security held by Appleton, Sturgis, and McKee, as trustees. Lowell was granted a power of attorney to make all decisions and take all actions regarding the Rolling Stock Contracts, the LTCB Bond, the LTCB Mortgage, the Payment Amendment (1845), the Settlement Agreement (1846), the RG Collateral Assignment (1846), all outstanding amounts, and all collateral. Assignment occurred prior to March 23, 1846. All discretion and power were concentrated in one person: John Amory Lowell.

L&C was then fully withdrawn from building locomotives, cars, and railroad equipment; and from involvement with the P&R debt. L&C moved onward to construction of a new canal, work on reservoirs in the New Hampshire Lakes Region, including Squam Lake and Lake Winnipesaukee, and maximization of its waterpower revenues.

Notwithstanding assignment to John Amory Lowell, the Neal Report (1849) continued to list the P&R debt as owing to L&C.[16]

### Resignation

Patrick Tracy Jackson submitted his letter of resignation as treasurer to the L&C board on August 30, 1845. He continued as a director. As with his previous resignations, the matter was directed to a committee, comprised of William Sturgis and John Amory Lowell. With effect on December 1, 1845, the resignation was accepted on September 16. Morse was elected treasurer.

Jackson's final activities on behalf of L&C related to resolution of the P&R debt under the Rolling Stock Contracts. Those activities continued after his resignation and through March of 1846. The entire Binney-Jackson plan was developed and implemented after Jackson had resigned as treasurer.

In May of 1846 Jackson let out his Lowell house of fourteen rooms on fifteen acres with a view of Pawtucket Falls, which was a walk of three minutes from the Boston & Lowell depot.[17]

# Preferred Stock Gambit

## Approaching Final Payment

An objective of Patrick Tracy Jackson in seeking and structuring the Rolling Stock Contracts was maintaining the value of L&C's machine shop while its disposition was being considered. Despite willingness of the L&C board to convert the shop to a twist mill, Jackson persisted in his efforts to sell rolling stock. Jackson was not—and temperamentally could not be—content with or accede to a disposition at a diminished return or a value he considered inadequate or inappropriate. As usual, the L&C board deferred to Jackson.

The most significant decrement to the shop's value was the P&R debt under the Rolling Stock Contracts. The burden of that debt lay heavily on Jackson as L&C undertook divestiture of its assets. The burden strengthened his resolve and revealed his commitment and discipline. Assignment to John Amory Lowell rid L&C of the debt. Horace Binney's counsel enabled that assignment.

To Jackson, the Binney consultation was more than a technical inquiry regarding debt assignment. Jackson sought to enhance the receivable's value. More, he endeavored to enhance the value of all P&R bonds and stock for the benefit of his circle in Boston, London, and New York, who were significant holders of both bonds and stock. The Binney-Jackson plan did both.

Jackson emerged from the Binney meetings with a fulsome plan to force a financial restructuring of the P&R. Jackson felt no qualms and experienced no hesitation in forcing the plan upon the P&R. He was committed to a hard position. His resolve extended to every element of the plan. Each was given effect. The outstanding principal was reduced by $163,944.75, to $150,000 by March 1846. A further $75,000 was paid before the final $75,000 was due in July 1849.[1]

It is unclear exactly when or how the final $75,000 was paid. Despite the P&R's perilous financial condition, it was paid just prior to September 15, 1849, whereupon the LTCB Mortgage was deemed satisfied and was released and discharged. A power of attorney was given to McKee to record the satisfaction, release, and discharge, executed by all three trustees. It was recorded in Montgomery County (October 26, 1849), and in Philadelphia and Berks counties.[2]

The debt assignment achieved the immediate goal. Full realization of the plan did not flow forth fluidly. Restructuring of floating debt was incomplete. The events of 1845 sensitized the Boston, London, and New York investors to the need for further intervention in the P&R's financial structure and illuminated a path. Elements of the plan became intermixed with circumstances prompting the Neal Report (1849) and the 1848-1849 financial restructuring induced by that report. The objective of that restructuring was reduction of the floating debt.

The backstory to the Neal Report (1849) is remarkable. It is also disturbing, especially regarding corporate governance and disclosure matters. The most palatable presentation of circumstances, as the P&R teetered on the brink of bankruptcy, was in the P&R's annual report for the 1848 fiscal year.[3]

The P&R experienced a "depression of trade and financial difficulties, that have to an unparalleled extent marked" 1848. Many subscribers to an 1848~1860 bond issuance defaulted on their purchase obligations. The United States and England suffered the effects of a depression. "[T]he consumption of Coal was greatly lessened, and the price sank to an extent almost unprecedent." Miners were unable to pay cash for coal haulage and, to maintain business, the P&R accepted promissory notes for haulage fees. The P&R's revenue stream was decimated.

> To have refused them credit would have been alike injurious to our policy and the permanent interest. … To have required the cash payment of Tolls at that period, would for a time at least have amounted nearly to a prohibition on its transportation. The Machinery of the Company would have remained idle…. Under these circumstances, but one course was open to the Managers—to receive the obligations of the parties in lieu of the cash payment of the freight. These obligations the Company, from pressing necessities was compelled to dispose of at the then current rates of interest, and a large additional loss was sustained.

The expense side of the business was also imperiling. Interest payments were due on January 1, 1849. The principal amount of a bond issue was due in March. A significant amount ($343,200) of 1842~1847 bonds, due in 1847, was unpaid at maturity. Due in 1848, and unpaid, were $75,000 of 1845~1848 bonds and a $75,000 payment under the Rolling Stock Contracts. Due in 1849 were $75,000 of 1845~1849 bonds and a like amount under the Rolling Stock Contracts. In 1850, $3,864,700 of 1839~1850 bonds were due.[4]

The P&R had insufficient cash to make any of those payments. Total cash on hand on November 30, 1847 was $50,317.92, and on November 30, 1848 was $22,578.66. The P&R took a course of action that might be described, charitably, as questionable from a corporate governance perspective.[5]

> To refuse or postpone the payment of any of the obligations of the Company, would have insured the utter prostration of its interests. Many of the debts were secured by a much larger amount of Bonds deposited as Collateral Security which would have been immediately sold at an enormous sacrifice.
>
> To have called a meeting of the Stockholders at such a time, would have rendered the downfall of the Company inevitable, and when so assembled, what effectual results would have been attained? ... It is too well known from the futile attempt of others—from previous meetings in reference to the affairs of this Company—from the scattered position of the Proprietors, (about one-third residing in England)—and from the panic, that the very call would have created, that no prompt and efficient aid could be derived from that source.
>
> Indeed, to have disclosed the difficulties of the Company at such a moment, would have insured the most disastrous results, while to make them known to the Proprietors at a later and more favorable period, would work infinitely less injury to the large interests intrusted [stet] to their care.

The P&R was weighed down by unfunded floating debt, not receiving cash freight payments, subject to high interest rates, and found it impossible to obtain money from "friends". Thus, "to maintain its existence, no course was left but for the President to allow some of the Bonds, held as Collateral Security, to be sold to meet the engagements for which they were pledged, and for which no other provision could be made." They were sold at 50% and 60% discounts. Sometimes more. Upon sale, they became outstanding debt at face amount. The P&R "capital" was "greatly increased".[A]

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[A] This conception of "capital", which included stock and bonded debt, was commonplace in the nineteenth and twentieth centuries. Henry Fink, the Norfolk & Western chairman, discussed capitalization thusly (Fink (1908)):

> The term capitalization is generally applied to the capital shares, and bonded debt combined, although the latter constitutes a debt, and is in no sense part of the capital of a railroad company. The reason for this misapplication

"Included however in this increase is the allowance of 30 per cent, made by direction of the Stockholders to those parties who subscribed to the Loan payable in 1856 at par, and have since converted it into preferred stock…." The reference was to the 1847~1856 convertible secured bond issuance.

**Gambit**

Events of 1847 through 1849, including a preferred stock issuance, illuminate the acrimonious public debate regarding P&R management as well as the power and reach of the Boston, London, New York, and allied investors. They also harken back to the Settlement Agreement (1846) and Patrick Tracy Jackson's insistence on eliminating P&R floating debt.

At the P&R annual meeting on January 11, 1847, the stockholders authorized declaration of a 10% common stock dividend. The board of managers then declared the dividend, payable on January 25. That was the first dividend ever paid by the P&R on its stock.

The P&R focused on operational matters in 1847. Port Richmond was enlarged by 22 acres. The P&R machine shop began expanding wood car capacities to 4.65 tons, built three first class and two small express engines, and began building one first class engine, one second class engine, and three passenger engines. Experiments were undertaken for using anthracite coal as fuel, including trials of the newly-built 21-ton *Novelty*. Four 27-ton coal-fired engines were acquired from Ross Winans. Larger engines were purchased, including two 27-ton and fifteen 22-ton engines from Baldwin & Whitney. Larger engines necessitated significant infrastructure expenditures, including to rebuild wood bridges with additional arches, piers, and supports to bear heavier trains. Fifteen new stone bridges, six new iron bridges, and four new timber bridges were constructed.[6]

Debt, including floating debt, increased yet again. Despite the increase, in January of 1848 the P&R proposed another stock dividend.[7]

In April 1847 Robert McCalmont again came to the U.S. to address P&R affairs. He was concerned about the floating debt (~$1.5 million), echoing concerns of Jackson given grit in the Settlement Agreement (1846). McCalmont and Tucker journeyed to Boston to propose funding the floating debt by sales of stock and bonds at par. Bostonians rejected the proposal. They countered with an offer to purchase bonds at the market price, taking their agreed portion plus any unsubscribed bonds. P&R bonds were then trading at 70% of face amount.

The determination of the meetings was that 1847~1856 bonds should be issued in accordance with the Bostonian offer. Rumors of the meeting and the proposed issuance circulated. Bond prices rose 5%. On May 1, McCalmont sailed for England and Tucker returned to Philadelphia. All seemed well in hand.[8]

Charles Henry Fisher, agent for Morrison Sons and, until 1847, a P&R manager, then advised John M. Forbes of Fisher's lack of support for issuance at a 30% discount. "I told him I regretted much, the Bonds were to be issued at so low a price - that at par I would have taken the Morrison's proportion, but declined taking any at the price thus arranged in Boston."

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probably is that very few American railroads were built from the proceeds of the sale of their shares. Nearly all of the companies were obliged to use their credit and borrow sufficient money for the completion of their roads, and to issue various kinds of security for their debts. It is presumed that the money so borrowed has been honestly invested in the railroads, and is represented by adequate property, and that therefore the bonded debt may be considered a part of capitalization.

P&R managers then rejected a sale at a 30% discount, citing the 5% "enhanced market value of the securities" as evidence that a lower discount was appropriate. At the direction of the P&R managers, Tucker undertook further negotiations in Boston and New York to obtain agreement on issuance terms.[9]

On May 8, during those further negotiations, a bill in chancery was filed in the Pennsylvania supreme court seeking an injunction against bond sales at less than par value. The proposal for sales at a discount was derailed. Prices of P&R stocks and bonds fell through the floor: "there was complete panic in the street."

On Sunday, May 9, emergency meetings were held in New York, attended by Tucker, Fisher, Gihon, and Thayer. Fisher informed Forbes that

> there was but one course to pursue, [being] to issue the Bonds at par, and unless it was done at once, the Company must go into bankruptcy—that with this bill pending it would be impossible to carry the floating debt—that the Banks in this City [Philadelphia] would immediately call in their loans upon Reading securities—that … unless it was then decided to negotiate the loan at par, they might as well be prepared for the Company to break the next day.

Fisher subscribed for $200,000 of bonds, at par. Fisher recalled:

> [I] estimated that Mr. Morrison would take $100.000 and my friends Mr. John A. Brown & Harris & Co $50.000 each. Mr Morrison fully approved my act and Mr Brown & Harris & Co took the amount I had estimated for them.… My predictions were fully confirmed. On the 10th every dollar of the demand loans of the P&R were called in and every broker on the street who had loans on P&R stock and bonds was obligated to pay up immediately.

Fisher stated that only two New England investors, both deceased by 1848, participated, each for $5,000. Gihon, for himself and others, took $60,000. McCalmont Brothers and Gihon & Company subscribed for the rest (approximately $1,130,000). Morrison Sons at the time owned approximately 7% of each of the P&R stock and the 1847~1856 loan. As collateral, each subscriber was provided bonds in face amount equal to twice the subscriber's subscription amount (the customary 50% discount).

The investors characterized their purchases as "preventing the entire Bankruptcy of the Co." The P&R's gratitude was embodied in the closing sentence of a Tucker letter: "The service then rendered cannot be too highly appreciated and it is for the Stockholders to decide how far those who made the sacrifice for their ultimate benefit are entitled to protection against loss on that account."[10]

While the bond purchase was necessary to protect investment in the P&R, it was inefficient from a market perspective. The market discount in 1847 on P&R bonds not used as collateral was 30%. Discounts increased in late 1847 and 1848 as the economy stalled and P&R prospects diminished. Discounts of 50% and 60% were documented, for both bonds not constituting collateral and bonds used as collateral. By 1848 P&R bonds were selling at "receivership prices".[11]

Investors in the 1847~1856 convertible bonds were not sanguine in relying on P&R stockholders to protect them for their sacrifice in staving off a bankruptcy. Nor were they content with mere laudation for their sacrifice. They preferred monetary recovery of the lost discount; through initiatives they could control.

The investors allied themselves with another investor group concerned about losses on P&R bonds: London holders of 1839~1850 convertible sterling bonds.[B] Even by 1847, it was clear the 1839~1850 bonds

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[B] At some time in 1847, probably concurrently with the 1847~1856 issuance, the 1836~1850 bonds were modified to eliminate their convertibility feature.

would not be paid at maturity. London investors then held about one-half of the P&R's outstanding bonds. Seeing opportunities concordant with the Binney-Jackson plan, L&C joined the alliance.[12]

The mechanism developed by the broader group involved a preferred stock issuance and exchange of 1847~1856 and 1839~1850 bonds for the preferred stock. That exchange allowed recovery of the lost discount and payment of the 1847~1856 bonds.[13]

Resort was had to the Pennsylvania legislature to establish a legal basis for the mechanism. To obtain passage of the law, the investors enlisted the support of the P&R and others interested in the development of Pottsville. A *quid pro quo* for some Pennsylvanians related to a long-fought battle between Pottsville and Orwigsburg regarding the location of the county seat for Schuylkill County.[14]

Since 1831, moving the county seat was a matter of heated debate. There were five buildings in Pottsville in 1824. In 1833 Pottsville was about 4,000 people and 500 buildings. In 1840, the population was 4,377, with 1,060 buildings, while Orwigsburg had a population of 779. In 1840 and 1845 Orwigsburg was comprised of 163 buildings, three of red brick. In 1850, 909 people lived in Orwigsburg, the largest number at any time to 1880. The increase was due to expansion of the town limits to increase the tax base. By 1847, there were approximately 1,500 buildings in Pottsville and 8,000-9,000 inhabitants, most involved in the coal business.[15]

On March 13, 1847, the Pennsylvania legislature passed a law submitting the removal question to county voters. The vote was 3,551 favoring Pottsville, and 3,092 opposing removal. When the vote was challenged, another law was enacted to establish and confirm the constitutionality of the move to Pottsville.[16]

Mining interests and the P&R preferred Pottsville, in the heart of coal country with better long-term coal prospects. The P&R ran coal trains to Pottsville, but no passenger or freight service. To garner legislative support, the P&R agreed to construct facilities for passenger and freight service to Pottsville, including a new depot. It was agreed that other buildings would be constructed in Pottsville, including (in 1851) the prison, which is still used as the Schuylkill County prison.

PA Law (1848) No. 233 was approved on March 29, 1848. It provided that it was lawful for the P&R to:[17]

> create and dispose of a sufficient amount of stock or loan, to enable the company to discharge their indebtedness, or any part thereof, which may mature and become due prior to the year eighteen hundred and fifty-seven; which stock so issued, shall be deemed and taken as preferred stock … none of the money arising from the sale or disposal of the stock or bonds which may be issued under this act, shall be appropriated to any other use or purpose whatsoever, than that of discharging the indebtedness before mentioned.

By April a "large majority" of bond holders had agreed to the preferred stock issuance and bond exchange and aligned with the P&R. The bond holders then undertook to mobilize stockholder acceptance of the transaction.[18]

A special meeting of stockholders was held on June 14. Resolutions were passed authorizing issuance, at "not less than 70 per ct.", of 7% preferred stock in exchange for the 1839~1850 and 1847~1856 bonds. Seizing the opportunity to recoup the payment of 30% over market for the 1847~1856 bonds, it was also resolved to form a committee to "investigate the claim of the subscribers at par to the Loan of the Co. payable in 1856 for compensation." The mandate included determination of the appropriate legally permissible discount on the shares. The meeting was adjourned to August 3 to consider the committee report.[19]

Some stockholders desired to make the 7% dividend cumulative. The P&R sought the legal opinion of Horace Binney. His July 20, 1848 opinion rejected an interpretation of PA Law (1848) No. 233 that would allow cumulative dividends.[20]

The committee's July 25 report was signed by John Murray Forbes, John E. Thayer, and Edward S. Whelen as "a majority of the Committee", hinting a lack of unanimity. Other members were William Dwight and Eliot Hasket Derby.[21]

The June 14 meeting of stockholders seems to have been called and conducted pursuant to proxies held by P&R officers and select large stockholders, including proxies for McCalmont Brothers and Morrison Sons. That meeting, and the related bond issuance, stand in stark contrast to statements made in the annual report for 1848 regarding the futility of seeking stockholder approval at meetings, the assertion that "no prompt and efficient aid could be derived from" a stockholder meeting, and the distant location of some stockholders. It is unclear whether all stockholders were afforded notice of the special meeting. Which raises the question of whether approval would have been obtained if all stockholders had been notified and participated directly?[22]

The July 25 committee report began with a short discussion of pricing the 1847~1856 bonds. It asserted that "at the time the crisis arose the Company [P&R] would have "gladly negotiated the said bonds at 70% had they been authorised by law to do so." That revisionist assertion conflicted with positions taken in May by Charles Henry Fisher and the P&R board of managers. The P&R managers rejected the Bostonian proposal to purchase the bonds at a 30% discount, asserting the discount excessive given the 5% enhancement of bond prices after filing of the injunction action, the April meetings, and Fisher's open opposition to the discount and discounts proposed in the subsequent meeting. By July, in something of an about-face, Fisher supported bond holder efforts to recoup their lost 30% discount.

The committee report noted that "it now being within the power of the Co. to do legally what they were then ready to do, the Co. are bound in equity to compensate the takers of the '56 Bonds". As recommended, each subscriber to an 1847~1856 bond was issued "3/7ths of the amount of said Bond" in preferred stock. The meeting of such of the stockholders as were notified and participated authorized the stock issuance on August 3.

The P&R issued $1,648,000 of 7% preferred stock. It entered into exchange agreements with some holders 1847~1856 bondholders and most holders of 1839~1850 sterling bonds. The exchange was dollar-for-dollar based upon the face amount of a bond and the par value of a share, which allowed bond holders to recoup the foregone 30% discount. The exchange was managed by J. E. Thayer & Brother (Boston), S. Jaudon & Co. (New York), and Chanley & Whelen (Philadelphia).

The exchange agreements were for $3,703,000 of bonds, of which $1,648,000 were converted in 1848. The entire 1839/40~1850 sterling issuance ($523,280) was exchanged, eventually. Not all 1847~1856 holders were willing to convert. Of the $1.4 million, only $723,000 were exchanged. At issuance of the 1847~1856 bonds, the P&R predicted that payments were "liable to be postponed to those [bonds] payable in 1860, secured by mortgages; but even those would take priority of those due in 1850." The reference to priorities was part of a P&R effort to persuade holders of 1839/40~1850 and 1847~1856 bonds to convert to preferred stock. Boston interests were reluctant, despite their inclination to equity. Possibly, the brush with bankruptcy inclined them to bonds, for the moment. And collateral for the Rolling Stock Contracts included $340,000 of 1839/1840~1850 bonds.[23]

The P&R's argument was presented by Tucker in a letter to the "Chairman of the Boston Committee". The letter was included in the annual report for 1849. It was issued in response to a June 14 letter from the Bostonians provided in response to the June 14 special stockholders meeting.[24]

Tucker's argument was that holders of 1839/40~1850 bonds were at the mercy of more senior secured issuances, including convertible issuances of 1843~1860 and 1844~1860, and even the 1847~1856 issuance. Those would be paid first. "It has long been known that these [1839/40~1850] Bonds could not be paid at maturity", the P&R confessed. Tucker argued that converting 1839/40~1850 holders would be in "no worse position" vis-à-vis other creditors, benefit from an interest rate 1% greater than the bond rate, and have a "greatly enhanced" investment because the P&R would be "relieved from all embarrassment". Nodding to the degraded cash flows available to a stockholder, Tucker attempted to persuade the Bostonians that preferred stock dividends would be forthcoming upon completion of conversion.

### Maybe a Lease

In desperation, overburdened with floating and bonded debt, the P&R sought new modes of financing in 1847 and 1848. In the dark and dismal financial circumstances of those years, and attempting to minimize book debt, the P&R considered adoption of a lease-to-purchase program for engines and cars. Overture for the program was made by "parties residing in the Eastern States, deeply interested in the prosperity of the Company". The P&R did not adopt the lease-to-purchase arrangement in 1847 or 1848. It did adopt the structure in later years.[25]

By the time the P&R considered the lease-to-purchase financing arrangements in 1847 and 1848, Schuylkill Navigation Company had introduced its boat loan structures. Frederick Fraley, the Schuylkill Navigation president, had by then proposed lease-to-purchase arrangements. Those derived from Lehigh Coal & Navigation canal boat sales arrangements in 1833 in response to the cholera pandemic and diminished boating of coal.

# Neal as Vehicle

## David Augustus Neal

Memories of the brink of bankruptcy were not easily dispelled. Despite increased demand for anthracite coal, the anamneses cast a long shadow into the future.

The P&R transported 1,350,151 long tons of coal during 1847 (an increase of 117,008 tons over the previous year). An unexpected shortage of vessels at Port Richmond left much of the coal lying on land, cleared only late in the year. Floating debt remained high; and was increased by payment of bonds due in 1847. Bridge and road construction, the enlargement of Port Richmond, and rolling stock acquisitions devoured cash. The P&R's financial circumstances remained precarious. Total P&R bonded debt was $8,095,050 at the beginning of 1848. That did not include $213,158.66 of bonds and mortgage loans on real estate. Nor did it include $507,637.27 of promissory notes and amounts due sundry persons.[1]

Late in 1848 the P&R issued $1.5 million of 6% 1848~1860 U.S. dollar bearer bonds. The ostensible purpose was reduction of floating debt. The bonds were secured by the 1848 Mortgage whose trustees were Nathaniel Thayer, John Gihon, and Edward S. Whelen, indicative of involvements of Boston, New York, and London interests. The mortgage covered the Philadelphia-Reading and Reading-Pottsville segments. Mortgaged property included all railways, rails, bridges, wharves, franchises, real estate, and tolls, income, issues, and profits from the segments. It also included cars, locomotives, and machinery used on the segments. Taking possession of mortgaged property upon a P&R default could be initiated by any one trustee and was mandatory upon the request of 25% of the 1848~1860 bond holders.[2]

From the vantage of Locks & Canals and the Boston interests, some progress was made in 1848 and early 1849. The 1845~1848 and 1845~1849 loans resulting from Jackson's 1845 interventions and the Payment Amendment (1845) and Settlement Agreement (1846), which were held by Bostonians, were paid in full. Of the $150,000 due under the Rolling Stock Contracts, $75,000 was paid pursuant to the Payment Amendment (1845). The final $75,000 was due in July 1849.[3]

It is not known whether the $75,000 payment to L&C in 1848 was voluntary or from sales of collateral bonds. Large sales of collateral bonds occurred in 1848, most at 50-60% discounts, including $278,000 of 1839~1850 bonds, $150,000 of which were held by the BUS, and $93,000 of 1844~1860 bonds held by others. Outstanding 1839/40~1850 bonds increased by $269,100, probably due to collateral bond sales. The bonds held as L&C collateral were 1839/40~1850 bonds. P&R cash flow statements show insufficient cash to make the payments to L&C or on the two 1845 bond issuances and contain no relevant payment entries. Most 1839/40~1860 bonds had been exchanged from preferred stock, except those held as collateral. Likely, bond collateral for the Rolling Stock Contracts was sold.[4]

Clearly, some investor interests were served by the preferred stock issuance, payment of debt under the Rolling Stock Contracts, and payment of the 1845 issuances. However, Boston, London, and New York investors felt the actions inadequate protection of their long-term interests. P&R stock had become "the

sport of the stock market—a mere medium of speculation". By 1848, criticism of P&R debt incurrence was widespread. Henry Varnum Poor, in an early writing as editor of the American Railroad Journal, addressed P&R debt expressly:[5]

> The experience of the Reading railroad, and some other similar enterprises, show that the safety of the capitalist is found in the fact, that the cost of the road is represented by share capital. Indebtedness of any sort is found to be a hindrance to the success of the enterprise, however well the interest is secured by a surplus of receipts over expenses. Every effort should therefore be made to secure the capital stock by the sale of shares, rather than resort to expedients by the hiring of money.

The Bostonians, in league with London and New York investors, initiated another investigation. A report would serve as public record. But reformation of P&R practices was the objective, not a political or historical record. The critical question was who would be entrusted with conducting the investigation?

The person had to be of unassailable integrity, financial acumen, and respect within both the railroad and finance industries. A person who had an intimate understanding of railroads and their operations, including financing. Someone who would be objective and forthright in criticism of the P&R.[6]

Given the objective, the person had to be able and willing to exercise power efficiently and effectively: to influence events in advance by suasion and blandishment, both institutional and personal. Wishing to avoid damage to the P&R, the investigator's qualifications, standing, and personal connections had to be such that the mere prospect of a report would ensure P&R action with minimal or no resistance. The investigator had to be sensitive in ensuring that the P&R could save face through compliance with the report, despite damning conclusions.

Approximately ten investors with large P&R equity and debt holdings requested David Augustus Neal as the investigator. Included were Thayer & Brother (John E. Thayer was on the Eastern Rail-road board with Neal), McCalmont Brothers, Gihon & Co., Peabody, Forbes, Dwight, and Read.[7]

David A. Neal was resident in Boston and, having been born in Salem and reared at sea as a privateer, of like mind with the Bostonians. He was president of the Eastern Rail-road from 1841 to 1851 and oversaw extension of its lines into New Hampshire and Maryland. He was a director of numerous railroads. After rendering the report, in 1851 he became a director and, reflective of his operational knowledge, first vice president of the Illinois-Central Railroad Company, in which he had large investments. Neal was indisputably a man of action and capable of inducing action.[8]

The Neal Report (1849) was commissioned by the P&R board of managers on December 13, 1848 and issued on September 18, 1849. It was a detailed examination of the P&R's financial status. Results of the report were publicly known and influential months before issuance. As anticipated, the Neal Report was sensitively unsparing in its analysis of P&R practices and the medicine needed to effectuate harsh remedies.

Table 16 summarizes critical findings of the Neal Report (1849) as of November 30, 1844 and 1849. Non-bond debt increased $1,609,518.15, largely due to a $1,932,816.68 increase in notes payable and sundry accounts (offset by decreases of $323,298.50 in equipment debt, including $163,944.75 to Locks & Canals and $77,546.25 to other car builders).

Neal issued a second report, the Neal Report (1850), which was addressed to P&R stockholders. The P&R took the Neal Report (1849) and Neal Report (1850) to its bosom, incorporating them in the annual reports to promote the P&R's commitment to responsible financial management.[9]

> The Managers take great pleasure in calling your attention to the very elaborate statement and views of D. A. Neal, Esq., as given in his Report of September last and to the one submitted herewith. Mr. Neal, as the

> representative of the New England Stock and Bond Holders has given much reflection to the present position and prospects of the Company. His experience as the President of the Eastern Rail Road Company, and his connection with other Rail Roads, entitle his views to much respect.

The Neal Report (1850) was largely descriptive of the state of the P&R system. It suggested no plan, other than considering construction complete, issuing stock to replace all debt retired by the sinking fund, and not incurring new indebtedness without the express approval of stockholders. Its tone was optimistic. David A. Neal increased his investment in the P&R after issuance of the reports.

Table 16: P&R Financial Status for 1844 and 1848 (US$)

| | 1844 | 1849 | Net Δ |
|---|---|---|---|
| Floating Debt | 806,669.64 | 1,494,651.93 | +687,982.29 |
| Total Debt | 7,447,569.44 | 9,584,937.79 | +2,137,868.15 |
| Notes Payable | 139,576.55 | 1,332,776.24 | +1,193,199.69 |
| Sundry Accounts | 54,139.56 | 793,756.55 | +739,616.99 |
| Total Bonds Outstanding | 6,640,900.00 | 7,169,250.00 | +528,350.00 |
| Bonds as Collateral | 1,444,000.00 | 390,000 | -1,054,000.00 |
| Stock | | | |
| Common | 2,010,000.00 | 3,845,392.50 | +1,835,392.60 |
| Preferred | 0.00 | 1,648,000.00 | +1,648,000.00 |
| Total Stock | 2,010,000.00 | 5,493,392.50 | +3,483.392.50 |

## 1849 Bond Issuances

Two bond issuances were made by the P&R in 1849. The 1849~1860 bonds were issued starting on January 9. By July 1, the P&R's floating debt was reduced to $182,724.31, down from $1.5 million in April of that year. The 1849~1870 bonds were issued in November 1849. Market discounts were 40-60%, necessitating issuance of over $2,924,000 to pay floating debt[10]

Issuance proceeds of the 1849~1860 6% bonds were $1,424,000, before discounts, commissions, and charges. Most were sold with discounts near 60%.[11] The bonds were convertible to stock any time prior to July 1, 1859 (at $50 face amount per share) and secured by the 1849-1 Mortgage, dated January 9, 1849. The trustees were Thayer, Gihon, and Whelen. The mortgage covered the entirety of the Philadelphia-Pottsville road and tolls, income, issues and profits plus all rents, reservations, and payments for any sale, lease, or rent of estates, rights, or privileges, "save only so much as may be necessary for expenses and repairs to the P&R roads". The collateral included all locomotives, cars, and machinery used on the road. It also covered after-acquired property.

The 1849-1 Mortgage was made subject to PA Resolution (1843) No. 1 protecting consent rights of contractors regarding superior liens. Remedies provisions included a trustee right to require transfer of possession of the collateral upon a default, and an obligation to require transfer upon request of 25% of bond holders. Trustees in possession were required to "conform to the lawful directions and orders" of the P&R in management of the collateral and collection and payment of income and proceeds, even after transfer of possession. The long arm of the P&R extended beyond default.

Issuance of 1849~1870 bonds began in November. Only $91,000 were sold by year-end. These figures, like all bond issuance figures, were before significant discounts, commissions, and charges. By November 30 of 1850, $3,079,400 were outstanding. The increase resulted, in part, from using 1849~1870 bonds to

pay, at par, 1839/40~1850 bonds. In 1848 only $254,500 of 1839/40~1850 bonds were exchanged for preferred stock and $2,439,100 of 1849~1870 bonds were outstanding. In 1849, preferred stock of $35,000 was exchanged for 1839/40~1850 bonds, some 1839/40~1850 bonds were issued, and $56,000 of 1839/40~1850 bonds were converted to 1849~1870 bonds. Outstanding 1839/40~1850 bonds in June 1849 were $2,477,700. The inability of the P&R to pay the 1839/40~1850 bonds operated as an effective inducement to conversion, but not to preferred stock, even at a 1% rate increase. After payment with 1849~1870 bonds, 1839/40~1850 bonds were zero by November 30, 1850.[12]

On November 7, 1849, the P&R executed the 1849-2 Mortgage to David A. Neal, John M. Forbes, and Robert D. Cullen, as trustees. The mortgage secured $4 million of 1849~1870 bonds. Collateral subject to, and terms of, the 1849-2 Mortgage were essentially the same as the 1849-1 Mortgage.

The mortgage was expressly subordinate to possession rights under previous mortgages. If possession were taken, revenues from disposition of collateral were to be applied, to pay: *first*, P&R expenses for repairs and administration; *second*, interest on bonds secured by a prior mortgage; *third*, the sinking fund deposit for the 1849~1870 bonds ($7,500 annually); *fourth*, interest on 1849~1870 bonds; *fifth*, preferred stock dividends (echoing its bond-related origins); and, *sixth*, indebtedness secured by mortgages in the priority order of related mortgages.

Boston, London, and New York interests benefited significantly from the 1848 and 1849 transactions. The net result was a decrease in outstanding loans of $925,800, retirement of the entire 1839/40~1850 sterling issuance, and outstanding 1847~1856 bonds of $667,000. The net decrease in total debt occurred despite an increase in outstanding balance sheet debt because of default-related sales of collateral bonds and increases in outstanding bond issuances.[13]

Chapter Thirty

# Credit to Intermediation

## Proem

Patrick Tracy Jackson was, and knew himself as, an adaptable pragmatist, which sustained his confidence as he and Locks & Canals surrendered to the Crisis of 1839 and its aftermath and the realization that, incrementally, rolling stock builders were becoming credit providers, financiers, and financial intermediaries.[A] Risks associated with building rolling stock, especially locomotives, were changing. Jackson had experience with delayed payment credits to purchasers of textile machinery and some railroads. He had learned to manage railroad debt during construction of the Boston & Lowell.[1]

Competition among builders to supply engines, cars, and other equipment escalated during the early 1830s. Orders for both textile machinery and railway equipment decreased modestly in 1836. The decrease was somewhat greater in 1837 and pronounced by 1840, a state that persisted into 1842. L&C began building engines for railroads not controlled by Boston Associates, such as the Pensacola Railroad in 1836, the Baltimore & Susquehanna in 1839, and the Philadelphia & Reading in 1842 and 1843. Jackson was intent on sustaining the work of the L&C machine shop at the highest achievable level. L&C survived. Many other locomotive builders did not.[2]

Despite similar financial pressures as railroads, builder capital requirements were smaller, their credit standings were stronger, and they were more adaptable. Railroads conditioned awards for building rolling stock on builder provision of credit and, later, financing. Competition among builders shifted offerings toward financial intermediation.[3]

Factors facilitating builder involvements also defined the limits of those involvements. As railroading grew, railroad needs expanded beyond the financial capabilities of builders. Financial institutions, including insurance companies and banks, assumed a larger role in providing capital.

## Intermediation

Builder adaptation to markets and customer needs was continual and incrementally accretive. Cash to credit to finance to financial intermediation, with each development retaining some elements of its predecessor.

Prior to the 1837 Panic, L&C, like most builders, sold rolling stock for cash on delivery, usually with no down payment. To compensate for the dearth of bond financing and a degrading economy, and to enhance competitive position, builders afforded railroad purchasers deferred payment credit for short periods (days

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[A] For present purposes, a financial intermediary was a functionary between two parties in a financial transaction to meet asymmetric objectives of each party. It was a conduit connecting different markets or effecting money transformation. Often, the intermediary accepted money in one form (a note, bond, or other instrument) and created money with different amount, time, or risk characteristics. Intermediation may be thought of more broadly, as moving funds from one use to another use where the funds have greater worth or value or better serve needs of a different group of holders.

to months). Credit was conceived fundamentally: as the ability to obtain products or services before payment. Credit creation was contractual.[4]

Early in the progression, deferred payment periods were extended: to one or two years. Longer periods necessitated more rigorous focus on collateral security arrangements and credit supports. Extensions were accompanied by adjustments to prices (including segmentation of payments), quality, delivery dates, and payment arrangements (including down payments, pre-delivery payments, and post-delivery payments).

Adjustments balanced builder revenue needs with a tangle of railroad circumstances. They were responsive to entity-specific and market factors. Entity-specific factors included the requirements of and constraints on the railroad and the builder, transaction-specific risks, financial and operational strengths and weaknesses of the railroad and the builder, prospects for industry segments within which the railroad operated, and competition faced by the railroad and the builder. Builder delivery guarantees and performance guarantees were responsive to changes in technology and degree of operational experience.

Securities of the railroad purchaser became part of the transaction paradigm, either as part of the payment regime or as collateral, with diverse consequences for the builder and a range of deferral opportunities for the railroad. The most frequently used securities were bonds and promissory notes, although other instruments were used as needed and when possible. Often, the bonds and notes were discounted, usually at 50% of face amount, sometimes more, depending upon the railroad and the markets. Notes, being of shorter duration, were subjected to smaller discount factors.

Promissory notes were short-term instruments issued by the railroad directly to the builder. The analytical framework was short term. Risks were relatively foreseeable. The builder assessed whether the railroad was able to pay in the next sixty days, six months, or other period. Enforcement was direct and personal, controlled by the builder or, if the notes were negotiable, by the assignee holder.

Bonds were longer term obligations issued in larger amounts to a financier group. The analytical framework was extended, requiring more complex analyses of the railroad, its competitors, its industry segment, economic and market trends, and a raft of other factors. Enforcement and control were neither direct nor personal. They required action by trustees, often with the concurrence or at the direction of a percentage of bond holders, each with differing interests and objectives.

Complexities reached a higher order of magnitude when builders accepted bonds and promissory notes of, and claims against, entities other than the railroad purchasing the rolling stock. In these transactions, the builder performed an explicit financial intermediation function.

A builder took some comfort from the ability to sell the bonds, notes, and other instruments in secondary markets. The securities, enveloped in a maze of acts of hypothecation, functioned as a shadow banking system. Secondary market sales were at a discount to the instrument's face value. Reliance on secondary markets introduced greater uncertainties, including as to the issuer's credit status and ultimate realization on the security. Greater risk—for some holder—accompanied enhanced liquidity.

At times, builders became involved in the capital structure of the railroad purchaser. Builders acquired bonds and stocks of railroad customers to obtain building mandates. Elihu Chauncey, in his June 21 letter to Patrick Tracy Jackson, sought loan subscriptions from L&C and dangled P&R stock as an inducement. The reward was the Rolling Stock Contracts.[5]

**Contractual Examples**

A survey of P&R contracts for purchases of cars and locomotives from 1842 to1846 illustrates (a) the types of credit accommodations, financings, and financial intermediation elements employed by builders and purchasers, and (b) dynamics of the builder-buyer relationship regarding control and power. Some contracts introduced new elements into transactional structures. Most prominently, after the Running Gear Contract, with exceptions for the Baldwin & Whitney engines, equipment was often placed in a trust during the payment period. Most contracts used a deferred payment mechanism. Some elements, such as performance-based payments, were used only in early coal car contracts.

Other structural elements related to technologies. The flexible beam truck for locomotives and cars was sophisticated untried technology in 1842. It was incorporated in technologically sophisticated equipment: an engine that operated on a fixed rail system with predetermined specifications (degrees of curvature, for example). Performance guarantees were provided by Baldwin & Whitney in engines contracts during the introductory period, and then phased out. The iron coal car was a new and relatively unsophisticated technology in 1843. Inspections of iron coal cars at delivery were contractually mandated, but builders did not provide performance guarantees.

In all contracts, the P&R was allowed to use the equipment on P&R roads after delivery and "until the time stipulated" for payment. If a trust was used, the trustees took delivery and possession and then gave the P&R possession for use.

Car and the engine contracts incorporated provisions to establish and protect builder rights as sellers and on-going leverage vis-à-vis the P&R. Protections focused on title transfer and collateral security. In deferred payment arrangements, transfer of title to the equipment from the trust to the P&R often occurred only upon full payment of the purchase price. Less frequently, it transferred at an earlier point, such as inception or after partial payment. Often, and intentionally, the legal nature of the sale was undefined. Contracts usually stated that the equipment was "assigned, transferred, set over, and delivered" to, first, the trustees "to secure" P&R obligations, and, second, upon full performance, the P&R.[6]

Collateral security usually included the equipment. It was sometimes supplemented with other collateral, most often bonds or promissory notes that could be sold in secondary markets. After-acquired property clauses often precluded use of equipment as collateral. Conditional sales and bailments circumvented the after-acquired property clauses.

Control and leverage benefits were through trustee appointment rights and control of remedies, especially determinations regarding repossession and sale of the equipment. Variations turned on whether and to what extent trustees and/or a builder initiated and controlled determinations. Where trustees had some control, variations also related to whether less than all trustees could initiate a process. Control of repossession and sale were often in different parties.

Unless otherwise noted in the following summaries, (a) equipment could be repossessed and sold upon a P&R default, (b) sale proceeds were applied to trustee expenses and the unpaid purchase price, with any excess to the P&R, (c) if sale proceeds were insufficient to pay the purchase price, the P&R was responsible for the shortfall, (d) trustees made repossession determinations, and (e) if party responsibilities in respect of remedies are not indicated, the parties relied on common law principles.

In the following discussion, coal car contracts and engines contracts are treated separately, each in temporal order. The sequence begins in 1842, as operations commenced. The first contract was the Running

Gear Contract. That contract originally incorporated the Engines Contract. However, for reasons noted below, the Engines Contract was hived off into a distinct contract in early 1842, before execution of the Running Gear Contract. The Running Gear Contract introduced use of the trust and use of performance-based payments.

Table 17: P&R Contracts for Building Coal Cars

| Contract | Payment | Innovation | Collateral |
|---|---|---|---|
| Locks & Canals<br>Running Gear (1842) | deferred: 1 year<br>performance payments | trust<br>performance payment | cars under D&B Cars (1842)<br>bond ($240,000) |
| Locks & Canals<br>Engines (1843) | Deferred: 2 years<br>performance payments | trust<br>performance payment<br>mortgage | cars<br>engines<br>road and revenues |
| Davenport & Bridges<br>D&B Wood (1842) | Cash | no trust | none |
| Bradley & Rice<br>B&R Wood (1842) | deferred: 18 months<br>promissory notes<br>performance payments | trust<br>performance payment<br>promissory notes | cars |
| Davenport & Bridges - Fuller<br>D&B-F Wood (1842) | deferred: 18 months<br>promissory notes | trust<br>performance payment<br>promissory notes | cars |
| Betts, Harlan & Hollingsworth<br>BH&H Iron (1842) | deferred: 4, 8, 12, 16 months<br>drafts | trust<br>bank drafts | cars |
| Davenport & Bridges<br>D&B Iron (1844) | part on car deliveries<br>part on last delivery | no trust | none |
| Bradley & Rice<br>B&R Iron (1844-1) | part on car deliveries<br>part on last delivery | no trust | none |
| Bradley & Rice<br>B&R Iron (1844-2) | deferred: 4 months<br>20 monthly, from month 4 | trust | cars |
| Davenport & Bridges<br>D&B Iron (1845) | deferred: 4 months<br>20 monthly, from month 4 | trust | cars |
| Bradley & Rice<br>B&R Iron (1845) | instalments: delivery, 4 and 12 months | trust | cars |
| Ross Winans<br>RW Iron (1846) | part cash<br>part 6-month note (month 13) | no trust<br>promissory notes | cars |

## Coal Cars

At commencement of operations in 1842, the P&R owned 430 wood coal cars. By year-end 1842 it claimed ownership of 1,130 and, by year-end 1843, 1,592. Eight were added in 1844 and six in 1845. The wood car inventory then decreased. The P&R acquired six iron cars in 1842, none in 1843, and 856 in 1844. Its inventory of iron coal cars was 1,498 in 1845 and 3,020 in 1846. See Table 8.[7]

The P&R's first coal car purchase during its operational period was in 1842 pursuant to the Running Gear Contract and the related D&B Cars Contract (1842). All subsequent contracts were for complete cars.

Most contracts required that cars be delivered into a trust, usually with two trustees. Cash payments were required in most early wood car contracts. The first three 1842 car contracts included performance-based payments. No subsequent car contracts contained performance-based payments. Practicality limited use of the mechanism. After the P&R acquired thousands of cars it became administratively burdensome to tie payments to tonnages carried in specific cars. Cars, provided by different builders, were fungible.[8]

All but two car contracts from 1844 onward were for iron cars. Deferred payments were used in each. Installment payment intervals varied. Promissory notes and other instruments were used for purchase price payments in 1842. No collateral was provided to secure payment of purchase prices for iron cars.

***Running Gear Contract (1842)***. See Chapter Fifteen. The March 3, 1842 Running Gear Contract was for running gear for 600 wood coal cars at $200 per car, totaling $120,000. The P&R was obligated to build 600 bodies and frames delivered to Port Richmond by September 3, 1842 and satisfied that obligation with the D&B Cars Contract (1842).

The Running Gear Contract introduced the trust into equipment financing. Until full payment, two trustees, both P&R officers (Brown and Emlen), held title to cars to which the running gear was attached. No down payment was required. Full payment was required one year after the contract date (later extended one year). The performance-based payment was 22½¢ per ton of coal transported in those 600 cars.

Collateral security was comprised of a single $240,000 P&R bond. Under the Engines Contract, upon full payment of the Running Gear Contract, all collateral securing the Running Gear Contract secured the Engines Contract. L&C had discretion to direct trustee repossession and sale of cars upon a default.

***D&B Cars Contract (1842)***. Pursuant to the D&B Cars Contract (1842) of March 30, Davenport & Bridges built 600 wood car bodies for delivery at Port Richmond by September 30, 1842 ("earlier if possible"). There was a mismatch with running gear deliveries. The contract, arranged by John E. Thayer and Albert H. Dorr as P&R agents, fulfilled P&R obligations under the Running Gear Contract. The price of each car body was $75, delivered. Payment was in cash upon attachment of car bodies and running gear, without deferment. No collateral security was provided. Cars were delivered into a trust under the Running Gear Contract. L&C, not Davenport & Bridges, was the trust beneficiary.

***B&R Cars Contract (1842)***. The B&R Cars Contract (1842) was executed on March 30 with Bradley & Rice for 200 wood coal cars at $250 per car. Payment, evidenced by promissory notes, was required eighteen months after delivery of all cars to Port Richmond. On the payment date, the price for each car was increased by an interest factor applied from its delivery date to its payment date.

Cars were held in trust by two P&R officers (Emlen and McKee) until full payment. Each of repossession and sale upon default by the trustees was upon the request of Bradley & Rice. No collateral was provided.

The contract, arranged by Thayer and Dorr, contained performance-based payments. The P&R reserved 75¢ per ton of coal transported in the cars. Each time the reserve accumulated to $2,000 it was paid to Bradley & Rice to reduce the unpaid purchase price.

***D&B-F Cars Contract (1842)***. Albert Fuller joined Davenport & Bridges on the March 30 D&B-F Cars Contract (1842) for 200 wood coal cars for delivery at Port Richmond no later than September 12, 1842. The price was $250 per car, plus interest from its delivery date to its payment date. Promissory notes evidenced the obligation. Payment was due eighteen months after delivery of all cars.

Cars were delivered into a trust, with two P&R officers, Emlen and McKee, as trustees. Upon a default, the builder could direct the trustees to repossess and sell the cars. No collateral was provided.

The contract was arranged by Thayer and Dorr with the same performance-based payment structure as the B&R Cars Contract (1842): 75¢ per ton of coal transported in the cars with payment each time the reserve accumulated to $2,000.

***BH&H Drop Bottom Cars Contract (1842)***. Betts, Harlan & Hollingsworth, executed the BH&H Drop Bottom Cars Contract (1842) on July 5, 1842. BH&H agreed to build six double-lever, drop-bottom coal

cars, each branded *Mr. Betts*, at $664 per car. The purchase price was paid in four P&R bank drafts, each for $416. The drafts, numbered 273 through 276, were payable four, eight, twelve, and sixteen months after July 5, 1842. No cash payment was required prior to maturity of the drafts.

Cars were delivered in trust to Emlen and Thomas George, as trustees. Upon a default, any draft holder could direct the trustees to repossess and sell the cars. The drafts were negotiable, exposing the P&R to determinations by unknown future holders. No collateral was provided.

***Engines Contract of 1843***. See "Engines Contract of 1843" in the next section ("Locomotives") for the building of 450 wood cars by Locks & Canals.

***D&B Iron Cars Contract (1844)***. In 1844 the P&R adopted a standardized form iron car contract. Specifications, components, and materials were specified by reference to a P&R model iron car, with specific variations. The P&R transportation superintendent inspected each car before acceptance and could reduce the purchase price of any car found to vary from the specifications.

On January 14, 1844, the D&B Iron Cars Contract (1844) was executed with Davenport & Bridges for 300 iron cars. One hundred were deliverable on each of May 1, June 1, and July 1, 1844. The purchase price was $275 per car, delivered onto the P&R road and accepted by the inspector. Payment terms were $200 per car as each ten cars were delivered, inspected, and approved, with the remaining $75 per car payable on July 1, 1844 for those cars.

Cars were not delivered into a trust. Title to each car transferred to the P&R upon its delivery, inspection, and approval. No collateral was provided. The agreement contained no remedies provisions.

***B&R Iron Cars Contract (1844-1)***. Bradley & Rice executed the D&B Iron Cars Contract (1844-1) on February 10, 1844. It was the standardized form introduced in the D&B Iron Cars Contract (1844). The contract was for 300 cars at $275 each ($82,500 total), delivered at Port Richmond by June 1, 1844. The P&R was to pay $200 as each ten cars were delivered, inspected, and approved, with the remaining $75 per car payable on July 1, 1844. One hundred cars were deliverable on each of May 1, June 1, and July 1. No trust arrangement was used. No collateral was provided. The agreement had no remedies provisions.

***B&R Iron Cars Contract (1844-2)***. Bradley & Rice executed the D&B Iron Cars Contract (1844-2) on December 26, 1844. The contract was for 300 coal cars in accordance with P&R model car specifications delivered at Port Richmond by June 1, 1845 ("earlier if possible"). The price was , at $285 per car ($85,500 total) plus interest from delivery until full payment. Payment was to be made in twenty equal monthly installments commencing four months after delivery of all cars.

Cars were delivered into a trust. John Tucker, of the P&R, and Lyman Kingsley, of Canton, Massachusetts, were the trustees. Kingsley was a preferred provider of iron car axles. Bradley & Rice had discretion to initiate repossession and sale of the cars upon a default. No collateral was provided.

***D&B Iron Cars Contract (1845)***. Davenport & Bridges executed the D&B Iron Cars Contract (1845) on January 1, 1845 for 300 iron cars delivered at Port Richmond by June 1, 1845 ("earlier if possible"). The price was $285 per car ($85,500 total) plus interest from the delivery date to the payment date. Twenty equal monthly payments of $4,275, plus interest, commenced four months after the average delivery date of all cars. Cars were delivered into a trust, the trustees being Tucker and Kingsley. Davenport & Bridges had discretion to initiate repossession and sale of the cars upon a default. No collateral was provided.

***B&R Iron Cars Contract (1845)***. Two hundred iron cars were built by Bradley & Rice pursuant to the B&R Iron Cars Contract (1845) of December 6, 1845 at $285 per car, delivered at Port Richmond. All cars

were to be delivered by June 1, 1846 ("earlier if possible"). The total price ($57,000) was payable in three equal installments, each bearing interest from delivery to payment. The first was payable in cash at contract execution. The second was payable on March 1, 1846. The third was payable six months after all cars were delivered (one year after contract execution).

Upon delivery, the cars were placed in trust with Tucker and Kingsley as trustees. Upon a default, the builder was entitled to initiate repossession and sale. No collateral was provided.

***RW Iron Cars Contract (1846)***. Ross Winans executed the RW Iron Cars Contact (1846) on January 28, 1846 for 200 iron cars at $292 per car deliverable by July 1, 1846. At delivery of a car, the P&R paid $58.40 in cash and provided Winans with six-month promissory notes totaling $233.60. Winans could designate the amounts and payees of each note, a notable move toward financial intermediation.

Winans retained title to all cars until full payment of all notes, with interest. Title retention was characterized as "the lien of the said Winans for the benefit of the holders of the said notes". The P&R right of use ceased upon a default under any note. Upon a default, Winans or his designee could take possession of and sell the cars.

### Locomotive Engines

The first contract in the locomotives sequence was the Engines Contract. The intention as to execute that contract on March 3, 1842. Because of P&R delays in providing specifications and delays due to Jackson's insistence on a mortgage over P&R roads, the Engines Contract was separated from the Running Gear Contract and its execution was delayed until March 9, 1843.

Meanwhile, the P&R executed two engine contracts. The first was the PR-BW Engines Contract (1842) with Baldwin & Whitney.[9] The second was a lease of the eight-wheeled, 13.8-ton *Manatawny*, and related tender, from William Norris for six months for $2,500. The Norris *Manatawny* Engine Lease (1842) was executed on October 2, 1842. The $2,500 rent was paid upon execution of the lease and the engine was delivered in October.[10]

The progression from credit to finance to financial intermediation occurred primarily in sales of engines. Innovations are apparent in the earliest contracts. Most were responsive to the P&R's lack of cash. Payment arrangements increased in complexity through the transactional lineage. With completion of the second track, the trend was toward builder realization of cash earlier in the deferral period. In some transactions, the timing of cash payments was accelerated. Down payments and payments upon delivery or completion of performance testing are examples. Other transactions were structured to include payments in bonds and other instruments that could be sold in secondary markets.

Each engines contract involved some payment deferral. Cash down payments were used. In one transaction, a P&R promissory note was provided to the builder prior to contract execution. P&R notes and bonds were part of the purchase price from the earliest contracts. By 1844, in the sale of the *Mohegan*, payment was made with a third party (State of Michigan) bond. In an 1845 transaction, a third party (State of Michigan) bond was substituted for a promissory note that was part of the purchase payment, possibly because of a P&R default in paying the note.[11]

Performance guarantees from engine builders were provided when engines incorporated new technologies (the flexible beam truck) and in first-time contracts with builders after the P&R realized its need for larger, more powerful engines. As technologies were proven and experience gained with larger engines, builder guarantees were phased out.

Table 18: P&R Contracts for Building Locomotives

| Contract | Payment | Innovation | Collateral |
|---|---|---|---|
| Locks & Canals<br>Engine Contract (1843) | 2-years deferred<br>performance payments | trust<br>performance payment<br>mortgage | engines and cars<br>bonds ($300,000)<br>road and revenues |
| Baldwin & Whitney<br>PR-BW Engines (1842) | part cash on delivery<br>6-month notes<br>3-year bonds | trust<br>promissory notes<br>bonds | engines |
| D. H. Dotterer<br>Dotterer Lycoming (1842) | part cash on delivery<br>3 post-dated checks | no trust<br>post-dated checks<br>lease of engine | engine |
| Baldwin & Whitney<br>PR-BW Engines (1844) | cash down payment<br>payment at delivery<br>payment after test | no trust<br>operations test<br>guarantee | Baldwin & Whitney<br>guarantee (delivery and<br>performance) |
| Norris Brothers<br>PR-Norris Engines (1844) | payment after test | no trust<br>title transfer at delivery | none |
| State of Michigan<br>(P&R seller)<br>*Mohegan* sale | Michigan bond (50%<br>discount) | no trust<br>intermediation:<br>Michigan bond at face for<br>Baldwin & Whitney engine | none |
| Baldwin & Whitney<br>PR-BW Engines (1845) | part cash on delivery<br>part after test<br>promissory note | no trust<br>promissory note<br>operations test<br>guarantee | Baldwin & Whitney<br>guarantee (delivery and<br>performance) |
| Baldwin & Whitney<br>PR-BW Engines (1846) | part advance<br>part cash on delivery<br>completion bonus<br>promissory note | no trust<br>promissory note | none |

***PR-BW Engines Contract (1842)***. The PR-BW Engines Contract (1842) used deferred payments and both P&R promissory notes and bonds as payment currency. The contract was executed on June 16, 1842 with Matthias W. Baldwin and George Vail for four engines and tenders: the *Perkiomen* ($7,000, 12.6 tons), the *Sanatoga* ($7,000, 12.0 tons), the *Mahanoy* ($7,500, 12.6 tons), and the *Wyoming* ($6,500, 10.8 tons). The *Sanatoga* and *Mahanoy* were rebuilt to 19.2 and 20.2 tons, respectively, in 1842. The *Wyoming* was rebuilt to 19.6 tons in 1847.

No down payment was required. Upon delivery of each engine, the P&R paid $1,000 in cash, totaling $4,000. The remaining $24,000 was paid with (a) P&R six-month promissory notes for $10,000, (b) P&R bonds due April 1, 1845 (likely 1841~1845) of $7,000, and (c) $7,000 of P&R bonds due January 1, 1847 (1842~1847).[B]

The engines were assigned in trust to Emlen and Henry Chester to secure the six-month promissory notes (but not the bonds). This was unusual. Bonds were used for the last two deferred payments.[12]

If the notes were fully paid by December 16, 1842, title was conveyed to the P&R. This was well before the final payment on January 1, 1847. If the notes were not fully paid on December 16, any holder could

[B] Both the 1841~1845 and 1842~1847 bonds were 6% unsecured and unconvertible. Outstanding principal of the 1841~1845 bonds was $37,500 in 1842 and $49,750 in 1843. Outstanding principal of the 1842~1847 bonds was $49,700 in 1842 and $327,700 in 1843.

require the trustees to repossess and sell the engines. As the notes seem to have been negotiable, the P&R was exposed to decision making by unknown future holders.

***PR-Dotterer Lycoming Engines Contract (1842)***. On September 23, 1842, D. H. Dotterer & Co. entered into the PR-Dotterer *Lycoming* Engines Contract (1842) for the 10.4-ton *Lycoming* at $3,300. The P&R used the before then in a hire. The P&R paid $800 in cash at signing, $1,000 on November 1, and $750 on each of January 1 and March 1, 1843. Each deferred payment was by post-dated check drawn on a Philadelphia bank.[13]

Title to the *Lycoming* did not transfer to the P&R until full payment, despite P&R use. If any check was not paid within ten days of its date, Dotterer was to retake possession of and sell the *Lycoming*.

***Engines Contract of 1843***. See Chapters Sixteen and Seventeen. L&C built 12 engines, 12 tenders, 450 wood coal cars, and 150 brakes pursuant to the Engines Contract of March 9, 1843. Tender building was subcontracted to Betts, Harlan & Hollingsworth under the BH&H Tenders Contract (1842).

The price for cars and brakes was $122,635. The price of engines and tenders was $90,000. To each was added interest determined to the date of payment from a computed delivery date. Payment was due two years after the average delivery date of the equipment. The contract included performance-based payments, Jackson having developed the structure with Thayer and Dorr. The P&R was to reserve 22½¢ per ton of coal transported in the 450 cars. Upon each accumulation to $2,500, reserves were to be paid to L&C to reduce unpaid amounts under the Running Gear Contract. After full payment of the Running Gear Contract, the per-ton reserve decreased to 15¢, determined on coal transported in any of the 1,050 cars under both Rolling Stock Contracts, and was applied to payments due under the Engines Contract.

All equipment was assigned to Nathan Appleton, William Sturgis, and William McKee as trustees. Two were appointed by L&C and one by the P&R. After trustee repossession of collateral, L&C could require its sale by the trustees.

As an unusual feature, the Engines Contract was secured by the LTCB Mortgage over the Philadelphia-Reading segment, including all lands, chattels, income, and profits from operation of that segment. Collateral also included $200,000 of P&R bonds (later increased). Importantly, the LTCB Mortgage *required* the trustees to repossess the equipment and collateral upon a default. Retaking was not discretionary.

***PR-BW Engines Contract (1844)***. The PR-BW Engines Contract (1844) was executed on February 21, 1844 with Baldwin & Whitney for six engines incorporating the flexible beam truck. These were the first engines purchased by the P&R of 19 tons or more. Required 1844 delivery dates were June 1 and 15, July 1 and 15, and (for the last two) August 1. See Figures 60 (the cab was modified from this picture), 61, and 62.

The contract employed a down payment, a delivery payment partially offset by the down payment, and a final payment upon demonstration of successful operation. The price was $6,500 per engine, totaling $39,000. The down payment was $10,000, or $1,666.66 per engine. Upon delivery of each engine, the P&R was to pay $5,000. One-sixth of the total down payment, plus 6% interest, was applied to the $5,000 cash delivery payment. The remainder of the $5,000, plus interest, was payable in cash. Fifteen days after demonstration of successful operation of an engine, the P&R was to pay $1,500 in respect of that engine.

Payments were not made in as required. Two examples are illustrative. On August 27, 1844, in the P&R Payment Notice (August 27, 1844), the P&R summarized payments for one of the engines. The $1,666.66 down payment and $51.66 in interest had been paid to that date. The unpaid purchase price was $4,781.68. On August 27, the P&R paid $2,000. On December 18, 1844, in the BW Note Receipt (1844), Baldwin &

Whitney acknowledged receipt of a P&R note of $3,000, dated December 29, 1844, payable on April 29, 1845. Upon payment of the note, the proceeds were to be applied to the first of the four engines under the P&R PR-BW Engines Contract (1844), delivered on May 1, 1844.[14]

Because the flexible beam truck was new technology,[C] Baldwin & Whitney provided delivery and performance guarantees to the P&R. Two types of collateral were provided by Baldwin & Whitney to secure the P&R's $10,000 down payment. The first was a performance bond, accompanied by a confession of judgment. The second was assignment of a $12,102.75 claim of Baldwin & Whitney against the State of Michigan, which was due on June 1, 1845.[15]

***PR-Norris Engines Contract (1844)***. Norris Brothers executed the PR-Norris Engines Contract (1844) on March 4, 1844 to build two six-wheel engines with 46-inch driving wheels and related eight-wheel tenders for delivery by June 1, 1844. The price was $6,500 for each engine-tender pair upon successful completion of a 60-day test. Norris Brothers provided a performance guarantee satisfied by passage of the test. Title to each engine transferred to the P&R upon delivery. No collateral was provided. The contract contained no remedies provisions. The engines were the *Richmond*, renamed the *Atlantic* (18.7 tons), and the *Philadelphia* (18.0 tons). The performance test for the *Atlantic* was passed on April 10, 1845.[16]

***1844 Mohegan Sale***. The September 1844 *Mohegan* sale by the P&R and the P&R's concurrent purchase of new engines from Baldwin & Whitney involved financial intermediation by both the builder and the railroad. The P&R accepted a State of Michigan sovereign bond of $13,500 face amount in payment of the ~$6,750 *Mohegan* purchase price (a 50% discount). The P&R used the Michigan bonds to purchase engines from Baldwin & Whitney. Baldwin & Whitney was marketing the new flexible beam truck engines and willing to accept the Michigan bonds at face value in payment for engines. A Michigan bond was applied under the PR-BW Engines Contract (1845). Application may also have been made under the PR-BW Engines Contract (1844).[17]

***PR-BW Engines Contract (1845)***. Baldwin & Whitney executed the PR-BW Engines Contract (1845) on January 3, 1845 for four engines on the same model as under the PR-BW Engines Contract (1844), with ten specific adjustments to the specifications. The engines were to be delivered in 1845 by May 1, 10, and 20, and June 1. On February 22 the contract was amended to add two engines with tenders (the *St. Lawrence* and the *Constitution*) on the same specifications, each of 19.5 tons, and each deliverable in June. Payment terms were $5,750 upon delivery of each engine-tender pair and $1,500 fifteen days after each engine was placed in operation. Indicative of assurances not always recited in contracts, the P&R provided a promissory note for $3,500, dated December 29, 1844, maturing April 29, 1845, in anticipation of execution of the PR-BW Engines Contract (1845).[18]

After the flexible beam truck technology was proven and the P&R was operational over two tracks, payment arrangements between the P&R and Baldwin & Whitney moved toward an earlier model, with more limited payment deferral. The purchase price of each engine was $7,250 (totaling $29,000). The P&R was to pay $5,750 upon delivery of each engine and the remaining $1,500 fifteen days after demonstration of successful operation of the engine, each with interest.

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[C] Patent 2,759 for the flexible beam truck was issued to Matthias W. Baldwin on August 25, 1842. Figure 62 is a photograph of the model submitted with the patent application and Figure 63 is a drawing. The design increased the proportion of weight resting on driven wheels, increasing traction to allow pulling heavier loads. Multiple driving wheel axles were coupled tot allow each axle to move independently in conformity to curves and vertical irregularities in the track.

Payments were not made in conformity with the contract, as evidenced by the Bond Receipt (May 7, 1845). On that day, Baldwin & Whitney accepted from the P&R a $4,530 State of Michigan bond, dated April 28, 1845, as payment under the PR-BW Engines Contract (1845). The bond was payable to the order of Baldwin & Whitney at the Phoenix Bank in New York City on September 20, 1845. The P&R was afforded a credit of $4,429.59 on the bond ("being the cash value of said bond this day"). Title to each engine transferred to the P&R upon its delivery.

The delivery and performance guarantee remained, although it was less fulsome than under the PR-BW Engines Contract (1844). No trust was employed and no collateral was provided. The contract contained no remedies provisions.

***PR-BW Engines Contract (1846)***. On March 21, 1846, Baldwin & Whitney executed the PR-BW Engines Contract (1846) for seventeen engines and tenders, all to be delivered by August 1. Two were 25-ton engines, priced at $9,500 each: the *Hercules* and the *Atlas* (Figure 50). The other fifteen were 20-ton engines, priced at $8,750 each (Figure 66).[19]

For each engine-and-tender priced at $9,500, the P&R was obligated to pay $8,000 upon delivery and $1,500 was applied to "liquidation of any advances or acceptances" by the P&R. The balance of the advances or acceptances was to be deducted from the price on the last one (or more) engines. The P&R began making advance payments on February 14. The first engine was delivered on March 26.

The P&R was to pay $7,250 upon delivery of each engine in the group of fifteen. The remaining $1,500 on each engine was similarly applied to any advances or acceptances.

Baldwin & Whitney received a negotiated bonus of $2,000 for completing all seventeen engines by August 1, 1846. All were delivered by July 11, 1846.[20]

Usually, payments were made in cash, although a few were in drafts. Payments commenced on February 14. Payments in February and March were usually $2,000, with one $4,500 payment, totaling $16,500 plus interest. Delivery of the *Hercules* and *Atlas* occurred on March 26 and 31, respectively. Four more engines were delivered in April. The P&R listed the in-service dates for those engines as April. Six payments in April totaled $57,250. Thereafter, payments ranged from $2,250 to $5,000, with nine payments made in May, eight in June, and two in July. Baldwin & Whitney was rigorous in demanding and obtaining cash payments.

No trust was used. No collateral was provided. The contract included no remedies provisions. Title to each engine passed to the P&R upon delivery of the engine.

# Inception of Equipment Finance

## Beginnings

The Rolling Stock Contracts occupied far more of Patrick Tracy Jackson's attention than he anticipated or desired, commencing in 1841 and continuing beyond his retirement to the last moments of his association with L&C in 1846. Jackson may have been more enthusiastic—or, at least, acquiescent—had he foreseen the benefits to finance in the twentieth and twenty-first centuries. Jackson, though innovative, was neither a visionary nor one to muse of legacy. He was a practical business manager. Pragmatic management begat that which the visionary would have prefigured.

Jackson managed risk exposures, and thus control mechanisms and collateral security. He was involved in three gestational equipment finance transactions: the 1838-1839 engines sale to the Baltimore & Susquehanna and the 1842 Running Gear Contract and 1843 Engines Contract, each with the Philadelphia & Reading.

The Baltimore & Susquehanna contract was structured to protect a six-month credit exposure (later extended to one year). Three elements were unique to L&C. These were retention of title by L&C until full payment of the purchase price, use of an agent to hold the collateral, and the taking of stock or bonds as additional collateral for the payment obligation.[1]

The transaction moved away from a direct sale and immediate transfer of title to a conditional sale with title transfer after full payment. Title retention was through an L&C agent, Charles Howard, the B&S president. Both elements derived from the necessity of avoiding the long reach and firm grasp of mortgages and liens on B&S property held by the City of Baltimore and the State of Maryland. The structure was suggested by Howard, a man with intimate knowledge of entanglements that might ensnare each of L&C and the B&S by virtue of those mortgages and liens. It benefited each to ensure that title to the engines remained outside the B&S for the entire payment period. An agency concept was sagacious, so long as the agent was a person of the probity of Charles Howard. But the railroad industry was moving toward managerialism. It was prudent to utilize structures that could be judiciously implemented without regard to personal characteristics.

Two innovations were introduced in the Rolling Stock Contracts. The first, borrowed from the canal industry, was performance-based payments. The second, which altered the core collateral security structure, was a trust managed by multiple trustees. In the first transaction—the Running Gear Contract—the trustees were officers of the debtor, the P&R. As a result of early experience with payment defaults, that was soon modified. The trustees under the Engines Contract represented interests of both parties, but the majority were appointed by the creditor-builder, L&C. Collateral held by the trust consisted of the transferred equipment and, as overcollateralization, additional assets. Measures—though rudimentary—were infused to control the collateral and, subject to legal and equitable constraints, decision-making by the trustees.

Subsequent transactions retained the trust and title retention mechanisms as fundamental structural elements, modified to accommodate interpretations of Pennsylvania (and Maryland) law. The equipment vendor, or a trust acting to secure payment to the vendor, retained title and entered into a bailment for hire (lease) coupled with a bailee option to purchase the equipment. Those features appeared in Schuylkill Navigation boat loans from and after 1850 and came to full flower in The Railroad Car Trust of Philadelphia in 1868 and The Philadelphia Equipment Trust of 1869, each sponsored by Lehigh Coal & Navigation.[2]

### Performance-Based Payments

Performance-based payments were used in each Rolling Stock Contract and a few early contracts for building wood jimmies. The mechanism was introduced on February 28, 1842. Albert H. Dorr and John E. Thayer were then working with Patrick Tracy Jackson to devise a payment structure. Details of development of the structure are unknown. Did Jackson introduce the idea? Or was it proffered by Dorr or Thayer? Or was it a product of their fertile interaction? Likely, each had a role in developing and refining the concept.[3]

The concept derived from canal boat practices in Pennsylvania in 1833, as noted in *Lehigh C&N v. Field* (1844), that became standard for Lehigh Coal & Navigation. Minutes of the Lehigh C&N board of directors indicate the arrangement was considered late in the 1832 boating season. Combining performance payments with a purchase option in an installment sale was initiated in response to the cholera pandemic. With the onset of cholera, captains would not boat coal and freight rates from the Schuylkill region to Philadelphia abruptly increased from $1.50 per ton to $3.75 per ton. Shippers traveled ten or fifteen miles down the tow path to charter scows, which were only available upon advance payment for freight and bonuses of $5-10. The structure dangled scow ownership for a captain as inducement to boating of coal at stabilized rates. A portion of the payment for each trip was applied to the scow purchase price.[4]

Installment sale arrangements were used on the Delaware and Hudson canal to recruit boatmen into an untried business. Around 1832, the Delaware & Hudson advanced a boatman 87½% of the cost of a canal boat. A deduction was made for each trip based on the tonnage of coal transported, at standard per-ton rates. That became standard practice. As discussed in *Tuthill v. Wheeler* (1849), the Delaware & Hudson continued to use the structure in 1845. Boats used on the Erie Canal in 1838 used similar contracts, as memorialized in *Strong v. Taylor* (1842). The practice was also evident in the Pennsylvania case of *Farmers' Bank v. McKee* (1845) pertaining to an 1841 contract for sale of seven canal boats.[5]

Given their extensive involvements in internal improvements and industries dependent upon internal improvements, it is likely Jackson, Dorr, and Thayer, and their legal counsel, were aware of boat sale and leasing practices and even specific court cases in 1842. *Lehigh C&N v. Field* and *Farmers' Bank v. McKee* were then pending, although not decided by appellate courts until December 1844 and March 1845, respectively. *Strong v. Taylor* was decided at the appellate level in 1842. Jackson adeptly used leasing practices and production-related payment structures for sales and leasing of mill powers by L&C to textile companies in Waltham and Lowell. Until construction of the Boston & Lowell, Jackson made extensive use of the Middlesex Canal, and was familiar with practices on that canal, which may have included haulage-based structures.[6]

Performance payments were not integral to equipment finance structures. They were used in some later transactions, and not others. Use depended upon the industry, the nature of the equipment, and the credit status of the vendee.

**Trust History**

Use of the trust as the basic structural element was the more important and lasting contribution of the Rolling Stock Contracts to equipment financing. Within a month of the Running Gear Contract, the concept was incorporated in P&R contracts with Davenport & Bridges and Bradley & Rice. Schuylkill Navigation's boat loans began plying the waters in 1845. As a primary competitor of the P&R, SNC was cognizant of arrangements used by the P&R in its financings.[7]

Some familiarity with the history of the trust in Anglo-American law is useful in understanding the importance of the trust, even in the unembellished form adopted in the early railroad and canal transactions. It is critical to appreciating the creativity, nuance, and range applied to trust concepts in transactions addressed in subsequent volumes of this study.

The earliest English trusts were called "uses". Until 1391 and the statute of 15 Richard II, ch. 5, they were used to achieve a range of objectives. Trusts were used to avoid the prohibitions of the statute of mortmain, which prohibited transfer of real estate to corporations, as opposed to natural persons, those interested in avoidance being ecclesiastical corporations. Trusts were used to pass property as a will substitute for intestacy, which limited a wife's interest to a one-third life interest (dower) with the remainder of the fee simple passing in primogeniture to the eldest male heir, thereby excluding daughters and younger male sons. Trusts were used to avoid taxes on lands held at death. They were used to avoid military obligations associated with land holding. Trusts were used to avoid loss of lands should an individual be convicted of treason (vicissitudes of the War of the Roses being relevant), to defraud creditors by depriving them of land on which to levy, and to allow tenants to escape the results of the feudal system of tenures. Robert Atkyns summarized thusly: "A trust is altogether the same that a use was before 27 Hen. VII, and they have the same parents, fraud and fear; and the same nurse, a court of conscience."[8]

A person made a conveyance ("feoffment") of land owned by that person to a friend or gentleman (a "trustee", then a "feofee to uses"). The trustee held the land on behalf of the conveying owner (the "settlor", then a "feoffor to uses"). Upon conveyance, the law recognized only the trustee as entitled to the land. There was an understanding (usually oral) that, at some future date (such as the settlor's death), the land would be conveyed to the settlor's wife or child or another person (the "beneficiary" or "*cestui que trust*"), as instructed by the settlor. The trustee held the land for the use of the settlor or designee during this arrangement. There was a separation of legal and beneficial ownership. These arrangements were popular in 1300s and 1400s although, at that time, they could not be enforced in the law courts.[9]

Various issues plagued the use of uses. Not all trustees were faithful to the arrangements. A trustee might convey the enfeoffed land to a third party or disregard the agreement allowing settlor use of the land. Creditors of trustees saw opportunities to realize upon enfeoffed land as collateral for trustee obligations. Directions to the trustee were often uncertain, ambiguous, or non-existent.

Pleas to law courts being unavailing, in the last quarter of the 1300s some church courts began enforcing agreements between the settlor and the trustee. By the last decade of the century, the Court of Chancery undertook to enforce these agreements. The arrangement took on the nature of a trust, rather than a mere contract. The trust was not a distinct juridical entity or personality; it was an *obligation of the trustee*.

Which led to the application by the Court of Chancery of three doctrines, each applied to the trustee by the mid-1400s. Beneficiaries could bring an action in the Court of Chancery for the remedy of specific performance: the beneficiary could obtain the land, rather than mere monetary damages. The beneficiary could obtain that remedy from the trustee and from some to whom the trustee conveyed the land. The

second doctrine entailed discovery. The beneficiary or other aggrieved party could compel the trustee to answer questions, provide responses under oath, and produce the instrument (agreement) of trust and related documents. The third doctrine related to protection of the land, and thus the beneficiaries, from claims of, progressively over time, heirs and donees of the trustee, and then creditors of the trustee having knowledge of the arrangement, even though the creditors had not agreed to the arrangement.

The rights of the settlor were not rights in land; they were personal rights against the trustee to comply with the agreement. As summarized by Maitland:[10]

> in history, and probably in the ultimate analysis, it is *jus in personam*, but that it is so treated (and this for many important purposes) that it is very like *jus in rem*. A right primarily good against *certa persona*, viz. the trustee, but so treated as to be almost equivalent to a right good against all—a *dominum*, ownership, which however exists only in equity. And this is so from a remote time.

### Trusts for Business

The common law trust was well known and widely used in the United States and England for business functions before the corporation became a preferred business form in the early nineteenth century. The trust was used as a collateral security mechanism, holding collateral for bond issuances. The trust was used as a business organizational form. It was a preferred device for holding the property of unincorporated associations and partnerships, where it functioned as an effective substitute for the corporate form and in protecting property from creditors of the associates and partners. In the early and middle nineteenth century, the trust was often preferred even where incorporation was available.[11]

As illustrated by transactions discussed in this volume and subsequent volumes of this study, commencing in the nineteenth century and into the twentieth, the trust was transformed from a real estate conveyancing device to a device for holding and managing financial assets. The management trust developed in harmony with changes in the nature of wealth. "Wealth, in a commercial age, is made up largely of promises." It is made up of stocks, bonds, loans, fund shares, insurance contracts, pension interests, annuity interests, bank accounts, and other financial claims and contract rights. To protect beneficiaries against trustee misbehavior, trustee fiduciary doctrines (loyalty and prudence) came to flower.[12]

In substituting the trust for an agency in the P&R transactions, L&C likely was not seeking to obtain all benefits of the trust as a vehicle possessing elements associated with the corporate form. L&C's objectives were more limited. The primary objectives related to (a) establishment and preservation of a strong and sensible collateral security structure for the benefit of L&C (the beneficiary) that involved decision making by multiple trustees, a majority of whom were appointed by L&C, and (b) as a related matter, partitioning and isolation of the relevant assets (locomotives, tenders, cars, and brakes).

Under applicable trust law, the trustee's obligation was to act for the benefit of the beneficiary with the care and diligence of a prudent owner of the collateral. Acknowledging that general principles yield to precise circumstances, trustee duties and responsibilities in the nineteenth century were summarized by Maitland thusly:[13]

> (i) A trustee is bound to do anything that he is expressly bidden to do by the instrument creating the trust.
>
> (ii) A trustee may safely do anything that he is expressly authorized to do by that instrument.

(iii) A trustee is bound to refrain from doing anything that is expressly forbidden by that instrument. … Within these limits a trustee must

(iv) play the part of a prudent owner and prudent man of business.

That is the standard by which his conduct will be judged.

As a default position, trust law constrained trustee discretion. Trustee discretion was limited, the law having developed in the realm of donative transfers where it was important, as a policy matter, to protect the beneficiary (usually an heir). Limited trustee discretion was an attractive attribute, rather than an impediment, to a beneficiary (like L&C) where the purpose of the trust was primarily to hold equipment as collateral security, as opposed to operating equipment as an on-going business. Equipment operation was the province and responsibility of the user (the P&R). Early collateral security trusts had essentially no operating standards or requirements. The constraints that scholars have identified as inimical to use of the trust for business purposes were largely irrelevant in this type of usage.

L&C was unconcerned with many other benefits of the trust, including capital lock-in and tradable shares.[A] Capital came only from L&C and was expended in building the equipment prior to establishment of the trust and transfer of equipment to the trust. There was no tradable shares benefit: L&C held the entire interest in the asset, was transferring the entire interest to the P&R pursuant to a conditional sale effectuated through the trust, and had no desire to involve other investors. As ultimately happened to the P&R debt under the Rolling Stock Contracts, assignment was adequate for disposing of the secured obligation.[14]

Which is not to say that L&C was oblivious to other benefits of the trust. Clearly, there was a desire for protection or shielding of assets from P&R creditors. There was a desire for protection from creditors of the trustees. That was available under trust law. Jackson and the Bostonians were cognizant of, and had realized, this benefit in connection with the original acquisition of L&C.[15] There may have been some consideration of legal personhood in litigation, and L&C may have achieved this type of benefit.

Other benefits that may have been of some importance to L&C in switching from an agency to a trust arrangement pertain to liability limitation and trustee powers and duties. There is no explicit evidence that L&C contemplated these benefits, but it seems probable given the care that Jackson and L&C exercised with respect to legal matters.

In the agency structure, and in the context of the general principle that the principal was bound by the acts of the agent, retained responsibilities and liability exposures of the principal (L&C) were significant. The acts of an agent were those of the principal (assuming the agent's authority was not exceeded), whatever the agent's obligations to the principal. The applicable principle was: Where two are innocent, the one whose acts or conduct enabled the event or occurrence is responsible. Which left a principal, such as L&C, exposed to third party claims, with a presumption in favor of the third party in many situations.

Charles Howard, the agent of L&C in the 1838-1839 transaction, was president of the Baltimore & Susquehanna. The B&S operated the engines and set operational standards. As case law well attests,

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[A] Entity shielding protects the assets of an entity from personal creditors of the owner of that entity and from creditors of other ventures. In trusts used for the L&C-P&R transactions, the trust assets were protected from creditors of L&C (as well as the P&R and its creditors). Limited liability protects the owners of an entity from creditors of that entity. Capital lock-in is the inability of an owner (such as a shareholder) to extract capital from an entity without approval of the board of directors or managers of that entity, board members and managers being charged with representing the interests of the entity, even where those interests might conflict with interests of the owner. The trust in more evolved structures was concerned with some of these other benefits, as discussed in later volumes of this study.

questions of agent authority abounded, especially where the agent had some interest in the subject property. Title in the agent was pregnant with authority issues and related liability exposure for L&C. Whatever the rectitude of the agent, such questions could not be eliminated, especially in financing arrangements where deductions as to implied authority had to be made.

Decision making by a trustee—or, better, multiple trustees—judiciously appointed and constrained minimized probabilities of misunderstandings as to scope of authority and for acts and omissions. The assets subject to an agency remained the property of the principal (L&C), subject to claims against the principal (by its creditors and for agent acts and omissions), until the conditional sale was fully unconditional. The assets were not isolated in a separate relationship, as in a trust. With a trust, the trustees owned the assets and were responsible for care of the assets in accordance with fiduciary principles. For the most part, liability was limited to the trust assets.[16]

Discretion was important to both L&C and its counterparties. Of itself, a trust was circumspect. It was not registered with a public authority. There was no disclosure of its terms or the identities of its participants or investors. Identities of trustees were known to prospective investors and became publicly known if a mortgage was granted to the trustees and recorded. L&C welcomed that disclosure as protective of its interests vis-à-vis a large, and growing, group of P&R creditors.

Control was an important consideration. Control of the trust was effectuated by discreet individuals pursuant to private documents establishing and governing the trust. In the L&C-P&R transactions, the trustees were appointed by the contract parties and were officers of those parties. Control was extended further pursuant to the LTCB Mortgage. A familiar structure, like the common law trust, was a more palatable and flexible alternative where an entity (like L&C) sought to safely situate a property away from itself to, among other things, reduce L&C responsibilities and liability exposures that accompanied asset ownership, even if the asset was held and managed by a reputable agent, such as Charles Howard.

The common law trust allowed property to be owned and/or held by reputable, controllable individuals held to relatively rigorous standards and required, *de facto* and *de jure*, to act in the interests of L&C as the beneficiary. Appointment and direction of the trustees, which could be accomplished without liability exposure, were important (especially in later transactions). Use of a common law trust allowed a settlor (like L&C) to write the rules as the settlor thought prudent, and the law mandated that those rules be followed.

Remedies available to a trust beneficiary better suited builders, such as L&C. Specific performance, and recovery of the trust property, were available in equity proceedings. The beneficiary was not limited to monetary damages (though that option remained available). And specific performance was available against many (not all) to whom the trust might convey the trust property. Discovery available in equity proceedings applicable to trust disputes was more expansive than in proceedings at law. And the chancellor would protect the trust property against claims of creditors of the trustee, even in a bankruptcy of the trustee.

Schuylkill Navigation progressively refined the trust and related collateral security arrangements in its boat loan equipment financings of 1845 through 1864. Structural maturity was attained, for the most part, with The Railroad Car Trust of Philadelphia and The Lehigh Equipment Trust of Philadelphia in 1868 and 1869, respectively. The capstone to this evolutionary process came after 1869 when trusts issued certificates, notes, bonds, and other securities to a larger investor group in "car trust" and "equipment trust" structures, an attribute that would be much further refined in transactions through the twentieth century.[17]

# ENDNOTES

## Endnotes: Overview

[1] This is a practitioner's definition. Equipment finance techniques are used primarily for capital equipment, broadly defined. Definitions of capital equipment vary with focus, financial practice, and jurisdiction. Many include parameters relating to tax, accounting, and financial reporting. See endnote 1, Chapter One, McMillen (2022-1). For present purposes, Brown's definition serves well: "those mechanisms sold to secondary companies for use in their final production of goods or delivery of services." Brown (1995), at 251, Introduction note 1, and Brown (1993), at 7.

[2] See the first paragraph of endnote 16 of Chapter Twenty-Two for rolling stock in service. P&R AR (1843), at 6 and 9, referenced equipment not included in the table: (a) 12 engines and 450 cars under the Engines Contract; (b) two engines not yet delivered by New Castle; and (c) 52 freight cars and 15 coal cars not yet mounted. Similar entries in P&R AR (1844), at 16 (for 1843), mention one undelivered New Castle engine and 24 freight cars to be mounted as covered cars.

Builders of the 39 locomotives of the P&R in 1843 were: (1) Braithwait & Milner, London: 8 passenger and light freight engines; (2) L&C: 12 coal engines; (3) Eastwick & Harrison: 3 coal engines; (4) William Norris: 2 coal engines; (5) Newcastle Manufacturing: 5 coal engines; (6) Dotterer & Company: 2 coal engines; (7) M. W. Baldwin: 6 light engines; and (8) Ross Winans: 1 four-wheeled vertical boiler coal-fueled engine. P&R AR (1844), at 11.

[3] The federal Bankruptcy Act of 1841, 5 Stat. 440, which introduced voluntary bankruptcy, was repealed in 1843. Weisman (1941), Warren (1935), at 49-94, and, for a broader view of bankruptcy and insolvency through history, Levinthal (1918).

Beyond reluctance, complications of this type bedevil financings of certain categories of assets, such as monopolistic and limited-provider assets and many government-owned assets.

[4] Jackson Corr. (August 29, 1843).

## Endnotes: Chapter Fifteen

[1] For the opening to Mount Carbon, Emlen to McCalmont Brothers, P&R Corr. (February 28, 1842), at 272-73, and Hare (1909-1914), at 18-9. Hare observes that sidings, additional tracks to coal regions, and roads were incomplete at the opening of the segment.

[2] For the proposed Running Gear Contract, its confirmation, and the portion available to Gibb for Gibb (1947), at 14-6, L&C Minutes (March 11, 1842). Emlen sent the contract, executed by the P&R, to Thayer on March 3: P&R Corr. (March 3, 1842), at 308. Figure 28 is a drawing of a wood jimmie, including running gear of the Pennsylvania Railroad identical to that of the P&R (see the description of Figure 28 in the Bibliography). For Davenport & Bridges, see White (1978), at 7 and 24, and the 1835 advertisement of Kimball & Davenport, the predecessor firm, at 6. White notes that Davenport & Bridges, which commenced business in 1834, ceased operations in or shortly after 1855. For Bradford's note, P&R Corr. (March 1, 1842), at 318.

[3] For the car building circular, Bradford to Robinson, P&R Corr. (February 3, 1842), at 279-80, sent at the direction of the P&R board and including the language of the circular. For Thayer, Kidder Peabody Baker Records (undated) and, for his estate, Vose (1859), at 52.

[4] For Edwards to Dorr, P&R Corr. (February 9, 1842), at 303-04. Nearly identical letters were sent to Thayer, P&R Corr. (February 28, 1842), at 302-03. A letter the same day to Christopher Loeser, an Orwigsburg lawyer, stated that contracts for 800 cars had been concluded that week and contracts for 300-400 more were being negotiated. The Loeser letter is in P&R Corr. (February 28, 1842), at 304.

[5] Emlen to Thayer & Brother (March 3 and 12) and Jackson (March 8), each in P&R Corr. (March 3, 8, and 12, 1842), at 308, 315, and 311, respectively.

[6] For Bradford to Thayer & Brother, P&R Corr. (March 16 and 19, 1842), at 316 and 320-21. The March 16 letter regarding the D&B Contract (1842) specified Emlen and McKee as trustees, although the trust was in and for the Running Gear Contract and the exclusive benefit of L&C. Anticipating execution, P&R AR (1843), at 3, mentions that the P&R entered into a contract for 1,000 coal cars on March 3, 1843, and Hare (1909-1914), at 19, references a contract for 1,000 coal cars and several additional engines. For Osgood Bradley, the founder of Bradley & Rice in Worcester, Massachusetts, see White (1978), at 6, 7, 10 and 26. Standard Steel Car Co. acquired the Bradley company in 1910 and the Pullman Company acquired it in 1930. L&C is referenced in White (1978), at 26.

[7] Despite March 30 dating the P&R executed the D&B Cars Contract (1842), D&B-F Cars Contract (1842), and B&R Cars Contract (1842) on April 4: P&R Corr. (April 4, 1842), at 335.

[8] P&R Corr. (April 4, 1842), at 335.

[9] BH&H Cars Contract (1842).

[10] HA 1520, Box 1220, Folder 9022, and L&C Minutes (March 11, 1842), for the Running Gear Contract (each including the text), and HA 1520, Folder 9022, for the bond.

[11] For the one-year extension L&C Minutes (September 22, 1842). For contract terms, L&C Minutes (September 20, 1842). For the 6% rate, Edwards to Dorr, P&R Corr. (February 28, 1842), at 304.

## Endnotes: Chapter Sixteen

[1] For Robinson's March 31 discussions with Jackson, Bradford to Dorr, P&R Corr. (March 31, 1842), at 333. For lack of an engine model by April 25, Emlen to Wirt Robinson, P&R Corr. (April 25, 1842), at 354. For delivery of running gear, L&C Minutes (September 20, 1842). For Jackson's report of the arrangement and authorization, L&C Minutes (April 1, 1842). The minutes imply running gear production of approximately 75 cars per month.

P&R AR (1843) and P&R AR (1844), to November 30 of 1842 and 1843, do not mention the Running Gear Contract. The Engines Contract and the New Castle contract are referenced in P&R AR (1843), at 6 and 9. A comparison of reports for 1842 and 1843 indicates an increase in cars from 1,130 to 1,592. That is consistent with L&C information, including delivery of running gear for all 600 cars by year-end 1842, taking into account the different fiscal years of L&C and the P&R, the completion date provided by Jackson, and production rates.

For the proposal to appoint Jackson to the P&R board, Edwards to Thayer, P&R Corr. (May 26, 1842), at 376.

[2] L&C Minutes (September 20, 1842).

[3] From L&C records, it seems the loan was never incurred. For the quotation, L&C Minutes (September 20, 1842).

[4] L&C Minutes (October 22, 1842).

[5] L&C Minutes (October 22, 1842).

[6] For locomotives not built by L&C as of such dates, Brown (1959), at 56-7 (to 1840), Hart (1946), at 25-8, P&R AR (1846), at 22-3, Statement E, Taber (2008), at 615-22, and Hare (1909-1916), at 20, with the annual report and Hare noting that the *Seminole* and *Hecla* were acquired in 1840 and the *Gem* (later renamed the *Gazelle*) and *Atalanta* were acquired in 1841. See, also, endnote 9, Chapter Nineteen.

[7] L&C Minutes (October 22 and December 7, 1842).

[8] The legislative action was PA Resolution (1843) No. 1. After that Resolution was obtained, Cryder so informed Jackson by letter. For approval of the reduced security package and Cryder's letter, L&C Minutes (October 22, 1842). For the prior mortgage on the Philadelphia-Pottsville road, L&C Minutes (December 7, 1842), P&R 1846 Report, at 51, and Neal Report (1849), at 15, the last two describing the 1836 Mortgage as the only pre-existing mortgage. For the portion of the road and P&R mortgage approval, LTCB Mortgage, as discussed *infra*.

[9] Descriptions of terms are from Engines Contract (1843), except as noted. The LTCB Bond recited outstanding indebtedness as $400,000 (a 50% discount on collateral bonds). It provided that if the P&R paid to the trustees $200,000 in

two years from March 10, 1843, with interest, "without any fraud or further delay then the above obligation shall be void or else to be and remain in full force and virtue." The LTCB Mortgage was for $200,000.

Some outgoing P&R correspondence with Jackson from and after March 8, 1843 refers to the Engines Contract as being for 500 cars. See, for example, P&R Corr. (March 8 and April 14, 1842), at 311 and 342-44. The contract and LTCB Mortgage reference 450 cars. No other document has been found indicating 500 cars and the pricing was unchanged.

[10] For Sturgis, McMillen (2022-2), at 29, endnote 3 and cited sources.

[11] For the number of jimmies on the P&R line (1843 to 1898), White (1993), at 312, Table 5.1, and 305 (largest users and estimates) and 306, Figure 5.2 (for Figure 28).

[12] See Railroad Gazette (1873, October 4), for cars on U.S. and Canadian steam roads, of 4 foot 8 inches and wider, in 1871 (252,122) and cars built in the year ended May 31, 1873 (36,765).

[13] Short descriptions of Harlan & Hollingsworth are White (1978), at 7 and 25, and Hoffecker (1974), at 21-4. For Harlan & Hollingsworth building iron steamships, destroyers, and vessels, see, e.g., SA (1861) and SA (1899).

[14] P&R AR (1846), at 23, Statement E. The last engine delivered under the Engines Contract (the *Cherokee*, on September 19, 1843) was 13.9-tons. The *Roanoke* (delivered September 4, 1843) and all others were 11.8 tons. The first annual report detailing engines was for the year ended November 30, 1845. It listed eleven of the twelve L&C engines, one having been sold to Michigan in 1844.

[15] Italicization of *Pottsville* in the quotation is added. For the *Pottsville*, P&R AR (1840), Statement E, at 31. The *Gowan & Marx* and early 4-4-0 locomotives are discussed in Warner (1934), at 13-5, Warner (1940), at 13-6, Hart (1946), at 18-20, and Caruthers (1907), at 97 and 99. It was designed with an unusual weight distribution placing nine tons on 42-inch driver wheels. White (1968-1), at 289, observes that it was converted to wood burning, then back to coal in 1855, and, in 1856, was rebuilt, and at the time of the exchange for the *Atlas* had run over 144,000 miles.

For P&R experiments with anthracite-fueled engines and iron cars, P&R AR (1844), at 12, 14 cars), and 16 (fuel), and P&R AR (1846), at 15 (engine rebuilding). By 1847, the P&R built an anthracite-fueled engine and was purchasing others, including from Ross Winans: see P&R AR (1847), at 14, SA Anthracite (1847), SA Anthracite (1852), and Warner (1940). As P&R machine shop capabilities advanced, the P&R commissioned a report on anthracite-burning locomotives from George W. Whistler, Jr., Whistler (1849), delivered in 1849. See also Keuchel (1970).

Locomotives consumed massive amounts of wood. An 1856 estimate was that each of the 5,000 locomotives in the U.S. consumed, on average, 800 cords per year. That aggregated to 4-5 million cords annually, or at least 100,000 acres of woodland. Wood costs increased as wood further from the rail line was used. Transportation costs increased, driving up commodity prices. Mining Magazine (1856), at 492-93, and Hunter (1985), at 402-05.

[16] PA Law (1833) No. 76, § 22 required completion by April 4, 1840. See Figure 22, announcing the December 9, 1839 opening of the P&R road.

[17] Research by this author indicates the *Gowan & Marx* was rebuilt to 13.8 tons in 1855 after 117,834 miles. Its mileage was then reset to zero. It recommenced running in 1856 (with 1,624 miles to year end) and ran until 1859 (when it had 20,231 accumulated miles from reset and was at work in Lebanon, Pennsylvania). Total documented mileage was then 138,065. It likely accumulated more miles prior to its 1860 disposition. Its average annual use after rebuilding was just over 6,000 miles per year. The *Gowan & Marx* does not appear in the P&R assets after November 30, 1859.

The February 1840 trial run of the *Gowan & Marx* was widely acclaimed because the engine pulled over forty times the engine weight, a spectacular feat at the time. Hearing of the results, the Russian Railway Commission determined to use the engine as its model for a new railway between St. Petersburg and Moscow. In 1842, George Washington Whistler was engaged to supervise building that railway after the position was declined by Moncure Robinson. The *Delaware* was a 10.1-ton engine built by Ross Winans in May 1838.

For the *Gowan & Marx* and its trial run, see Nicolls (1840), at 99-100, Osborne (1921), at 249-55, Warner (1934), at 13-5, Warner (1940), at 13-5, Robinson & Robinson (1878), at 23, Pennoyer (1938), Sinclair (1907), at 148-49 (a drawing is at 144), White (1968-1), at 287-89 (a copy of a French engraving of the engine is at 291), and Brown (1959), at 56. For the *Gowan & Marx* placed-in-service date, P&R AR (1840), Statement E, at 31. For the *Gowan & Marx*, P&R AR (1855), Statement E, at 39, P&R AR (1856), Statement E, at 36-7 (not active; being rebuilt), P&R AR (1857), Statement E, at 39, and P&R AR (1860), Statement E, at 35. For New Castle Manufacturing Company, Bell & Fisher (1929). For the exchange

for the *Active*, Reading Century (1941), at 13, and, at 34, for a picture. A postage stamp, issued by the United States Postal Service depicting the *Gowan & Marx* is available at the Smithsonian Institution, National Postal Museum, https://postalmuseum.si.edu/object/npm_1989.0496.10178.

The original incorporating legislation was PA Law (1833) No. 76, with the deadline for completion of works at § 22.

[18] For brakes, Emlen to Thayer & Brother, P&R Corr. (June 2, 1842), at 384, Edwards to Thayer & Brother, June 3, 1842, and Emlen to Robinson, at 386. Emlen's proposal was adopted. For references to 500 cars, P&R Corr. (March 8 and April 14, 1842), at 311 and 342-44.

## Endnotes: Chapter Seventeen

[1] L&C Minutes (October 22, 1842).

[2] See Chapter Twenty-Two for the 1843~1860 loan and events contemporaneous with negotiation of the Engines Contract.

[3] L&C Minutes (October 22, 1842 and February 23, 1843).

[4] For the most part, PA Resolution (1843) No. 1 was observed in the breach. On April 4, 1862, PA Law (1862) No. 240 was approved as a supplement. It was passed because, as it recited: "It frequently happens that incorporated companies, by assignment, conveyance, mortgage or other transfer, divest themselves of their real and personal estate, in contravention of the provisions of [PA Resolution (1843) No. 1]…." The 1862 law allowed contractors who obtained a judgment against a violator of PA Resolution (1843) No. 1 to issue a *scire facius* to those to whom the property had been conveyed, mortgaged, or transferred, the case to proceed "as in other cases of *scire facias* on judgment against terre tenants." A *scire facius* was a judicial writ requiring court appearance to show cause why judgment should not be enforced. A terre tenant was the owner of land acquired from a judgment debtor or one who had actual possession of land. In Pennsylvania it referred to a person who purchased and occupied land subject to a judgment against a former owner or an existing mortgage or judgment. See *Dengler v. Kiehner* (1850) and *Hulett v. Mutual Life Insurance* (1886).

[5] No evidence has been located indicating that the consent of any contractor was obtained in respect of the mortgage securing the 1843~1860 bonds.

[6] Chester was a law partner and brother-in-law of Charles Chauncey (brother of Elihu). Chester and Chauncey argued the 1832 Pennsylvania supreme court debt action case of *Altemus v. Ely* (1832). Chester did work for The Girard National Bank and was nominated as its solicitor on July 9, 1832. He was a member of the Finance Committee of The Law Association of Philadelphia from 1827 to 1841. He was counsel to the Musical Fund Society of Philadelphia in 1833, through at least 1835. He provided a home and education to John Mifflin Brown, an African American minister from New Castle, who Chester later recommended as minister for the Protestant Episcopal Church. One of Chester's law students, Edward Owen Parry of Pottsville, was recommended as a U.S. Circuit Court judge by leading members of the Schuylkill County coal industry. Chester died in 1848, age 55.

For Chester, Moncure Robinson to his father, John Robinson, April 17, 1828, in Robinson Letters (1929), at 13, PLA (1906), at 449, *Altemus v. Ely* (1832), Smith (1922), at 191, Hazard's Register (1835, October 31), Schuylkill History (1881), at 307, Peirce (1883), at 28, and Leach (1902), at 43 (1832 nomination as solicitor of Girard Bank).

[7] For board acquiescence to no mortgage, L&C Minutes (October 22, 1842 and January 23, 1843).

Recordation information is hand-written on the LTCB Mortgage (1843). Jackson's correspondence sketches recordation. The recorded LTCB Mortgage was sent to Jackson in late June 1843. On June 24, Jackson wrote to Henry Chester noting recordation only in Philadelphia (on March 30). After confirming the necessity of recordation in Montgomery and Berks counties, Jackson wrote to Bradford on June 28, returning the deed and requesting further recordation. It was recorded in Berks county on July 3 and Montgomery county on July 14. Bradford returned the fully recorded mortgage to Jackson on August 5, 1843. P&R Corr. (June 24 and 28 and August 11, 1843). The LTCB Mortgage was recorded in Philadelphia County Mortgage Book R. LL No. 1 at page 615, Berk's County Mortgage Book at pages 560, 561, and 562, and in Montgomery Mortgage Book No. 24 at pate 567: LTCB Release of Mortgage (1849). In error, Jackson sometimes referenced a "March 11" mortgage.

[8] Accounting for equipment financing transactions was misleading long after 1842-1843. The methodology of the U.S. Interstate Commerce Commission (ICC) in the early twentieth century perpetuated the disconnect with legal reality and the murkiness that enveloped ownership determinations from financial statement information. The ICC allowed a railroad to book accretions in ownership as each payment was made on the relevant equipment trust obligation (and thus the relevant lease or conditional sale agreement). Each increment corresponded to the payment amount. Of course, the trust did not transfer ownership incrementally. Transfer was made only after full payment. For Duncan's pointed critique of these practices and related suggestions, see Duncan (1924), at 240-67.

[9] There was (and is) debate regarding fiduciary duties of a trustee in a commercial trust. See, for example, Morley & Sitkoff (2020), at 337. Some courts held that trustee duties were defined by the trust agreement, rather than fiduciary principles under donative trust law. See *Hazzard v. Chase Bank* (1936). Others held that fiduciary duties were defined both by the trust agreement and donative trust common law principles. See *Dabney v. Chase Bank* (1952).

[10] This language, from the granting clause, differs slightly from the recital and P&R resolution.

[11] For P&R disclosure of other mortgages, P&R AR (1844), at 4 and 16, and P&R 1846 Report, Appendix N. 8, item 3, at 51l. Mortgages in favor of the London bondholders are in P&R 1846 Report at 8 (subsequent statements refer to other mortgages, but not the LTCB Mortgage). The P&R 1846 Report disclosed the LTCB Mortgage, although it incorrectly described that mortgage as being made in favor of W. F. Ember [stet] and J. A. Brown, who were the trustees for the Running Gear Contract.

[12] For the 1836 Mortgage, HA 1520, Book B9, with recordation information for the counties of Philadelphia (October 26, 1842), Berks (June 28, 1843), and Montgomery (July 14, 1843).

[13] The other exceptions pertained to interest, the sinking fund amount, and certain other rights.

[14] Even if the 1836 Mortgage had applied to equipment, it would not have captured equipment under the Rolling Stock Contracts: title was not conveyed to the P&R until full payment.

[15] The P&R granted a few other mortgages on specific buildings, lots, and property. Some secured the 1843~1860 and 1844~1860 bond, each covering the Philadelphia-Pottsville road and each executed after the LTCB Mortgage. In addition, the P&R granted smaller mortgages (totaling $213,050) on property at Richmond, near the Richmond Depot, and at the Broad Street Depot to individuals, including R. Twells, G. & B. W. Ball, John A. Brown, J. C. Fisher, John Smith, and G. T. Lewis, and on undisclosed property to the Reading Benevolent Society.

[16] P&R Minutes (October 22, 1843).

## Endnotes: Chapter Eighteen

[1] An introduction to early nineteenth century accounting is Densmore (2000) and examples of book-keeping treatises include Preston (1827), Preston (1837), Preston (1842), Preston (1843), Bennett (1829), Bennett (1839), Goddard (1821), Jackson (1801), Jackson (1811), and Shea (1839). Discounts were given rudimentary treatment in some works; for example Preston (1842), at 16, 79, 80, 81, 84, 108, 109, 110, 111, 116, 117, 118, and 119, and Preston (1837), at 22. A bibliography of early bookkeeping works is Bentley & Leonard (1934). New editions of popular treatises (particularly Preston) were released every year or two.

[2] Holders seem to have been paid (or accrued payment rights to) interest on both the notes and the bonds. Consider the last section of this Chapter.

[3] For discounts, commissions, and charges see P&R 1846 Report, at 11-2, 13 (total discounts on bonds to March 30, 1846 were $1,494,046.89), 14 (50% discount on pledged bonds), 50, table No. 5, *Statement of Loans of the Company, for which Bonds had been issued, with the amounts received, and commissions allowed, to November 30, 1843, compiled from the original entries in the Books of the Company (for loans from 1836 to 1843)*, table No. 6, *Statement of Loans and Discounts, November 30, 1844 (for loans from 1836 to 1844)*, and 51, table No. 7, *Statement of Loans and Discounts, 1st August 1845 (commissions for loans from 1836 to 1844)*, Neal Report (1849), at 10, 18, 19, 20, 36, and 38, and, for the 1847 bond issuance, P&R AR (1848), at 3. The Neal Report, at 4, stated that discounts, commissions, and charges on $5,148,013.11 of outstanding debt were $1,492,886.89 (22.48% of the aggregate face amount outstanding of $7,447,569.64). The act confirming usury compliance was PA Law (1845) No. 205.

[4] Neal Report (1849), at 4, for discounts on loans from 1844 to 1849, and at 36 and 38, for 1849 loans to pay floating debt. For increasing asset values by discounts, commissions, charges, interest, deficits, and losses, Bogen (1927), at 29-30 and, for those factors accounting for all but $9,343 of new assets, 34-5. Bogen notes that the book cost of the P&R assets in 1844 was $9,457,570 and debt of $2,948,450 was due within six years. Cash available to meet those obligations was $15,532.

[5] For an early example of bonds used to pay accumulated expenses, P&R AR (1844), at 8, showing two liabilities totaling $665,471.99 "most of which are to be settled by Bonds." Neal Report (1849), at 34, recommended: "All Bonds, Coupons, and other evidences of debt when once redeemed, should be cancelled, and evidence thereof presented to the Managers."

[6] P&R annual reports contain numerous references to bond retentions for future sales and provision as collateral. For treasury bonds and the quotation, P&R AR (1844), at 4-5. For the discount on pledged bonds, P&R 1846 Report, at 14.

[7] The P&R frequently used promissory notes as a cash substitute. It used other mechanisms as well. A power of attorney allowing McCalmont Brothers to draw 12-month bills for payment of bonds due in London in July 1842. See Chapter Twenty, endnote 6 and associated text.

[8] Recognized explicitly by the 1845 Investigations Committee in the P&R 1846 Report at 7. Among the references to understated liabilities and interest arrearages, P&R 1846 Report, at 7. Two entries in P&R AR (1844), at 8, for 1843 reference obligations to sundry persons in England and the U.S., "most of which is to be settled by Bonds" (totaling $665,472.14). These are not present in P&R AR (1845), which references, at 8, "Obligations issued for settlement of arrears of interest due in England July 1, 1846" ($113,957.55). In the 1845 financial restructuring (*infra*), there was likely payment of overdue interest with bonds and exchange of bonds of different series (1839~1850 sterling bonds into 1840~1850 dollar bonds). Interest payments with bonds during 1846 may account for some increases in outstandings: compare P&R AR (1847) with P&R AR (1846). For example, the $180,000 increase in U.S. dollar portion of the 1839/40~1850. The P&R paid sterling interest arrearages on 1839~1850 bonds with discounted 1840~1850 bonds, and may have similarly paid some principal: the principal amount decreased from $940,800 to $564,000 and the outstanding principal amount of the U.S. dollar portion (1840~1850) increased to $1,956,500 from $819,000.

[9] Assume a 6% $1,000 bond and 50% discount rate on bonds used to pay interest. At the end of year one, accrued simple interest was $60.00. The P&R issued $120 of bonds to pay that interest. The total outstanding principal amount of bonds increased to $1,120.

[10] Isaac Babbitt of Boston invented a mode of constructing the boxes within which run the gudgeons or journals of machinery in general and for axles of railroad cars, locomotives, and other carriages. He was awarded patent number 1252 on July 17, 1839. The low-friction tin-based metal alloy (96% tin, 8% antimony, and 4% copper, in the 1850s, or 89% tin, 9% antimony, and 2% copper in later formulations) came to be known as Babbitt metal and was used extensively into the middle of the twentieth century. Babbitt's patent did not cover that metal, although he did conceive of using soft metal ("white metal"). A "babbitt man" was someone who made the metal alloy.

[11] See the Bradford letters, P&R Corr. (January 31, February 1, and February 2, 1842), at 275-78. For the patent rights licensing fee, Bradford to Thayer & Brother, P&R Corr. (April 28, 1842), at 359. A February 7 letter to Wirt Robinson authorized contract settlement with five-year bonds payable in 1850, ten-year bonds payable in 1847, and twelve-month notes. P&R Corr. (February 7, 1842), at 277. In a financial intermediation function, the P&R also used Michigan bonds acquired as payment for sale of the *Mohegan* to pay, at the undiscounted face amount, for a new larger engine from Baldwin & Whitney. See McMillen (2022-M).

[12] See, for example, P&R 1846 Report, at 10 and, for exchanges of 1839~1850 sterling bonds for 1840~1850 bonds, at 12. For conversion of 1839/40~1850 into 1849~1870 bonds, see Chapter Twenty-Eight.

[13] See the discussion of PA Resolution (1843) No. 1 in Chapter Seventeen.

[14] P&R 1846 Report, at 13-5.

[15] See, for example, endnotes 3 through 5, and associated text, in Chapter Twenty of this volume regarding Morrison Sons being paid interest on bonds held as collateral.

[16] An example is the Gihon Second Loan (see Chapter Twenty-One). The Gihon debts were not recorded in the financial statements.

Bonds not sold, used as collateral, and converted into preferred stock are in Neal Report (1849), at 13-5. As of November 30, 1844, $1,443,800 of bonds were used as collateral and not disclosed in financial statements. See P&R 1846 Report, at 13-4. Included were $340,000 of bonds pledged as collateral to L&C for the Rolling Stock Contracts.

## Endnotes: Chapter Twenty-Five

[1] Wales was one of two primary coal suppliers to Boston Manufacturing from 1814 to 1825, working closely with Jackson. He worked with Jackson, Henry Lee, Nathan Appleton, Horace Gray, and others in support of the BUS in 1834. He was a successful Boston merchant involved in trade with the southern United States and owned and built ships. Wales was a director and the president (1836-1842) of the Western Railroad, an incorporator of the Boston & Worcester, and a director of the Boston & Providence, the Taunton Branch, the Nashua and Lowell Rail-Road Corporation, and, again working with Jackson, the Columbian Insurance Company. He was a founder of the Ancient, Free and Accepted Masons in Randolph, Massachusetts in 1862, a trustee of the Boston Lying In Hospital and the Providential Institution for Savings in the City of Boston, and an officer of the Boston Female Asylum. Wales was an incorporator of the Boston Fuel Savings Institution, the City Hotel of Boston, and the President, Directors, and Company of the Merchants Bank. Other incorporators of Boston Fuel Savings included Josiah Quincy, John Tappan, and Nathan Hale. He was an incorporator of The Proprietors of Tremont Mills with Amos and Abbott Lawrence, William Appleton, Benjamin Nichols, and others in 1831. With John A. Lowell, William Appleton, and others, he was a lender to Daniel Webster. Wales was a member of the Massachusetts House of Representatives in the late 1830s and 1840s.

For Wales, Fisher (1947), at 18, 19, 22, 35, and 56, Western RR AR (1837), at 9, Western RR AR (1838), Western RR AR (1839), Western RR (1840), B&P AR (1834), N&L AR (1844), Taunton Branch AR (1837-1), Taunton Branch AR (1837-2), Taunton Branch AR (1838), Taunton Branch AR (1840), Taunton Branch AR (1841), Gregory (1983), at 20-1, MA Law (1821) Ch. IX (Boston Fuel Savings Institution), MA Law (1825) Ch. CIII (City Hotel), MA Law (1828) Ch. LXII (Merchants Bank), MA Law (1831) Ch. LXXII (B&W), Masons (1862), and Female Asylum (1833). For Wales and ship owning and building, Briggs (1889), at 139, 184-85, 238, 312, 314-18, and 320-21. For Wales and coal, Unger (2013), at 121-23. For Wales and work on the BUS, Morse (1926), at 8. For the Tremont Mills, MA Law (1831) Ch. CXXXV and Drake (1880), at 68. For Wales in the Massachusetts House of Representatives, MA Register (1839), at 33, 46, 164, 165, 231, and 242, and MA Register (1846), at 43. For loans to Daniel Webster, Rich (1975), at 164-65. For trusts established under the will of Thomas B. Wales, McClung (1912), at 104-18.

[2] For board meetings considering sale or conversion of the shop, L&C Minutes (September 21, 1841, and May 20, May 28, September 20, October 14, and November 20, 1842 (determination not to sell or convert), and October 7, 1843). For the May 28 decision to sell, L&C Minutes (May 28, 1842). Determinations regarding the shop intertwined with considerations regarding sales of excess waterpower. Some mills used excess waterpower without payment to L&C, and Jackson was evaluating (a) whether to reserve some excess power for the converted shop and (b) how to obtain payment for excess power. Discussion of waterpower reservation for the converted shop occurred in the September 20, 1842 board meeting: L&C Minutes (September 20, 1842). At the October 14 board meeting Jackson opined that the shop might be sold for a cotton mill and would bring a higher price if excess water were allocated to it. L&C Minutes (October 14, 1842).

[3] For the initial inquiry, L&C Minutes (November 20, 1843). For the 1843 analysis of conversion of the machine shop, L&C Minutes (October 7, 1843).

[4] ` L&C Minutes (November 20, 1844).

[5] For the $50 dividend, L&C Minutes (December 9, 1843). Other dividend statistics are from Gibb (1950), at 101-02.

[6] For the respective directions and authorizations, L&C Minutes (September 21 (adjourned), September 25, October 2 (authorizing Jackson a commission of 1% on sales of property other than the Prescott Mill, the mill leases, and machinery under contract), October 26, November 13 (postponing land sales), December 6, 1844, and March 8, 1845 (reversing the November 13 postponement). During this period, L&C also attempted to sell other properties (primarily parcels in Lowell, the Merrimack Hotel, two brick stables, and a group of wooden houses). The asset sale process played out until mid-1845. For the October 9 circular, L&C Minutes (March 8, 1845).

[7] Machine Shop Subscription Agreement (1844).

[8] For board authorization allowing sale per the circular and the quotation, L&C Minutes (December 6, 1844). For Lawrence's offers, L&C Minutes (December 6, 1844 and March 10, 1845).

[9] Gibb (1950), 185-86, for the asset purchase, including $50,000 of land and tenements.

[10] Lowell Machine Shop enabling legislation was MA Law (1845) Ch. 10. And see Gibb (1950), at 183-86. For authorization of Lowell Machine Shop and Lowell mills to own L&C stock, MA Law (1846) Ch. 48; and see endnote 13 of this Chapter. For the offices, Boston Almanac (1845), at 83. The value of the assets as of July 31, 1844 (and July 31, 1843) is in the L&C Minutes (September 16, 1845).

[11] For the capital stock increase of Lowell Machine Shop, MA Law (1848) Ch. 2. For the offices, Boston Almanac (1845), at 83. Figures for 1848 are from *Lowell And Its Corporations*, 74 NILES' NATIONAL REGISTER 3 (1848, October 25).

[12] For the direction regarding the November 29 meeting, L&C Minutes (November 19, 1845). For the schedule of assets not sold, L&C Minutes (November 29, 1845).

[13] For the 1845 and 1844 amounts, P&R AR (1846), at 9, and P&R AR (1845), at 8. The figure from P&R 1846 Report is at 14. P&R AR (1845), at 8, for the year ending November 30, 1844, indicated a $50,000 (plus interest) payment was made in 1844. Jackson to Brown, Jackson Corr. (October 23, 1843), contains Jackson's request for payment of $50,000. Payment may not have been made in full until 1845. See the request in the October 23 letter and Jackson to Bradford, indicating that $5,000 had been paid (Jackson Corr. (November 6, 1843)), and no indication of any other payment prior to 1845. An additional $77,546.25 was due other car builders. For the November 30, 1844 figure, Neal Report, at 7.

Interest at 6% per annum does account (approximately) for the different amounts in the P&R annual report and the November 19 asset sale schedule. It would have been approximately $10,736.48. Applying that rate does not account for the discrepancy between the amounts specified in the Neal Report (1849) and the P&R annual report over the one-year period (the interest would have been $9,836.69, short of the P&R debt figure by $10,200.51 as of November 30, 1845). The P&R did not capitalize accrued and unpaid interest into the obligation in its financial statements.

The P&R balance sheet trail specifically listing the P&R debt ends on November 30, 1845. Subsequent annual statements made no mention of it. It is difficult to determine whether payment was made because of lumping of indebtedness in general categories (such as "sundry persons" or "sundry accounts"). The April 15, November 15, and December 15, 1845 figures are from internal account summaries, including in Morse to Bradford, March 23, 1846 (HA 1520, Box 1220, Folder 9022). That summary lists every payment from April 15, 1845 to March 6, 1846, and accrued and unpaid interest from June of 1843 to April 15, 1845, as $23,389.85, bringing the stated total amount due as of April 15, 1845 to $236,024.85.

[14] On October 16, the L&C board authorized Jackson and Lowell to negotiate a sale of L&C property, including the machine shop, foundry, and other property. They reported to the board on November 19 that they had agreed to sell the other property for $600,000 to Lowell companies. L&C Minutes (October 16 and November 19, 1845).

Gibb (1950), at 102 states that, after this reorganization, "[a] new company called, like the old, the Proprietors of the Locks and Canals on Merrimack River, was formed to regulate the water power at Lowell. Stock for this company was subscribed by the Lowell corporations on a basis proportionate to the number of mill powers owned by each." A review of Massachusetts laws and records pertaining to L&C discloses no new company formation. The original L&C continued to exist. On February 17, 1846 certain Lowell companies were legislatively authorized to purchase stock of L&C as they determined appropriate pursuant to MA Law (1846) Ch. 48. The act stated that "nothing herein contained shall in any way affect the duties and obligations of the said Proprietors of Locks and Canals on Merrimack River." The companies purchased the stock from L&C, the stock having been reacquired by L&C at the November 29 meeting.

The act authorized the named companies to spend whatever sums they determined appropriate to improve waterpower on the Merrimack River and to own and hold such real and personal property in New Hampshire as New Hampshire law permitted. The identified companies were Merrimack Manufacturing, Hamilton Manufacturing Company, Appleton Company, Suffolk Manufacturing Company, Tremont Mills, Lawrence Manufacturing Company, Lowell Manufacturing Company, Boot Cotton Mills, Middlesex Company, Massachusetts Cotton Mills, Prescott Manufacturing Company, and Lowell Machine Shop. For water power in the first half of the nineteenth century, Lowell (1868), Hunter (1979), and Malone (2005).

## Endnotes: Chapter Twenty-Seven

[1] In 1845 there were two primary routes between Philadelphia and New York. One via the Camden & Amboy, leaving Philadelphia in the morning, with a steamboat between South Amboy and New York, taking approximately 5½ hours. Another involved a combination of railroads, boats, and ferries of approximately 4½ hours: the New Jersey Railroad, the New Brunswick & Trenton, and the Philadelphia & Trenton, leaving Philadelphia around 4:30 p.m.

There were four primary routes from New York to Boston. The Long Island Railroad ran from Brooklyn to eastern Long Island, with a steamboat to Allyn's Point, and then railroads through Norwich and Worcester, taking approximately 10½ hours. A second involved steamboats from Battery Place to Stonington and the Boston & Providence or, in season, steamboats to Newport and Providence connecting with the Boston & Providence. A third route entailed a steamboat from New York to New London and Allyn's Point and railroads through Norwich and Worcester. The fourth route was a steamboat from New York to New Haven and railroads through Hartford, Springfield, and Worcester. Travel time for each of the three routes was approximately 13½ hours.

See Disturnell (1846), with route tables and travel times. For the Camden & Amboy, see Dunbar (1915-III), at 991-96, and for the Boston & Providence and Boston & Worcester, Dunbar (1915-III), at 996-1007. See Boston Almanac (1845), at 28, for the temperature.

[2] For the board presentation, L&C Minutes (December 13, 1845), containing the text of the Trustee Liability Agreement (1845) and the Tucker and Morse letters.

[3] The interpretation and analysis in this book of the 1845 debt, 1848 preferred stock issuance, and the related involvements of Boston, London, and New York interests, varies from others, for example Johnson & Supple (1967), at 49-56, and Bogen (1927), at 19-40.

[4] Gihon & Company was a significant participant in the P&R's 1844~1860 loan, among others. John Gihon was a loan trustee for that loan. Gihon made critical loans to the P&R in 1843: the Gihon First Loan and Gihon Second Loan. For the placement of Tucker, McHenry (1881), at 6. For Tucker as Assistant Secretary of War, Blackman (1987) and Tucker (1863), the latter being a reply to a U.S. Senate report regarding his governmental activities. Tucker's successor was Richard D. Cullen. Cullen, a McCalmont Brothers clerk sent to the P&R in 1851, became president in 1856. He was deposed by McCalmont in 1860, when Asa Whitney became president. Charles Eastwick Smith became president in 1861, convinced by Whitney. Gihon & Company failed in 1857 and was liquidated. For the transition from Tucker through to Smith, McHenry (1881), at 6. For the McCalmont Brothers role in elevating Smith to the presidency. Scott (1902), at 42.

In 1862 Tucker took a leave of absence from the P&R to serve as Assistant Secretary of War at the request of Edwin M. Stanton. He supervised development of the military railways department as an adjunct of the armed forces and came to know military officers in charge of railroad operations, including Brigadier General Daniel C. McCallum. In 1864 a labor strike disabled the P&R. Charles E. Smith, then P&R president, sent Tucker to Washington to obtain temporary replacements from the army for the striking workers. McCallum was amenable. Smith, fearing that the army personnel would be unwilling to act as strikebreakers, then asked Major General George Cadwalader to take possession of the P&R under an Act of January 31, 1862. Cadwalader did so on July 11, 1864 and appointed Smith as superintendent of the P&R.

[5] Tucker to Jackson in the L&C Minutes (December 13, 1845).

[6] This letter is in HA 1520, Box 1220, Folder 9022, as well as the P&R Minutes (December 13, 1845) and Jackson Corr. (December 13, 1845).

[7] Morse to Tucker, December 13, 1845, and draft of December 10 agreement, each in HA 1520, Box 1220, Folder 9022.

[8] P&R Corr. (January 16 and January 24, 1846).

[9] No copy of this agreement has been obtained. Terms and the progression are specified in the P&R correspondence and Morse's December 13 letter.

[10] The $300,000 of bonds securing the Rolling Stock Contracts were: 1-24 ($5,000 each), 1-12 ($10,000 each), and 1172 ($100,000). 1-24 and 1-12 were issued pursuant to the Settlement Agreement (1846) in exchange for bond 1141 provided on March 9, 1843. Bond 1172 was issued under the March 2, 1844 Jackson-Thayer agreement. See Neal Report (1849), at 14, RG Collateral Assignment (1846), L&C-Lowell Indenture (1846), and the recordable acknowledgement of the $150,000

debt. The referenced financial statements are P&R AR (1846), especially at 9, and P&R AR (1847), at 8. For Brown's resignation, P&R Stockholders Meeting (1846) and, for his continuing share holdings, P&R Election Vote (1846).

[11] Jackson's requirements are in P&R Corr. (February 12, 1846). The Morse follow-up is P&R Corr. (February 12, 1846). For related correspondence, P&R Corr. (February 9, March 5, March 6, March 12, and March 23, 1846). For the payment record, Morse to Bradford on March 23, 1846, HA 1520, Box 1220, Folder 9022. Thayer payments on March 6 and of unpaid monthly principal of $15,000 involved calling amounts from loan subscribers and are detailed in Thayer & Brother to Bradford on March 6, 1845, in HA 1520, Box 1220, Folder 9022.

[12] Subscribers List (1845).

[13] For 1845 issuances, P&R AR (1847), at 8 (balance sheet). Amounts due L&C are not specifically identified in any subsequent annual report. For the 1847 issuance, P&R AR (1847), at 3 and 9 (balance sheet). For the absence of 1845 bonds and mortgages, Neal Report (1849), at 15. For 1848 liabilities, P&R AR (1849), at 11. For debt owed to L&C at year-end 1845, P&R AR (1846), at 9.

[14] I am grateful to my wife, Karin Laine McMillen, for her analysis of Binney as Mozart. Such is the perspective of an opera singer with a love of the intricacies and richness of the genre and art form, especially from an historical vantage.

[15] L&C-Lowell Indenture, with L&C approval at L&C Minutes (December 11, 1846). For L&C board approval of the debt transfer to Lowell, L&C Minutes (February 11, 1846). For the P&R debt to L&C at year-end 1845, P&R AR (1846), at 9.

[16] Neal Report, at 7 and 16. New canals were the main topic of L&C board discussions after sale of the machine shop. See P&R Minutes (March 20 and September 12 and 15, 1846). For the New Hampshire reservoirs, Steinberg (1991), especially at 99-134.

[17] For Jackson's resignation, L&C Minutes (August 30, 1845). For the committee and acceptance of resignation, L&C Minutes (September 16, 1845). Jackson was treasurer on November 29 but not December 6. L&C Minutes (November 29 and December 6, 1845), indicating the house numbers at which board meetings were held on those dates (11½ Tremont Row being Morse's). For Jackson's Lowell home, Boston Courier (1846, May 28).

## Endnotes: Chapter Twenty-Eight

[1] For the July 1, 1849 payment, Neal Report (1849), at 16. Payment of principal between 1844 and 1848 is from the Neal Report (1849), at 6 (table) and 7 (L&C debt was not identified).

[2] The undated satisfaction, release, and discharge was executed in Boston on October 10 and Pennsylvania on October 17 and satisfied of record on October 26, 1849. It was initiated by John A. Lowell, then holding the P&R debt, to Nathan Appleton who reported it to Tucker in a September 15 letter, requesting documents, which Bradford provided that day. See LTCB Power of Attorney (1849) and LTCB Release of Mortgage (1849).

[3] P&R AR (1849), at 3-5, from which quotations in paragraphs following are taken. For the Schuylkill Navigation experience in 1848, McMillen (2023-4), Chapter Ten.

[4] Bond amounts due in 1847, 1848, and 1849 are from P&R AR (1847), at 8. The amount due in 1850 is from the Neal Report (1849), at 35.

[5] For this and the next preceding paragraph, P&R AR (1848), at 9. The quoted language was originally a single paragraph, without indentation.

[6] Hare (1909-1914), at 35, 37, and 56. For P&R efforts in 1847, P&R AR (1848), especially at 5 (Port Richmond land), 14 and 30-1 (engines), 14 and 28 (car enlargements), and 19 (bridges). For the *Novelty*, P&R AR (1847), at 14, P&R AR (1848), at 15, Reading Century (1941), at 18-9, and extensive discussions of the *Novelty* and the *Baltimore*, a Winans-built coal-fired engine, in Whistler (1849). As an experiment, the *Novelty* was not in P&R engine inventories.

P&R circumstances were complicated by the Mine Hill and Schuylkill Haven Railroad Company (MH&SH). Almost 40% of coal transported by the P&R originated through the MH&SH. In 1847, the MH&SH was completing a 7½ mile extension into the Swatara fields and payments, including for rails from Reeves, Buck and Company of Phoenixville, had not been made. The MH&SH successfully petitioned the legislature for a $200,000 stock increase and use of engines, rather than horses and mules. PA Law (1847) No. 217. That necessitated increasing track width, modifying curves, relocating

tracks, and constructing bridges, water stations, engine houses, and buildings. Teamsters feared loss of work and in July demanded a new contract and increased compensation, threatening to withdraw all teams on August 14. Whereupon the MH&SH placed engines on the road, some borrowed from the P&R. Hare (1909-1914), at 122-26.

P&R-built engines were the *Wyoming* (19.6 tons), the *Palo Alto* (20.8 tons), and the *Monterey* (19.9 tons). Ross Winans engines were the *Baltimore* (26.9 tons) the *Maryland* (27.0 tons), the *Delaware* (27.1 tons), and the *Ohio* (27.9 tons). In addition, the P&R purchased fifteen 22-ton engines from Baldwin & Whitney in 1846. P&R AR (1849), at 30-1.

7 P&R AR (1848), at 8. For a perspective on P&R anthracite-burning engines by 1914, SA (1914, January 10), which has a picture of a banquet held in the locomotive firebox.

8 Hare (1909-1914), at 35, 37, and 56.

9 For rejection of the 30% discount and 5% increase, Tucker to Dwight, May 10, 1848, in HA 5020, Box 1219, Folder 8881. The May date seems inaccurate. The committee was appointed on June 14. June 10, which predated appointment, was stricken and May inserted. For the quotation and events, Fisher to Forbes, July 13, 1848, in HA 5020, Box 1219, Folder 8881.

10 Tucker to Dwight, May 10, 1848, in HA 1520, Box 1219, Folder 8881, including quotes.

11 For the quotation, Report of Committee (1848). For receivership prices, Bogen (1927), at 33. For the 60% discount, Neal Report (1849) at 38.

12 For modification of 1836~1860 bonds to eliminate convertibility, compare P&R AR (1847), at 9, and earlier reports, with P&R AR (1848), at 9, and subsequent reports.

13 Histories of U.S. preferred stock are, Evans (1929) (railroads), Ripley (1915), at 94 *et seq*., and Evans (1932).

14 I am grateful to Christopher T. Baer for observing, during a discussion of the legislation authorizing the preferred stock: "That was about the time the county seat was moved to Pottsville." That observation led to the connection here discussed.

The *quid pro quo* was PA Law (1848) No. 233, § 2: extension to Pottsville and passenger depot. PA Law (1849) No. 272 deadline extension to March 29, 1852 and requiring Pottsville passenger cars "if an equitable arrangement" was made with the Mount Carbon railroad." PA Law (1850) No. 38 (§ 3 proviso) required commencement of construction within 60 days. Passenger service was agreed with the Mount Carbon railroad in late 1850. P&R AR (1851), at 15. Pottsville became the county seat in 1851. Prison construction borrowing was authorized by PA Law (1852) No. 8. The Orwigsburg tax base expansion was in PA Law (1851) No. 223. For county seat removal, Schuylkill History (1881), at 77-9. For Pottsville, Elliott (1906), Henning (1906), and Russell (1888). For Orwigsburg, Orwigsburg Civic (1913) and DP&S (1911), at 1.

15 For notice of the vote, NA (1847, October 15). For the 1845 and 1850 Orwigsburg data, Schuylkill History (1881), at 364-66. For the 1834 population and dwelling figures, PA Coal Report (1834), at 189. For the 1840 census figures, NA (1846, January 13). For the 1824 and 1847 Pottsville data, Minor (1847).

16 The laws were PA Law (1847) No. 272 (voting) and PA Law (1848) No. 100 (constitutionality).

17 PA Law (1848) No. 233, § 1.

18 ARJ (1848, April 29).

19 For the June 14 resolutions, HA 1520, Box 1175, Folder 19. The resolution also addressed the order of payment of expenses, bond and loan interest, an interest reserve fund, and dividends.

20 For the proposed preferred stock certificate (with resolutions printed on the back) and Binney opinion, HA 1520, Box 1219, Folder 8842. Binney rejected the certificate, which contained an interpretation of PA Law (1848) No. 233 and the June 14 resolutions.

21 Derby was a Boston lawyer, member of Derby & Fuller (with H. Weid Fuller), and legal counsel to the Eastern Railroad. Dwight was a Boston accountant and officer of Boston Manufacturers Mutual Fire Insurance Company.

22 Proxies granted to Tucker allowed him to vote on all matters at all stockholder meetings and had no expirations. They are in HA 1520, Box 1175, Folder 9. Pennsylvania requirements for valid proxies were in PA Law (1820) Chap. CXIII, to which the P&R was subject and required that the proxy be dated within six months of its use and not be issued in blank.

23 P&R AR (1849), at 11 (balance sheet) and 8-9, and compare P&R AR (1848), at 9. For conversions at July 1849, Neal Report, at 21 and 23. For postponement of bond payments due in 1856, P&R AR (1849), at 4. For holder unwillingness to convert, P&R AR 1850, at 12. For firms handling the exchange, NAUSG (1848, May 16). For executed stockholder

exchange agreements, HA 1520, Box 1219, Folder 8842. For 1840~1850 bonds ((numbers 1172, 1-24, and 1-12) held by L&C as collateral, Neal Report (1849), at 14.

[24] Tucker to the Chairman of the Boston Committee, dated May 10, 1848, included in P&R AR (1850), at 14, with the 1% rate increase and "no worse position" assertions at 15.

[25] P&R AR (1848), at 7-8.

## Endnotes: Chapter Twenty-Nine

[1] P&R AR (1848), at 9 (financial statements) and 5 (coal transport), P&R AR (1849), at 11, and Neal Report (1849), at 38.

[2] 1848 Mortgage.

[3] For the due date of the final $75,000 for L&C, Neal Report (1849), at 16.

[4] For collateral bond sales, P&R AR (1849), at 3 and 5, and Neal Report (1849), at 23. For cash flow statements, P&R AR (1849), at 11, 12, 14, and 4 (notes receivable were discounted at losses). For bonds held as collateral by L&C, Neal Report (1849), at 14.

[5] The sport of the market quote is from ARJ (1849, October 13), taken from Neal Report at 4, absent "mere medium of speculation". The Poor quotation is from ARJ (1849, March 10).

[6] An example of Neal's forthrightness was his response to the promotion of George B. McClellan to replace General Winfield Scott. "McClellan would build the best bridge in the State of Illinois, and, when it was done, he would hesitate to go over it, for fear something had been overlooked." Neal worked with McClellan at the Illinois Central: McClellan was chief engineer. The quotation is from Rantoul (1916), at 61; Rantoul's wife was Neal's daughter and attended the school run by Anna (Jackson) Lowell, daughter of Patrick Tracy Jackson.

[7] Undated letter of 1848, HA 1572, Box 1182, Folder 919.

[8] Neal was born in Salem on June 7, 1793 and died in August 1861. He spent his early years at sea. During the War of 1812, on his second cruise as a privateer on the *Diomede*, he was captured by the British brig, the *Rifleman*, and taken to Halifax. During transport to Dartmoor Prison, he attempted to overtake the British ship, the *Bensen*. During fighting, Neal suffered damage to his hand. Three fingers were amputated. After release from Dartmoor Prison in 1815, he engaged in maritime trade until 1820. He then joined his father at Neal and Sons, eventually succeeding his father. In 1841 he joined the Eastern Rail-road as president. For Neal, Ackerman (1890), at 48-51, and Eastman (1928), at 27-32. For the Illinois Central, Ackerman (1890), Brownson (1915), Bradlee (1922), Kennedy (1951-I), Kennedy (1951-II), Kennedy (1951-III), and Kennedy (1951-IV). Neal served as a director of the Norwich & Worcester and the Sandusky, Dayton & Cincinnati. Low's (1845), at 94 and 119. Neal was a director for insurance companies, including the Equitable Safety Marine and Fire Insurance Company. Loring's Register (1841), at 245.

[9] P&R AR (1850), with the quotation following from 14.

[10] Figures are from P&R AR (1850), at 19. The floating debt is from Neal Report (1849), at 22, also noting issuances, by July 1: $1,419,000 of 1848~1860 and $1,294,000 of 1849~1860 bonds.

[11] Neal Report (1849), at 36 and 38.

[12] Shareholder resolutions for the 1849~1870 issuance are in P&R AR (1850), at 16-7. P&R 1849 Resolution described the intended use of bonds. The bond form, some issuance details, the text of the 1849-2 Mortgage, and the September 6, 1849 P&R board issuance resolutions are in BDA (1850, February 27) and ACDA (1850, February 27). For sales of the 1849~1870 bonds, P&R AR (1851), at 23. For the discount, P&R Annual Meeting Minutes (1849).

Of the 7,153 votes at the January 8 stockholders meeting approving the discount, 633 were cast by Gihon & Company, 593 by Thayer & Brother, 496 by Bailey, Bailey & Aims, 412 by Charles Henry Fisher, 315 by John M. Forbes, 286 by Neal & Co., 275 by Chanley & Whelen, 224 by W. S. Wilson, 205 by William Callwell, 204 by William R. Lejeé, 191 by Spofford, Tileston & Co., 183 by F. Peabody, 181 by Eliot Hasket Derby, 160 by each of David A. Neal and B. R. Nichols, 152 by Gilbert & Sons, 151 by H. Callwell, and 144 by Gilbert, Cobb & Co. After the Neal Report (1849), Neal increased his P&R stock position. By June 1850 he owned 1,950 shares, and 2,742 shares by October 1850. Neal invested jointly with Horatio Hollis Hunnewell, a Boston financier: Johnson & Supple (1967), at 53, citing Neal's journal.

Figures for the 1839/40~1850 bonds are from P&R AR (1848), at 9, P&R AR (1849), at 19, P&R AR (1849), at 11, and P&R AR (1850), at19. Figures for the 1849~1870 bonds are from P&R AR (1849), at 19, and P&R AR (1850), at 19. P&R AR (1850), at 19, records conversion of $56,000 of 1839/40~1850 bonds into 1849~1870 bonds by November 30, 1849. For the absence of both 1839~40 and 1839~1850 bonds by 1850, see P&R AR (1850), at 23.

[13] Despite a net reduction in outstandings, November 30, 1848 statements showed increases: 1839/40~1850 ($269,100); 1843~1860 ($82,800); and 1844~1860 ($93,000). These were attributable to cash shortages, payment of L&C and bonds due by 1848, economic depression in the U.S. and U.K, and bond conversions. Convertibility of the 1843~1860 bonds occurred between November 30, 1848 and November 30, 1852. See Neal Report (1849), at 23 and 15. For modification of the 1843~1860 bonds, compare P&R AR (1848), at 11, and P&R AR (1853), at 22 (annual reports in intervening years do not identify convertibility).

## Endnotes: Chapter Thirty

[1] For the textile industry experience, see Chapter Three, endnote 2 and related text.

[2] Provision of credit and financing by Boston's cotton mercantile houses to support textile production by New England manufactories is analogous. See Davis (1960), especially at 7.

[3] For his 1839 restructuring, Baldwin turned to Stephen Vail of Speedwell Iron Works, his supplier of iron forgings. Vail provided Baldwin approximately $20,000 as well as support from an entity with a reputation for credit-worthiness. Vail's son, George, became the owner of an approximately one-third interest in Baldwin's reorganized firm and moved to Philadelphia to join the firm's management. Brown (1995), at 10 and footnote 30 at 256.

Ross Winans, with George Gillingham, was given and gave precedence for work of the Baltimore & Ohio as well as rent-free use of the grounds, buildings, and fixed machinery at the Mt. Clare works, which allowed Winans to build engines below market price. Bell (1912), at 21-2, and Sagle (1947), at 10. Pangborn (1894) (pages are not numbered) mentions only the precedence given to the Baltimore & Ohio work.

The system of supplier credit throughout industries related to U.S. internal improvements was pervasive in 1839, as discussed in Gerstner (1839) regarding a car builder.

[4] Gibb (1950), at 46-7.

[5] See Chapter One, endnote 1, and related text.

[6] The first volume of this study is McMillen (2022-1).

[7] Trusts, rather than the P&R, "owned" many of the cars and locomotives, although the P&R listed all as assets in its financial reports. The P&R had rights of use and, if full payment was made, of ownership. Thus, the references to "control".

[8] See the series of letters in P&R Corr. (February 8, 9, and 28, 1842), at 302-04.

[9] The SARS-CoV-2, COVID-19 pandemic precluded study of the Baldwin contracts. Baldwin was creative in using credit, financing, and financial intermediation devices. Study of those contracts is necessary to refine observations of this study.

[10] See Norris *Manatawny* Engine Lease (1842) and P&R AR (1846), at 22. The 13.4-ton *America* was hired and delivered at the same time. The P&R eventually purchased both engines.

[11] For these transactions, see McMillen (2022-M).

[12] PR-BW Engines Contract (1842). For the outstanding principal amounts of the 1841~1845 and 1842~1847 bonds, P&R AR (1843), at 11, and P&R AR (1844), at 8, respectively.

[13] See P&R AR (1846), Statement E, at 22.

[14] P&R Payment Notice (August 27, 1844) and BW Note Receipt (1844), respectively.

[15] The PR-BW Engines Contract (1844) and the PR-BW Engines Contract (1845) and payment arrangements for each are discussed in McMillen (2022-2), at 39-48. A more complete description of the flexible beam locomotive model submitted with Baldwin's patent application is available on the web site of the National Museum of American History, Behring Center, at https://americanhistory.si.edu/collections/search/object/nmah_843732.

[16] Information on the *Atlantic* and the *Philadelphia* is from PR-Norris Engines Contract (1844), which includes an acceptance certification for the *Atlantic*, and P&R AR (1846), Statement E, at 22. The *Richmond* (*Atlantic*) was delivered in August and the *Philadelphia* in October.

[17] PR-BW Engines Contract (1844). For Baldwin credit and purchase arrangements, Brown (1995), at 12-3. Exactly which Michigan bonds were provided is unknown.

[18] The two engines added by February 22, 1845 amendment to the PR-BW Engines Contract (1845) were put on the road in June.

[19] The 27-ton engines were the *Hercules* and the *Atlas*. The 22.4-ton engines and delivery dates were: April: he *Texas*, the *Alabama*, the *Kentucky*, and the *Indiana*; May: the *Princeton*, the *Amazon*, the *Empire*, and the *Warrior*; June: the *Washington*, the *Pocahontas*, the *Alleghany*, and the *Georgetown*; and July: and the *Montezuma*, the *Florida*, and the *Rio Grande*. The 22.4-ton engines delivered under the Engines Contract (1846) had a cab with a roof and side curtains rather than wooden sides with windows.

[20] For the delivery dates, PR-BW Account Ledger (1844) and P&R AR (1847), at 30. The PR-BW Account Ledger (1844) lists accrued interest and engine payments for all engines to July 11, 1844. The material in the next two paragraphs of text is from the PR-BW Account Ledger.

## Endnotes: Chapter Thirty-One

[1] McMillen (2022-2) explores this transaction.

[2] For boat loan trusts and The Railroad Car Trust of Philadelphia, McMillen (2023-4).

[3] For Edwards to Dorr, P&R Corr. (February 28, 1842), at 303..

[4] Portions of the LC&N structure may have been borrowed from the Delaware and Hudson Canal Company (see the next paragraph). For the cholera pandemic and Lehigh C&N structure McMillen (2022-1), at 77-110, and sources cited. The Lehigh C&N board minutes are for the January 27, 1833 meeting, MG-311 Lehigh Coal and Navigation Company Records, positive microfiche roll number 1, minutes of the Board of Managers, Indices 1865-1912 (2 vols.), from Books A-C # 143.1, at 322, personal collection of Christopher T. Baer, to whom the author is most grateful.

[5] For boat shortages, rate increases, and responses, D&HC AR (1833), at 4-6, and Luther (1881), at 47. For Delaware & Hudson performance-based credits on boat sales, Johnston (1900), at 40-4, and Lowenthal (1997), at 117-18 and 285, endnote 153, based on Johnston, with the installment purchase under "Terms of Boating for 1830.". From Johnston (42-3), it is clear the arrangement was used after (possibly in) the 1835 season.

[6] For Jackson and mill power leasing, L&C Mill Power Proposal (1826), including, at 4 (§ IV), and in the form of Indenture, at 15. The Indenture formulation is slightly different, although the gold and silver amounts do not vary. The Dorr proposal was made to the P&R and the subject of Emlen's letter to Dorr, P&R Corr. (February 9, 1842), at 285.

[7] McMillen (2023-4) discusses the Schuylkill Navigation boat loans.

[8] The Atkyns quotation is from *Attorney General v. Sands* (1668), at 563. Many summaries of the history of uses are similar. The text follows Morley (2016), Langbein, Lerner & Smith (2009), at 299-335, Pollock & Maitland (1898), especially at 228-39, Maitland (1904), and Helmholz (1979). See also Maitland (1908), especially at 222-26. This is a summary of complex and factually dependent principles and rules. See also Hansmann & Mattei (1998), especially at 439-40, Hansmann, Kraakman & Squire (2006), Langbein (1997), Langbein (1995), especially at 632-36, and Ames (1913). Representative texts addressing trusts in the period are Willis (1827), Cornish (1834), Lewin (1842), Lewin (1858), Story (1870), at §§ 960-82, Cook (1923), and Cook (1924). For Getzler on Maitland (1904), see Getzler (2016).

[9] See Helmholz (1979) regarding enforcement by ecclesiastical courts in probate jurisdiction, with ecclesiastical jurisdiction diminishing in surrender to the jurisdiction of chancery.

[10] The quotation is from Maitland (1929), at 23-4, and, at 24, comes the following:

> The term 'use' is a curious one it has, if I may say so, mistaken its own origin. You may think it is the Latin *usus*, but that is not so, it is the Latin *opus*. From remote times—in the seventh and eighth centuries in barbarous or vulgar Latin you find 'ad opus' for 'on his behalf.' … In English mouths this becomes confused with 'use.' In

record Latin it remains *ad opus*. If I hold land *ad opus Johannis*, this of course means that I hold it on behalf of John.

[11] Morley (2016) presents the history, rationale, benefits, burdens, and prevalence of the common law trust in the nineteenth century business context. See also Langbein (1997), Sitkoff (2005), Silberstein-Loeb (2015), and Mahoney (2000). Works relevant to trusts in equipment financings in the late nineteenth and early twentieth centuries are Neal (1971) and Andrews (1923). For the union of law and equity in the nineteenth century, Funk (2020), Ames (1913), Am. Law Reg. (1860-I), Am. Law Reg. (1860-II), and Am. Law Reg. (1860-III).

Corporate charters were granted in the U.S., as in England, by the cumbersome and politically susceptible process of special incorporation laws. General incorporation statutes allowing corporate formation by any person officially filing the required documents were introduced in the U.S. mostly between 1836 and 1852, when half the states had adopted these laws. By 1875 approximately 90% of the states had passed general incorporation laws. Nonetheless, incorporation remained a protracted process. Special incorporation co-existed. See Hamill (1999), including times of passage of, and protracted formation under, general incorporation laws, Dodd (1954), at 368, and Hurst (1970), especially at 7-15.

Nor was incorporation necessarily appealing for implementation of business objectives. Incorporation was accompanied by restrictions regarding total number of shares, par values of shares, permissible activities, conduct of operations, asset ownership, dividend payment percentages, voting, capitalization, and more. As the charters of many of the entities in this study attest, shareholders often retained personal liability for entity actions in any case: limited liability had not yet seen full bloom. Statistics on the reluctance to convert from the trust to the corporate form after general availability in England in 1844 are in Morley (2016), at 2147 and 2160, including notes 94 through 96.

Most scholarship ascribes the leading role in business development to the corporation. Among many examples are Dodd (1954), Chandler (1977), Seavoy (1982), Harris (2000), Blair (2003), Micklethwait & Wooldridge (2003), and Wright (2013). Others have considered the comparative advantages and disadvantages of partnerships and corporations in the nineteenth century. See, for example, Lamoreaux (1998).

[12] Langbein, Lerner & Smith (2009), at 209-10, under "The Living Law". The quotation from is from Pound (1922), at 236. For histories of duties: Getzler (2006), for loyalty, Getzler (2002), for care (prudence), and Getzler (2019), Frankel (2011), Ribstein (2011), and Alces (2014), for fiduciary obligations.

[13] The quotation is from Maitland (1929), at 98, and, for emphasis, has been reformatted from a continuous stream in the original to individual lines. To the same effect, Willis (1827), at 121-26 and 167-200. For an argument in favor of "trust protectors" in the present time, when powers and discretions of trustees are expansive, consider Ausness (2010). For fiduciary principles in historical English law, Getzler (2019). For a comparison of fiduciary responsibilities, as of 2019, under agency law and trust law, see DeMott (2019) and Sitkoff (2019). A taxonomy of private contemporary U.S. trust law is Morley & Sitkoff (2020).

[14] Other benefits of the common law trust were realized in more developed and sophisticated equipment financing structures, especially those selling tradable beneficial interests. They included equity shielding, capital lock-in, and tradable interests, among others. See Morley (2016), at 2166: "Every aspect of the corporate form that legal theorists and historians have identified as key to the corporate form's success also existed in the trust." For entity shielding, Hansmann, Kraakman & Squire (2006), at 393-98, Hansmann & Kraakman (2000), and in the nineteenth century trust context, Morley (2016), especially at 2167-72. For capital lock-in, Blair (2003) and Morley (2016), especially at 2148 and 2167-72.

[15] See McMillen (2022-2), at 23.

[16] See Story (1851), with respect to agency principles at the time, and Story (1846) and Story (1870), with respect to equitable principles at the time.

[17] Gibb (1950), at 96-7, opines that by 1842 L&C "had failed to use only one major device from among those which later became important." While true as to the general concept of the trust, refinements in trust structures after the L&C-P&R transactions were profound. The bailment for hire (lease) was not used by L&C. The lease-purchase arrangement, as embodied in the Schuylkill Navigation boat loans and the Philadelphia Plan and their respective variants, became a staple element of the structure.