THE EXPANDING HORIZONS OF THE SCHUYLKILL NAVIGATION COMPANY, 1815-1870

BY WALTER S. SANDERLIN*

A T A Research Conference of the Pennsylvania Historical and Museum Commission and the Pennsylvania Historical Association in Harrisburg in April, 1968, Professor George R. Taylor called for renewed efforts in the search for materials relating to the early industrial development of eastern Pennsylvania. The importance of transportation facilities in promoting and facilitating the growth of industry suggests that the study of internal improvements is an appropriate corollary to Dr. Taylor's summons. An examination of the records of the Schuylkill Navigation Company, on deposit in the collections of the Pennsylvania Historical and Museum Commission, reveals a rich storehouse of information concerning the economic history of the area.

The history of the Schuylkill Navigation, in fact, offers excellent opportunities for several studies, of which the economic development of Philadelphia and the Schuylkill valley is of paramount interest. Chester L. Jones has provided an introduction in The Economic History of the Anthracite-Tidewater Canals, but the subject is broader and more complex than the emergence of the coal trade. The economic diversification of the entire region, the growth and metamorphosis of the valley towns, the changes in property values and tax revenues are merely a few of the topics which come to mind. More difficult to assess is the overall influence

*The author is a Professor of History at Washington and Jefferson College.

1 Cited hereafter as Schuylkill Papers. These include pamphlets and copies of acts of the legislature, as well as Directors Minute Books (DMB), Rough Minutes of Directors Meetings (RM), Letter Books (LB), Minutes of Stockholders Meetings (SM), and Annual Reports (AR)—some printed, some entered in SM. The minute books are not paged and must be used by reference to the appropriate meeting date.

2 (University of Pennsylvania Series in Political Economy and Public Law, No. 22, Philadelphia, 1908.) Jones says that freight rates for coal dropped to less than a third of previous levels in 1824. Jones, Economic History, 128, quoting Niles Register, XXVII (December 25, 1824), 258.
which the existence and operation of the Schuylkill Navigation had on these activities. The specific role of the waterway in the expansion of Philadelphia itself is as imprecise as it is important. Comparative studies involving similar improvement projects in the United States is another potentially rewarding area for research, and again Jones' volume has suggested some of the possibilities present for this type of approach. Many other canals, outside the anthracite region, might be profitably examined in this connection.

Among the opportunities presented by the preservation of a fairly complete set of company records is the study of the expanding horizons of the management of a nineteenth century transportation facility. For it is manifest that the concept of their work which the officers had when they undertook their improvement was far more modest than the increasingly complicated activities in which they became engaged before the eventual lease to the Reading Railway Company in 1870. In this continuing enlargement of functions is mirrored the changing character of the American economy, of business enterprise, and of transportation in the nineteenth century. The experiences of the Schuylkill Navigation Company may be divided, for this purpose, into four categories: construction and operation; finances; relations with state and local governments; and the growth of canal-related activities.

By 1815 industry in the United States had made considerable progress, as a result of the Napoleonic wars, and would continue to develop under the protective tariff of the American system. Great hopes were also held for the expansion of domestic commerce because of the growing requirements of industry and the rapid settling of the western lands. The political and economic climate in the early national period encouraged the rise of internal transportation agencies—waterways, turnpikes, and eventually railways. In 1815 the river improvement age was growing to a close in the east; this relatively makeshift type of work which had been adequate in the 1790's no longer sufficed. These earlier efforts, however, encouraged eager promoters to believe that there was sufficient knowledge and experience available to make possible a considerable expansion of improved waterways. Although canal engineering in the United States was still quite primitive there
had been considerable activity in Europe, especially in England, from which the relatively few American engineers could learn. It is apparent that some Americans visited English waterways or read pamphlets on canal construction. But it is equally obvious that many relied on trial and error, or merely adapted basic engineering principles to the particular requirements of canal building.

This then was the immediate background of the Schuylkill Navigation. Technologically it lay between the river improvement and the canal stages of inland water transportation (and its experiences reflected both the advantages and the disadvantages of each stage). Historically and geographically the waterway was in the heart of an early American industrial region. The major necessary ingredients for the success of the undertaking were present: a mood of optimism (warranted or not); the availability of capital and markets in Philadelphia; a rich agricultural area with a reasonable expectation of substantial economic development, the known existence of large quantities of coal and timber in the Schuylkill watershed; the burgeoning demand for both, as construc-
tion and as heating materials, in the growing American cities; and
the possibility of important connections with the west by way of
the Susquehanna and Juniata valleys. Economically the waterway
was only one of many small internal improvement projects under-
taken about the same time. Indeed the strictly limited objectives
and dimensions of the Schuylkill Navigation may have been a
distinct advantage. It is a matter of historical record that both
capital and enthusiasm for, not to say confidence in, large scale
projects were conspicuously absent. The Erie Canal (1817-1825)
is the obvious exception; other major efforts were indifferently
supported, financially, until the success of the Erie was manifest.

Although trade with the west, as a supplement to the coal
traffic, was a continuing theme in the history of the navigation,
it was distinctly muted. From the beginning the principal goal of
the project was the exploitation of the vast natural resources in
the upper Schuylkill basin. The river itself was an obvious route
for commerce, the potential of which had been recognized from
the time of the earliest English settlements in Pennsylvania. The
falls and rapids of the river made some artificial improvement of
the natural waterway inevitable. The sufficiency of the water
supply on the upper reaches of the stream and the absence of a
summit level to be overcome enhanced the prospects for the
successful development of this trade route. The only major prob-
lems confronting the promoters of the navigation in 1815 seemed
to be the financing of the work and the assembling of an adequate
labor force. As matters developed, the resourcefulness of the
managers of the enterprise would be sorely tested by these two
necessities.

In 1815, investment in trade and transportation was generally
considered to be a conservative and usually profitable use of capital
—certainly entailing far less risk than speculating in the new
factories; and the chartering of a joint stock company was a

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Alvin F. Harlow, *Old Towpaths* (New York, 1926), 7, quoting an
announcement by William Penn in 1690. Harlow also asserts that the first
survey for a canal in America was made in 1762 by David Rittenhouse and
Dr. William Smith, covering the route from the Schuylkill at Reading to
the Susquehanna at Middleton. On Benjamin Franklin's interest, see Report
to the Board of Managers of the Schuylkill Navigation Company on the
Improvement of the Schuylkill Navigation, by Solomon W. Roberts, Civil
Engineer (Philadelphia, 1845), 3, in Schuylkill Papers. Cited hereafter
as Roberts Report.
logical and customary method to obtain the relatively large sums
required. The incorporation procedure, however, brought the
Schuylkill Navigation into contact with the Pennsylvania As-
sembley and opened the door to political influence. An involvement
with state and local governments was inevitable for many reasons:
to obtain permission to levy and collect tolls on hitherto free river
traffic; to control the water flow in the river, infringing the
riparian rights of property owners; and to condemn land needed
for the construction of the improvements contemplated. There
would also be, in all probability, some regulation of the waterway
as an enterprise traditionally vested with the public interest. For
an undertaking that originally wanted merely to make available
an improved channel for local trade, the Schuylkill Navigation
quickly found itself engaged in political activities at a variety of
state and local levels. Repeated recourse to the legislature for
relief, exemptions, and other forms of special treatment provided
the opportunity for continuing government interference in com-
pany affairs. 4

The life of the Schuylkill Navigation Company as an independent
enterprise began in 1815 and ended in 1870. Until the early thirties
the waterway was built and operated essentially as originally
planned. The middle period of its existence witnessed the first
major improvement of the work and the era of its greatest pros-
perity until the completion of the Reading railway in 1842. The
last phase produced another major enlargement in response to
the competition from the railroad and a brief revival of fortunes
until the navigation was formally leased to the Reading in July,
1870.

In the first period the company's range of activities was
routine: construction and financial problems were of primary

4 Act of March 8, 1815, incorporating the Schuylkill Navigation Company,
and supplements thereto, especially February 8, 1816, February 1, 1821,
March 20, 1827, March 19, 1830, April 27, 1844, February 14, 1845, April 10,
1845, April 7, 1852, April 5, 1859, March 21, 1865, all in Schuylkill Papers.
See also DMB-A, March 11, 1819; AR (1820), 3-4. Note that the annual
reports were prepared and adopted in December of each year, and presented
to the stockholders in the first week of January in the following year; hence
AR (1820) was actually published in 1821. From the beginning it was con-
sidered advisable to divide the Board of Managers between Philadelphia and
valley representatives. DMB-A, July 24, 1816. Additional references to legis-
lative matters not included in the compilation of laws mentioned above can
be found in DMB-B, May 17, 1826; AR (1835), 11; AR (1836), 15; AR
(1859), 11; RM, April 5, 1859.
importance; relations with the government followed a more or less uneventful pattern, similar to the experiences of internal improvement elsewhere. Canal-related activities were virtually non-existent, being limited to the sale of water power at dams and some speculation in real estate and town sites. As originally conceived the navigation extended 108 miles from Mill Creek to Philadelphia. It was designed to overcome a fall of about 500 feet by means of dams, pools, and sluices in the river itself and by short canals and locks around the major falls. The canal portions were to be 3 feet deep and 22 feet wide at bottom; the locks, 80 feet long and 17 feet wide, were to be built of dressed stone. One 400 foot tunnel, the first in America, was planned, and propulsion was to be by poling. Despite brave talk about diversified, two-way trade, traffic on the waterway was almost entirely downstream from the beginning, and the planning of the work anticipated this development.

Some modifications in the plans were made early in the course of construction. The Pennsylvania Assembly stipulated that the work must be carried on simultaneously on both the upper and lower stretches of the river, depriving the managers of the freedom to consider commercial, financial, and labor conditions in making their improvements. Seasonal low water led to the abandonment of the dam and sluice method for a dam and lock arrangements, which resulted in heavier land damages. The amount of the fall to be overcome by the locks proved to be twenty percent higher than government surveys had indicated (588 feet). Through contractors’ carelessness or indifference some locks and canals were smaller than planned, affecting the size and tonnage of boats operating on the waterway. As costs mounted and the patience of the managers was exhausted, inferior rough stone or timber planked locks were accepted; some had to be torn down

2 DMB-A, February 3, April 3, 19, 1819, December 2, 1820, September 1, 1821, February 18, 1822; DMB-B, February 20, September 1, 1826, June 29, 1828, April 22, November 17, December 5, 21, 1829; AR (1822), 7-8, 10.
3 Harlow, Old Towpaths, 87; AR (1837), 7; AR (1843), 16; Roberts Report, 7; Report of Edward Miller, Civil Engineer, on the Improvement of the Schuylkill Navigation (Philadelphia, 1845), 4, 5, 8, in Schuylkill Papers. Cited after as Miller Report.
4 AR (1820) in SM; AR (1825), 8; DMB-A, November 5, 1817, March 25, April 13, July 25, 1818, November 30, 1819, February 15, March 2, 1820, October 21, 1822.
and rebuilt almost immediately.\textsuperscript{8} Towpaths were needed, as poling was abandoned for horse and mule power, adding to the land requirements of the waterway. In a sense the Schuylkill Navigation was never completed: dams, locks, and aqueducts were constantly being rebuilt, strengthened, or raised.\textsuperscript{9} It is interesting to note, however, that despite all the troubles and changes over the years, there was no substantial shift in the nearly equal proportion of river improvements and artificial canals on the waterway.\textsuperscript{10} The major alteration was the construction of a canal (later largely abandoned) through the town of Reading, after heavy and persistent political and economic pressure, rather than following the river bed through this treacherous limestone region as planned.\textsuperscript{11}

All these changes, plus the normal pressures of inflation, caused repeated financial crises as costs soared. Judging by the company records, a good part of the additional expenses could be attributed to the managers' inability to secure and retain an adequate number of sufficiently skilled engineers to supervise properly the construction. Poor advice in locating and building dams, canals, aqueducts, and locks is frequently mentioned.\textsuperscript{12}

On the other hand, the problem of securing a large force of unskilled workers was more easily solved and seldom a subject of complaint in this period. The major construction of the Schuylkill Navigation preceded the internal improvements mania of the

\textsuperscript{8} DMB-A, February 4, 1823; AR (1828), 3-4; AR (1833), 4, 9.
\textsuperscript{9} DMB-B, May 10, 1827; Roberts Report, 5-6, 7.
\textsuperscript{10} AR (1825), 8; AR (1836), 15; Roberts Report, 5.
\textsuperscript{12} DMB-A, November 5, 1817; AR (1822), in SM; AR (1826), 4; Cadwalader Evans [SNC President] to Samuel Baird and Lewis Wernwag, August 19, 1816, LB-4; Evans to Wernwag, December 21, 1817, LB-16; Harper to Seneca Lapham, February 27, 1819, LB-57; Harper to Wernwag, April 8, 1819, LB-63; Evans to Thomas Oakes, May 17, 1819, LB-66; Harper to Oakes, June 28, 1819, LB-72; September 27, 1819, LB-85, May 17, 1820, LB-120; July 26, 1820, LB-142; December 30, 1820, LB-174; Harper to Ariel Cooley, May 22, 1821, LB-195; Evans to Nathan Roberts, November 12, 1823, LB-289; Harper to Beach, November 24, 1823, LB-290; Harper to Caspar W. Morris and Thomas Firth, November 12, 1824, LB-362.
1830's and thus escaped the resulting competition for laborers. The early start also enabled the waterway to minimize the effects of the great cholera outbreak of 1832 which scattered construction gangs elsewhere. 13

Despite all efforts to economize, substantial loans, including a most critical one from Stephen Girard, were necessary in 1823, 1824, and 1825, raising the total expenses from the initial estimate of $500,000 to approximately $1,880,000. After the navigation was officially opened to Pottsville in 1825 additional work was needed by 1828 to complete the work in a satisfactory manner to Mt. Carbon. 14 Only $50,000 of the original capital was subscribed by the Commonwealth of Pennsylvania—a remarkably small demand upon public funds and a tribute to the caution and business acumen of the managers. 15

Because of the early completion of the navigation the company enjoyed an extended era of prosperity without local competition. It was able to offset the inflationary pressures of the 1830's in its rate structure. Beginning in 1829 the company paid substantial dividends to its stockholders. The decision to pay dividends out of income was the result of discussions lasting several years. 16 It marked a departure from traditional business procedures, in that the company decided to allocate its income arbitrarily for fixed purposes: current expenses, interest on debts, a contingency fund for emergencies, and a dividend account. No longer would the Schuylkill Navigation try to pay off all old obligations in order to reach that ideal situation where there were only the stockholders to be considered. The debts became permanent, renewable when necessary or convertible into stock. Any improvements would be financed out of new loans or stock issues, and would be expected to generate enough additional income to carry the increased interest or dividend charges.

The middle period in the history of the Schuylkill Navigation was a relatively peaceful one. The original scope of the enterprise—to make available an improved transportation route—was still sufficient, nay, eminently profitable. As late as January 1, 1844,

13 AR (1832), 7; DMB-B, August 6, 1832.
14 DMB-A, February 4, 18, 1823; AR (1825), 10; Roberts Report, 4.
15 DMB-A, April 9, 1817. The company had hoped for a state subscription of $100,000. AR (1820), in SM.
16 DMB-B, February 17, 1827, November 30, 1829.
the annual report for 1843 reaffirmed that the navigation was simply "a public highway." Of course, the company felt obliged to try to maintain law and order along its waterway. It issued detailed rules and regulations describing what it considered to be acceptable and unacceptable behavior by users of the navigation. It sent specific instructions to company personnel to implement these rules and, in particular, to discourage the use of spirituous beverages on the waterway. But efforts of this kind were typical among canal companies during the thirties.

Relations with state and local governments generally were cordial, or at least quiescent. Recognizing political realities and, at the same time, saving money, the company agreed to share the Fairmount dam with the city of Philadelphia, which was seeking increased supplies of water for its ever-growing municipal needs. This agreement, entered into in 1819, began an uneasy and often stormy relationship which lasted until the demise of the navigation. If the enlargement of the waterway, based on the projected growth of trade and tonnage, meant a resumption of construction and financial problems, the prosperity of the navigation was not thereby threatened; business continued while the improvements were being made. The work could be carried on as circumstances dictated: pressed forward when finances and workers were available, delayed when unfavorable business or health conditions prevailed, sandwiched into the slack periods between traffic peaks. There was no pressure from local competitors to force precipitate action.

\[37^7\text{AR (1843), 13.}\]
\[38^7\text{DMB-B, June 19, 1830, July 27, 1835; AR (1935), 5. The problem persisted, of course. See RM, March 10, 1858, and October 11, 1865.}\]
Planning for the first major expansion of the Schuylkill Navigation began as early as 1829. The coal trade from the anthracite region via the Schuylkill prospered encouragingly despite the presence in the anthracite region of the Delaware and Hudson Canal and the Lehigh Coal and Navigation Company.20 By 1836, seven short railroads were being built to channel the trade from the coal regions to the Schuylkill, seeking access to markets in Philadelphia and beyond.21 As the monopoly carrier in the thirties, the navigation company did not have to encourage these works, beyond accommodating their terminal facilities along the waterway. The Union Canal was officially completed, between Reading and the Susquehanna valley, in 1829. Both the Union and the Schuyl-

20 The SNC kept a record of coal shipments by the three major carriers, 1831-1842, SNC coal traffic increased from 81,854 tons in 1831 to 209,071 in 1832 to 523,152 in 1837. SNC share of the coal trade exceeded the combined totals of its competitors after 1832. See the annual reports for the respective years.
21 DMB-B, January 19, 1830, March 16, 27, 1835; AR (1833), 14; AR (1834), 11; AR (1836), 7; AR (1837), 13-14. In 1836 the lateral railroads provided nine-tenths of the coal tonnage on the SNC. Ninety percent of the coal carried to Philadelphia on the SNC in 1837 was trans-shipped to other markets.
kill companies promptly proposed improvement programs, including the doubling of locks, in anticipation of a substantial growth in general traffic from this interchange. The construction of the Pennsylvania Main Line of Public Works led to a later decision by the Schuylkill managers to enlarge their locks to the standards of the state works (90 feet by 15 feet) to facilitate the interchange of boats with this much larger canal network.

The greater dimensions of the navigation and the increased use of its facilities led the company to review the water supplies available. Although the board showed some concern about the grants of water power already made, additional leases were signed periodically. The directors preferred to rely upon the construction of reservoirs, which began in a halting manner in the thirties, to insure a sufficiency of water for all purposes, rather than forego the income for water power leases.

The navigation's creditable interest and dividend payment record enabled the company to secure readily the necessary financing (from revenues and from loans to carry out the projected improvements). Dividends declined somewhat during the economic crisis following 1837, but the Schuylkill Navigation did not suffer as much from the inflation and deflation of the 1830's as did the Main Line of Public Works, the Chesapeake and Ohio Canal, and the grandiose projects undertaken by the states of the Old Northwest. By 1845 the total investment in the works approximated $3,900,000.

The completion of the Philadelphia and Reading railway as a

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27 DMB-B, January 14, 1826, September 6, 1833; AR (1825), 5; AR (1826), 4-5; AR (1828), 6; AR (1830), 3-4, 12; AR (1831), in SM; AR (1832), 10; AR (1833), 3-4; AR (1835), 15-16, 19-20; AR (1837), 7-8; AR (1838), 15; AR (1839), 9; Roberts Report, 6. See also Opinion of Counsel on Right of Schuylkill Navigation Company to Double Locks at Fair Mount (Philadelphia, 1832), in Schuylkill Papers.

28 On the concern over existing water power grants, see DMB-B, October 26, 1835, April 20, 1836; DMB-C, September 11, 1838; AR (1835), 13-14. On the new leases, see AR (1835), 21; DMB-B, May 7, 1836, March 8, August 22, 1837; DMB-C, November 1, 1838. On the early interest in reservoirs, see AR (1831) in SM; AR (1833), 7; AR (1834), 7-8; AR (1835), 6; DMB-B, October 3, 1831; DMB-C, June 18, 1839, November 8, 1841.

24 AR (1835), 12; The Position and Prospects of the Schuylkill Navigation Company, Charles Ellet, Jr., Civil Engineer (Philadelphia, 1845), 6; in Schuylkill Papers. Cited hereafter as Ellet Report. $430,000 of the $1,696,545 spent on improvements came from revenues.

25 AR (1842), 7-8, 9-11; AR (1843), 10-11; Ellet Report, 6.
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competitor for the coal trade, in 1842, ushered in an entirely
different period in the history of the Schuylkill waterway. In a
bitter struggle for a share, if not a monopoly, of the coal trade,
the railroad directors promptly embarked upon a ruthless rate-
cutting campaign which decimated profits and eliminated dividends
at a time when prosperity was returning to the country generally. The
superior facilities which the Reading could offer for the
through transportation of coal forced the managers of the naviga-
tion company to re-examine their own works. A second major
improvement program to enlarge the capacity of the waterway and
to improve its competitive position was pushed through at a cost
of approximately $4,850,000.

This undertaking may have been inevitable, but it came at a most
inopportune time; the rate war destroyed the excellent financial
record of the company at a time when doubts were rising as to
the future profitableness of the waterway. The urgency with which
the improvements were completed in the 1840's was almost disastrous. Virtually all trade on the line ceased in 1846, as the
waterway was completely overhauled in what amounted to a
"crash" program. The general tightness of credit at the end
of the Mexican War caught the Schuylkill Navigation with
$1,800,000 in bills outstanding; these were ultimately paid by
selling $3,600,000 six percent loan certificates at one-half face
value. Under the circumstances an accommodation with the rail-
road was imperative. This traffic agreement, plus the inflation
following the Gold Rush and legislative authority for a financial
reorganization in 1852, enabled the company to recover somewhat
before the Civil War. In 1859 the Schuylkill Navigation expe-
rienced the first of eight years in which its gross annual income exceeded $1,000,000.

More significant, for the purposes of this study, is the fact that
the competition from the railway encouraged the managers of the
waterway to expand their ideas concerning the proper scope of
their transportation facility and to act accordingly. Soon after

Ellet Report, 9-10; AR (1843), 8; AR (1844), 5; AR (1846), 21.
SM, January 6, 1845; SM, January 3, 1848.
AR (1846), 4-9.
DBM-D, November 12, 15, December 13, 14, 1847; AR (1847), 8-10; AR (1848), 3-4.
AR (1849), 8-9, 12.
the official opening of the navigation in 1825, the officers had
been concerned about promoting full utilization of its works. Pro-
hibited by law from direct action, company officials sought indi-
vidually to increase trade on the Schuylkill. In the 1840's and
1850's the Schuylkill Navigation Company considerably expanded
its corporate role in transportation. Under a continuing program
the managers acquired larger and better boats, leased them to
boatmen, and attempted thereby to regulate freight rates. In 1859
the company went all the way and successfully requested the
Assembly to amend its charter to permit it to operate a trans-
portation line on its waterway. The managers built or leased land-
ings, docks, and wharves, and operated them for the convenience
of the coal trade, both at the head of navigation and in Phila-
delphia. The board belatedly recognized the full gravity of the
water supply problem. Numerous reservoirs were constructed and
maintained in the mountains to provide a constant flow, for
navigation purposes, in all seasons, and efforts were made to
keep the navigation open a full ten months a year. To conserve
water supplies, company officials made frequent inspections to
prevent abuse of water-power leases, and repurchased some overly-
generous grants when possible.

The steady migration of coal mining away from the upper
reaches of the Schuylkill and the aggressive competition of the

21 DMB-C, November 27, 1841, January 21, February 18, 26, September 26,
November 21, 1845; DMB-D, January 15, 1846, January 11, October 25,
December 14, 1847, January 5, 1848; RM, January 12, March 23, 1859,
February 13, 1857; AR (1854), 11; AR (1848), 15; AR (1849), 12; AR
(1859), 11; RM, February 6, 20, 1854, September 1, November 17, 1858,
January 2, April 5, 1859, February 29, October 31, 1860, February 20, 1861,
October 22, 29, November 12, 1862, January 3, February 11, September 30,
October 10, 1863, June 8, 1864, May 27, June 24, 1868; Appeal of the Boat-
men of the Schuylkill Canal to the Coal Consumers, Coal Producers, and the
Coal Land Owners (Port Carbon, 1864), 4, in Schuylkill Papers. Cited
hereafter as Appeal of Boatmen. See also An Act Incorporating the Schuyl-
kill Valley Navigation Company [and supplements] (Pottsville, 1844), in
Schuylkill Papers. This company, organized under an act of March 20, 1827,
included many SNC managers on its board of directors.
22 DMB-D, November 7, 1846, January 31, February 18, 1848; AR (1849),
10; RM, January 17, 1853, February 20, November 20, 1854, October 27,
1855, March 7, 21, December 26, 1860, March 5, 1862.
23 DMB-D, February 16, April 6, July 27, 30, August 27, December 24,
1846, February 7, 1848, October 1, 1849, February 18, 1850; RM, May 16,
1853, December 18, 1854, December 15, 1856, May 4, 1859; AR (1848), 14;
AR (1852), 13; AR (1854), 18.
24 AR (1844), 4; DMB-C, February 4, 1844; RM, May 15, 1854, May
4, 1859.
Reading forced the navigation company to re-assess its relations with the lateral railroads, which it had taken for granted in the thirties, and to assist in every way possible the fortunes and independence of these critically valuable connections between the waterway and the active mines. The Schuylkill even built and serviced railroad cars to carry the coal to the navigation. The Mine Hill and Schuylkill Haven Railroad, which carried the bulk of the navigation's remaining coal trade, was so important that the managers, faced with a take-over attempt by the Reading, agreed to assume full responsibility for the short line railroad in 1862. The navigation company proved to be unable to carry the added financial burden, and in 1864 it had to relinquish control of the Mine Hill railroad to the Reading. The saturation of the Philadelphia market and the decline in coal prices spurred the managers to encourage the through transportation of coal to New York City. The company built the boats, provided cash incentives for boatmen, and even rented a wharf and opened an office in New York City to promote the sale of Pennsylvania anthracite. The board also provided steam tugs to tow coal boats from the Schuylkill to the Delaware River. Under the pressure of competition the Schuylkill Navigation learned to emulate the Reading, offering rebates and other special terms in arranging contracts with individual mining companies for the transportation of their coal.

Under the impact of changing business conditions the personnel and the interests of the Schuylkill Navigation Company changed. Many of these related activities required legislative authorization, which intensified the political involvement of the waterway. Company officials spent an increasing amount of their time in lobbying activities, protecting and advancing the fortunes of the coal and

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52 DMB-C, March 18, June 24, 1845; DMB-D, March 4, June 7, 1847, January 31, 1848, April 30, 1849; RM, December 8, 1858, December 28, 1859, February 8, 1860, December 9, 1863, September 28, 1864, March 22, 1865; AR (1845), 3; AR (1849), 10; AR (1861), 15-16.
53 RM, November 27, 1861, January 2, March 19, 1862, May 18, 1864; AR (1861), 15-17, 40-44; AR (1863), 12-15, 31; AR (1864), 12, 15. There is also a separate copy of the contract of May 12, 1864, between the Reading and the SNC, in the Schuylkill Papers.
54 DMB-C, June 7, 1841; DMB-D, March 26, 1846, January 31, 1848; AR (1852), 11-12; RM, July 19, 1852, January 12, 1859, April 18, July 11, 1860, March 22, 1865, March 13, 1867, March 11, November 11, 1868.
55 DMB-C, April 8, May 21, 1845; DMB-D, March 22, April 22, June 7, November 22, 1847, April 19, 23, 1851; AR (1845), 6.
transportation enterprises. The importance of uninterrupted operation of the navigation as a public highway embroiled the company in controversies with Sabbatarians, boatmen, its own employees, and eventually the Pennsylvania Assembly. All these canal-related activities placed heavy new demands on waterway finances. The influence of the coal companies in the selection of the officers and directors of the navigation company became more pronounced. In a continuing effort to diversify its traffic and to diminish its dependence on the coal trade, the board of managers entered into various commercial and financial arrangements with the Union Canal Company, including loans and stock advances. The board seemed determined to prevent commercial opportunities from slipping through its hands, even to the extent of long-term commitments on a scale not anticipated in the beginning. Concern over the proportion of the anthracite trade obtained by the Delaware and Hudson and the Lehigh Navigation now took on new dimensions as the navigation company joined with others to bring stability of prices, supplies, and markets to the anthracite region. The late fifties were fairly prosperous years, and the Schuylkill Navigation seemed to be well on the way to accomplishing the transition from being simply an improved waterway available for trade to becoming a complex and competitive transportation system.

The rapidity of the collapse of the navigation company as an independent enterprise, therefore, is all the more remarkable. It is true that, even in the 1850's, railroads were proving to be more adaptable in accommodating their facilities to changes in market and supply situations. This was apparent in the experiences of the Schuylkill Navigation with the lateral railroads. The railway also offered year-round service, which the waterway could not provide in Philadelphia's latitude, in a region whose economic requirements could no longer be met by a seasonal transportation

20 RM, April 30, May 7, 1862, April 16, 1864, June 28, 1865, June 27, 1866.
21 DMB-B, April 21, 1832, February 18, 1833; AR (1833), 4; DMB-C, February 19, 1838, June 30, 1841, June 5, July 26, August 19, September 16, 1843; March 20, 25, 27, 1844; RM, June 19, 1854.
22 DMB-D, March 4, 1850; RM, July 19, 1852, January 5, May 10, June 20, 1853; December 3, 1855, January 9, 1856, March 9, 1864, September 13, 1865, January 26, 1870; AR (1853), 12; AR (1856), 8.
23 RM, April 16, 23, 1862, April 21, May 13, 1863, March 23, April 13, May 11, 18, 1864, February 14, March 14, April 25, 1866.
agency. Most significant, perhaps, and curiously most often overlooked by canalers, generally, were the steady and impressive technological improvements in virtually all aspects of rail transportation. By 1850 railroads could compete effectively with canals even in the shipment of bulk materials.

But there is the positive decline of the navigation to consider as well. The future prospects of the Schuylkill Navigation had become increasingly clouded as the years passed. The failure to develop alternatives to the coal trade reduced the company to a position of utter dependence on that business. The waterway and the city of Philadelphia were obviously on a collision course over the use of water from the Fairmount Dam. The navigation required greater amounts of water to pass the heavier boats using its enlarged works; Philadelphia consumed substantial quantities of water to fill the needs of its growing population and industry.43 Increasingly bitter labor strife, in a period of notoriously poor labor-management relations, was reflected in boatmen's strikes in 1856, 1858, 1862, and 1863.44 The changeable natural environment in the Schuylkill watershed—irregular weather patterns, droughts, and freshets, deforestation, silting of stream beds—emphasized the vulnerability of the navigation. Two devastating floods in 1850 demonstrated the exposed and precarious character of the Schuylkill's works.45 There was also a growing concern about the coal dirt filling the upper stretches of the navigation in the 1850's.46 This development boded ill for the future of the waterway as all attempts to counteract this interference with traffic proved fruitless. Relentless nature provided one of the final blows to the navigation in 1870.

Behind all these problems, however, loomed the strained financial condition of the company. Burdened with a bewildering number of loans and mortgages, the Schuylkill Navigation was entangled in an intricate web of long-term debts, notes for current arrears, drafts to cover emergency repairs, and depressed money markets.

43 RM, December 8, 1858, September 7, 14, 21, 28, 1859, October 1, 8, 862, October 11, November 8, 1865, August 11, 25, September 15, October 8, 27, November 11, 1869, February 25, 1870.
44 AR (1856), 12; AR (1858), 3; RM, July 16, 23, 1862, July 22, 1863.
45 AR (1850), 3, 6-9.
46 DMB-D, March 4, 1850; RM, April 4, May 8, 15, 1854, January 21, June 2, September 15, 1856, June 16, 1860, September 4, 1861, October 11, 1863, December 11, 1867.
In the 1850's the managers reverted to the more conservative policy of using available funds from income to pay all expenses of whatever nature, thus avoiding further loans while the prices of the Schuylkill's outstanding securities were low. Stock dividends, regularly paid, helped restore the reputation of the navigation without consuming its cash reserves. In 1860, however, the stockholders expressed a strong preference for the payment of dividends over the accumulation of cash reserves to meet all contingencies. The managers bowed to this demand, and the financial future of the enterprise dimmed as all limitations on debts were removed. The legislative relief, which had enabled the company to reorganize its staggering obligations and to expand its activities in order to provide a fairly complete range of transportation services, came too late. Developments in technology and the economy had exceeded the capacity of the waterway to adapt effectively to the migration of the mines and the competition of the railway.

Although Philadelphia and the Schuylkill valley were relatively remote from the battlegrounds, the Civil War had a surprisingly severe adverse effect on the waterway's fortunes. Boats became scarce because of government requisitions, business conditions were depressed in 1861-1862, federal and local taxes increased, and the managers insisted that inflation in 1864-1865 seriously restricted the anticipated growth of trade on the navigation.

Financial problems, vastly more complex than originally contemplated, once again began to catch up with the company despite almost a decade of million dollar gross income years, as increases in expenses during the latter years of the war exceeded increases in revenue. The Reading Railway secured control of the lateral railroads which carried the coal to the navigation. Labor unrest and agitation, in the minefields and on the transportation lines, disrupted trade and eliminated profits. The post-war recession badly hurt the company, in contrast to the relatively mild and passing effect of the panic of 1837 and the following depression. The reasons for this were the heavier financial obligations of the Schuylkill Navigation, the presence of organized labor as a factor

47 AR (1856), 12-15; AR (1860), 14-16; SM in AR (1860), 39-41.
48 RM, July 31, September 4, 11, 1861, March 5, May 7, 21, 28, August 27, 1862, March 11, September 9, 1863, October 29, 1864; AR (1861), 3-4, 17-18; AR (1862), 5, 11; AR (1864), 13.
49 Appeal of Boatmen, 3; RM, September 30, 1863, April 16, 1864.
in transportation costs, and, above all, the existence of the Reading railroad as a dangerous competitor.

Strikes, drought, flood, and the city of Philadelphia combined to bring financial ruin to the waterway in 1870 and to force it into the hands of the railway. After the lease of the Schuylkill Navigation Company to the Philadelphia and Reading Railroad Company, the river improvements were used almost exclusively to supplement rail transportation in periods of peak coal shipments. This secondary role continued until the railroad developed facilities adequate to carry the trade offered. The waterway was then allowed to decay until it ceased to be either a potential threat or a viable transportation agency, and was gradually abandoned.

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AR (1865), 10; AR (1866), 9; AR (1867), 9-10; AR (1868), 10-12; AR (1869), 6; AR (1870), 4; RM, May 25, June 30, 1870; SM, June 20, 1870, in AR (1870), 5.

Material relating to the history of the navigation after 1870 is also included in the Schuylkill Papers. Further information is available in other depositories along the route of the waterway, such as the Historical Society of Berks County and the Reading Public Library.