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## THE DEVELOPMENT OF AMERICAN SHIP-ACCOUNTING PRACTICES TO 1900: A COMPARATIVE STUDY OF THREE VESSELS

*Abstract:* Accounting has always been utilitarian in nature. It adapts to the changes in the business environment by meeting the need for new types of information. The change in waterborne transportation in the U.S. during the 19th century provides an example of such an environmental change that led to a need for accounting adaptation. With the advent of the steamboat, old accounting methods were modified and new ones created to meet the changes in the business environment. In the process, a standardized ship-accounting model was developed. The model can be seen in the accounting records of three ships that sailed at the beginning of the 20th century.

### INTRODUCTION

In 1903, the prominent English accounting author, Lawrence Dicksee [1976b, p. 3], wrote: "One of the most ancient (and therefore one of the simplest) modes of transacting business is through the agency of the ship." The early American ship-accounting practices were, for the most part, this simple agency model in which the value of the ship and cargo were combined to act as a separate business transaction for each voyage. The development of new accounting procedures to fit the changing nature of ships and the shipping business in the U.S. shows the adaptive nature of the accounting process as the 19th century progressed.

This need for a new ship-accounting model came with the advent of the steamboat in 1807. Robert Fulton's *Clermont* showed the world that steam could be used to travel faster on the waterways of the American continent. Faster travel led to

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changes in the accounting practices of the shipping business. Steamships began to make the aforementioned ship-agency accounting practice obsolete, especially for American riverboat traffic. A ship owner could now make numerous trips with his ship in the same period it took the old sailing ships to complete one tour to some distant shore. The accounting relationship between the business transaction and the ship could now be severed. Ship accounting had to adapt to the changes occurring in the industry. The questions involved in this transition are simple. First, did a "standard" model of accounting develop for American shipping during the 19th century? Second, was the model used by the shipping companies accurately presented in this study?

In an attempt to answer the questions posed above, this paper compares the accounting practices of three ships that sailed and traded at the turn of the 20th century. The first ship studied was a Great Lakes steamer named the *Adella Shores*. The *Shores* was part of a family-owned partnership that shipped salt between Michigan and Chicago aboard a small fleet of lake vessels. Next, the records of the riverboat or packet named the *Betsy Ann* were reviewed. This ship was operated out of Natchez, Mississippi, navigated the lower Mississippi River, and was locally owned by a family corporation with multiple business interests. Finally, the records of the *Richard A. Bingham*, a schooner that plied the lumber trade in the Caribbean, were studied. The schooner was personally owned by the manager of a lumber company in Pensacola, Florida.

The varied modes of ownership of the three ships mirrored that of the shipping industry in 1903. The book, *Workers of the Nation* [Willetts, 1903, pp. 569-581], said that there were 3,100 steamers, like the *Shores*, on the Great Lakes at this time. Of this number, only 600 were operated as part of a fleet business. The remainder of the ships were presumably individually owned and operated. Next, at this point in history, there were only about 189 steamers, like the *Betsy Ann*, left on the Mississippi River. Willetts indicated most of these were locally owned and operated. Finally, the fleet of American-flagged, ocean-going schooners, like the *Bingham*, numbered greater than 16,000 in 1903. Willetts did not discuss an ownership mode for these vessels.

As a final note of introduction, the three ships all sailed before the U.S. Interstate Commerce Commission (ICC) issued orders in 1910 to begin an effort to regulate the waterborne traffic in the U.S. Regulations issued by the ICC focused on

accounting practices for depreciation and maintenance, as well as balance sheet classifications for waterborne carriers affiliated with railroads [ICC, 1910, 1912]. The fact that these standards did not apply to any of the three ships reviewed for this study allows for a comparison of their records with contemporary ship-accounting practices.

### THE SHIPS AND THEIR OWNERS

*The Great Lakes Shipper — The Steamer Adella Shores*<sup>1</sup>: Samuel Neff and Sons Shipping Company, the owner of the steamer *Adella Shores*, was a family partnership comprised of the father, Captain Samuel Neff, and his two sons, Captain Sidney Neff and Charles Neff. The Milwaukee-based shipping company began operations in the late 1880s when Samuel Neff moved from Oshkosh to Milwaukee. His two sons joined him in the business in the early 1890s. Sidney acted as a ship captain while Charles was responsible for the management of the business in Milwaukee. The Neff fleet of 1900 consisted of three wooden-hulled steamships — the *Adella Shores*, the *Minnie Kelton*, and the *Edwin Tice*. These three ships acted as the core of their small Great Lakes fleet. In addition, the Neffs purchased two barges, the *Marion* and the *O. J. Hale*, for the 1900 shipping season. The auxiliary log of the *O. J. Hale* noted that she had sailed with the *Adella Shores* between Chicago, Illinois and Manistee, Michigan. The ships were primarily used to transport salt from central Michigan to the port of Chicago for the National Salt Company, the forerunner of the Morton Salt Company. At the turn of the 20th century, salt was an important commodity that was used in a range of products from food preservatives to industrial solvents. The ships in the Neff fleet all had long and storied histories, but only the records of the *Adella Shores* and the barge *O. J. Hale* were used for this study.

According to data from the records of the Runge Collection, the *Shores* was a wooden-hulled steam barge that was built in 1894 for the Shores Lumber Company of Ashland, Wisconsin at a cost of \$65,000. The ship was 195 feet long and displaced 734 gross tons. It was built by the Wolverine Boat

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<sup>1</sup>The history of the *Adella Shores* and the Neff Family comes from the documents of the Wisconsin Marine Historical Society and the Milwaukee County Historical Society. These records include the Neff Family Collection and the Runge Collection which is a set of ship identification records and

Company out of Gibraltar, Michigan. The shipping company of Samuel Neff and Sons purchased the ship for the 1898 shipping season for an undisclosed amount of money. At the time of the purchase, Inland Lloyds indicated that the *Shores* had a value of \$35,000. After Samuel Neff died in 1904, the company's assets were split between his two sons. Sidney Neff owned the *Shores* until his death in 1907. The *Adella Shores* was then acquired, in 1908, by E. M. Carleton of Cleveland, Ohio, and subsequently sank off Grand Island in Lake Superior on May 1, 1909. Fourteen sailors lost their lives in the accident.

The *O. J. Hale* was a wooden schooner built in Trenton, Michigan in 1874. It was 138 feet long and displaced 326 tons. When the Neffs purchased the ship for \$1,500 in October of 1900, the masts were removed and the hull used as a barge for shipping salt across Lake Michigan. No history was available after the 1900 season.

*The River Boat — The Packet Betsy Ann*<sup>2</sup>: The packet (or flat-bottomed riverboat) *Betsy Ann* was built in Dubuque, Iowa in 1899 by the Iowa Iron Works. The ship was the first steel-hulled riverboat on the Mississippi-Ohio River system. The ship was 165 feet long with a beam of 33 feet. Its builder and owner was Rufus F. Learned of Natchez, Mississippi. The boat was named after his wife, Elizabeth. Learned, one of the richest men in Mississippi, was the owner of a lumber company and plantation in southern Mississippi. He operated the *Betsy Ann* through the Natchez & Bayou Sara Packet Company. From 1899 to its sale to Frederick Way in 1921, the *Betsy Ann* ran mail, passengers, and goods between Natchez and Bayou Sara, Louisiana, about 100 miles south on the Mississippi River. From 1921 to 1931, the riverboat spent most of its time cruising the Mississippi-Ohio River system shipping cotton and ferrying passengers between Cincinnati, Ohio and Pittsburgh, Pennsylvania. The *Betsy Ann* was famous for its riverboat races in Cincinnati during the 1920s. In 1931, she was sold to John Hay of St. Louis, Missouri, who used it for towing river barges. In 1940, the *Betsy Ann* was dismantled and her hull used as a barge.

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<sup>2</sup>The history of the *Betsy Ann* was discussed by Frederick Way, Jr., and the biography of R. F. Learned was published in *Biographical and Historical Memoirs of Mississippi* [Anonymous, 1891]. An additional source is Flesher and Soroosh [1987]. The records of the *Betsy Ann* are part of the Learned Lumber Company Collection, housed in the Special Collections Department of the University of Mississippi Library.

*The Ocean Traveler — The Schooner Richard A. Bingham*<sup>3</sup>: The schooner *Richard A. Bingham* was named for the infant son of the owner-operator, Francis Frasier Bingham (F. F. for short) of Pensacola, Florida. Born in Michigan in 1872, F. F. Bingham moved to Pensacola in 1890 and began working for the Southern States Lumber Company where he eventually became one of its directors. The company harvested the pine forests of western Florida and southern Alabama. The pine lumber was then shipped from Pensacola to the east coast of the U.S. and to Europe. The lumber trade made the city of Pensacola very rich, and the port of Pensacola became second only to New Orleans for shipments from the Gulf Coast. Pensacola-based ships also made trips to Central America where the pine lumber could be bartered for heavier woods such as mahogany. It was into this market that the *Bingham* entered in 1903.

The log of the *Richard A. Bingham* indicated that the ship was chartered (fitted out) on October 21, 1902, and formally launched on January 10, 1903. According to the application to the U.S. Customs Service for a vessel license, the *Bingham* was a wooden-hulled, one-deck, three-masted schooner that was about 90 feet in length and 26 feet wide.<sup>4</sup> The ship was built by Robert H. Langford, a small shipyard in the Pensacola area. The ledger of the *Bingham* indicated that the cost of the ship totaled \$7,355. This figure included \$3,828 for construction, \$2,299 for rigging and sails, and \$1,227 for equipment.

The *Richard A. Bingham* was operated by the A. R. Bingham Shipping Company whose "owner" was Amos Reed Bingham, the father of F.F. Bingham. According to customs records, the actual owner and operator was F.F. Bingham, but his lumber company duties may not have allowed him to operate the ship directly. The *Bingham's* captain was Raymond L. Merritt who, according to the bookkeeping records, shared in the profits of each of the ship's four voyages. For her short life of 350 days and only four voyages, the *Richard A. Bingham* had a very interesting history including a reported mutiny. Three of

<sup>3</sup>The records of the construction and shipping accounts are in the Bingham Collection housed at the Special Collections Department of the Birmingham Public Library, Birmingham, Alabama. The biography of F. F. Bingham was told by Rucker and Woolsey [1991].

<sup>4</sup>The Board of Navigation for the District of Pensacola, Florida through the *Application or Owners or Master Vessel for Official Numbers a Signal Letters*, issued the *Richard A. Bingham*, I.D. number 111442 on January 23, 1903 (Na-

the four trips that the *Bingham* made were to the Central American country of Belize, which was then a small colonial outpost called British Honduras. On the fateful fourth voyage to Belize, the *Bingham* was detained by customs authorities in Frontera, Mexico. After this problem was rectified, the ship proceeded to Belize, unloaded its cargo of southern pine, and took on mahogany for the return trip. The *Richard A. Bingham* went down in a gale off the coast of Belize on December 18, 1903. The partial log entry reads as follows: "Sailed Dec. 17 from Belize to Pensacola and that night went on a coral reef outside of Belize Harbor and became a total loss. Crew saved" [Bingham Account Book, 1903, p.104].

As the historical vignettes show, each of the three ships had a storied past of adventure, romantic voyages, tragedy, and, of course, hard work. The work aspect can be seen in the related accounting records that have survived nearly a century in various archives and libraries. These records show three distinct, but similar methods of accounting for essentially the same activity — the commercial voyage of a ship. The similarities in accounting procedures between each ship show that a "standard" ship-accounting model may have developed over the century preceding the travels of the *Adella Shores*, the *Betsy Ann*, and the *Richard A. Bingham*.

### SHIP-ACCOUNTING PRACTICES

*A 19th Century Ship-Accounting Model: Comparing the accounting practices of these three ships would be a superfluous undertaking without a base-line accounting model with which to compare the ships' practices. To detect the base-line model of accounting practices available to these three ships, 16 books published before 1900 were reviewed for their presentation of ship-accounting practices. The books and relevant publication data are listed in Appendix A.*

The selection of the books came in three phases. First, a review of Bentley and Leonard's classic work, *A Bibliography of Works on Accounting by American Authors* [1970], was conducted. This work noted four specific treatises on ship accounting published in the U.S. before 1900, the authors of which were Ely Stone [1839], Francis Clark [1837], Peter Duff [1846], and James Fleming [1846]. These books were obtained and reviewed. Next, two other treatises on ship accounting, Hemmeter's [1888] and the *Improved Vessel Book* [Anonymous, 1881], were reviewed. These books were found in the Great

Lakes Historical Society Library. Finally, the remaining selections were general texts on accounting published during the 19th century. Some of that century's most prominent accounting authors, such as Bennet, Foster, and Marsh, were represented in the study.

Other books were consulted for the study, but only those books which contained a discussion of ship accounting (either ocean-going or riverboating) were used for the development of the ship-accounting model. Two examples of other books consulted for the study included one by the notable team of Bryant, Stratton, and Packard who wrote *Bryant and Stratton's National Book-keeping* [1860]. Another was A.B. Mersevey's *Book-keeping, Double Entry* [1875]. Both books discussed sending and receiving merchandise on consignment aboard a steamer, but neither discussed the method of accounting for the ship itself. Because of this omission, these books were not used to help discover the base-line, ship-accounting model.

Though the list of books consulted for this study does not purport to be an exhaustive review of all accounting books published in the 19th century, it does represent a fair sampling of the contemporary thought on ship-accounting practices. This assumption is based on three facts. The books consulted represented almost every decade of the 19th century so that a developmental pattern could be noted. Second, the books were written by prominent authors of accounting texts as listed by Bentley. Finally, in many cases, such as Bennet's *The American System of Practical Bookkeeping* [1976], the books were found to have had multiple editions published over several decades of the 19th century.

The review of the books provided 14 different principles, methods, and disclosures used by the authors to explain how ship accounting was to be completed. Table 1 shows the distribution by principles, books, and dates. The ship-accounting model provided by the book reviews gives an excellent picture of a "uniform system" of accounts for ships that was widely discussed by the accounting authors of the day and presumably represented actual practice.

The groups of accounting principles derived from the books can be categorized into two sections — *capital accounting* and *financial accounting*. Outside of the double-entry requirements, the principles outlined by the study were all specifically adapted to the shipping industry. They applied equally well to the three geographic areas sailed by the ships — the  
Published by The Lakes, 1999 and the oceans. The model that apparently



**TABLE 1**  
**A Review of Ship-Accounting Practices Noted in 19th Century Accounting Books**

ACCOUNTING PRINCIPLE	BOOK																TOTAL	%
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		
Double-entry accounting or a system that ties to double-entry ledger required	Y	Y	Y	Y		Y	Y	Y	Y	Y	Y	Y		Y	Y	Y	14	88
Purchase of ship as an asset with a ledger account	Y	Y	Y		Y		Y	Y	Y	Y		Y					9	56
Shipments and profits accounted for against the purchase price of the ship	Y	Y	Y		Y		Y	Y	Y	Y		Y	Y				10	63
Shipments, both revenues and expenses are accounted, for as individual voyages, not in total	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y				15	94
Specific listing of expenses				Y			Y		Y			Y	Y				5	32
Captain made debtor of the voyage transactions				Y				Y			Y		Y				5	32
The profits are closed to the owner's balance account after specific trip profits are determined				Y		Y				Y							3	19
A ledger account specifically for the ship						Y			Y	Y	Y	Y					4	25
Voyage Report	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	15	94
Cash Book						Y			Y	Y	Y	Y		Y	Y	Y	7	44
Fuel Book						Y			Y	Y	Y	Y		Y	Y	Y	6	38
Crew Book						Y			Y	Y	Y	Y		Y	Y	Y	7	44
Freight Book						Y			Y	Y	Y	Y		Y	Y	Y	7	44
Passage Book						Y			Y	Y	Y	Y		Y	Y	Y	5	31
TOTAL PER BOOK	5	5	5	6	4	10	6	5	6	12	10	12	4	6	8	8		
PERCENTAGE	36	36	36	43	29	71	43	36	43	86	71	86	29	43	57	57		

Note: The book number corresponds to the bibliographic listing from Appendix A.

developed for ship accounting in the 19th century suited its users well and was adapted to their special needs. The flexibility and adaptability of accounting development are clearly seen in this ship-accounting model. A third category of accounting principles will also be discussed, those comprising *management accounting*. The accounting procedures of the three ships will be compared and contrasted with this model as a base.

*Capital Accounting Principles:* The accounting procedures dictated by the "model" discussed above indicated that the physical vessel itself should be accounted for using the traditional agency model. This model takes the cost of the vessel, adds to it any revenues generated, and subtracts from it any expenses to arrive at an ending balance or value. An example of this practice (Exhibit 1) comes from Crittenden in his book, *Book-keeping by Single and Double Entry* [1850, pp. 115-122]. This example presents a fictitious purchase of the *Ship Massachusetts* for a voyage to Canton, China from 1849-1850.

**EXHIBIT 1<sup>5</sup>**

**Ledger A Example for 1849**

1849 July 2	To Thomas Harvey (Purchase)	25,000.00	1849 July 14	By Cash (Passenger fees)	1,800.00
July 12	" Cash (Provisions)	1,160.00			1,800.00
July 16	" Bills Payable (Insurance)	1,926.25			
July 16	" Cash (Port duties)	5.60			26,291.85
		<u>28,091.85</u>			
		28,091.85	1850 Feb. 28	Balance to Ledger B	28,091.85

**Ledger B Example for 1850**

1850 Mar. 1	To Balance from Ledger A	26,291.85	1850 May 9	By Cash (Freight Fees Home)	5,000.00
May 6	" Adventure to Canton	2,069.68	May 9	" Sundries	8,500.00
"	" Cash (Crew's Wages)	3,808.67	" 29	(Trading fees while in Orient)	22,500.00
June 29	" Interest	1,431.84		" Bal to New a/c	36,000.00
June 29	" Profit & Loss	2,397.96			
		<u>36,000.00</u>			
1850 July 1	----- To Bal. Fr. Old a/c	22,500.00			

<sup>5</sup>The explanation of the account entries was added by the author of this

The system discussed by Crittenden was very similar to those highlighted by other accounting authors of the day. This system may have been introduced some 30 years earlier in Bennet's classic 1820 text, *The American System of Practical Bookkeeping*. In a footnote to his *Ship Ocean* example, Bennet wrote:

The Dr. side shows the cost of the vessel and the charges attending her. The cr. what she produced by the freight or sale. If the ship is not sold, Cr. the account first *By Balance* for her present value or for the value of any share you have in her, and then *To or By Profit and Loss* on the account. If the ship is sold the account is to closed *To or By Profit and Loss* only [Bennet, 1842, p. 69].

As the exhibit shows, the owners of the ship took all the revenues and expenses directly against the value of the ship. The actual cost of the ship itself did not change but was "adjusted" for the value of the expenses or revenues related to the voyage or transaction. In fact, Crittenden actually used the terms "produced value" or "costs value" regarding money paid for or gained from the ship [Crittenden, 1850, p. 67].<sup>6</sup> The owners then closed the account to profit-or-loss after the ship returned home. It must be noted here that the consignments of goods shipped on the *Massachusetts* were accounted for separately from the ship and yielded a profit of \$11,700. Finally, in this case, the ship was not sold at the end of the "Adventure to Canton," but was instead transferred to a new account so that it could be used to take advantage of another overseas adventure. It is interesting to observe, however, that when the ship was "transferred" to another account, it was done so at a value of \$22,500, or \$2,500 less than its purchase price. This reduction shows that the ship owners understood that the ship was depreciating, but they did not set up accounts to match this process directly against the revenues produced. Dicksee [1976a, p. 90], about 40 years later, noted in his auditing book:

**SINGLE SHIP COMPANIES** almost invariably make no provision for depreciation: the auditor need not waste his time upon any effort to convince his clients of the imprudence of this course, but he should not

<sup>6</sup>The \$1,438 "interest charge" to *Ship Massachusetts* was credited to an interest and discount account which was closed to profit and loss. This charge was for a loan on the purchase of the ship.

forget to append the necessary qualification to his certificate.

The Single Ship Company that Dicksee talked about is a legal device where a single ship was incorporated into its own company. A freight agent may incorporate several ships separately during a shipping season. This multiple incorporation was done to limit his and his shareholders' liability against claims from ships that might be lost. The losses from one ship's voyage would not hurt the profits from another ship's voyage. To some extent, this process institutionalized the "voyage report" form of ship accounting [Boyce, 1995, pp. 360-378].

Though the context of Dicksee's book defines a legal device called a Single Ship Company, its application can be transferred to small shipping firms rather than larger companies like the Goodrich Transportation Line or the C. Reisse Coal Company that had large modern fleets on the Great Lakes at this time. Although both the Neffs and Bingham owned more than one ship, their accounting methods mirrored those of Dicksee's Single Ship Company regarding depreciation.

With the Neff records, capital accounting for their ships may have been dictated by Wisconsin state law that taxed ships as personal property based on size and age of the ship. The law read as follows:

Chapter 48 Section 1042a of the *Code of Wisconsin for 1898* presented the following rates for determining the value of a wooden ship for property tax purposes based on the age of the ship.

one to five years old . . . . .	\$ 9 per net ton
five to ten years old . . . . .	\$ 7 per net ton
ten to fifteen years old . . . . .	\$ 6 per net ton
fifteen years and upward old . . . . .	\$ 4 per net ton
Wooden Barge fifteen years or upward old . . . . .	\$ 3 per net ton

[Sanborn and Berryman, 1898]

Though the shipping companies may not have been concerned directly with depreciation, Wisconsin state law appeared to have allowed for the concept by reducing the value of the ship over time as its hull grew older and began deteriorating.

The type of *capital accounting* outlined by the model could be identified in two out of three of the vessels used in this study. For the *Adella Shores*, the manner by which the Neffs accounted for her cost was unfortunately not found in her records; however, the capital accounting for the *Shores'* com-

panion barge, the *O. J. Hale*, was provided and is shown in Exhibit 2. This exhibit shows that the cost of the *O. J. Hale* was shown as a current expense rather than capitalized. This practice was probably due to the transient nature of ship ownership at the turn 20th century, and, as ship histories showed, the high probability of accidents. These arguments may have been the reason why none of the books reviewed for this study mentioned the concept of depreciation.

It should be noted here that neither the Neff records nor the Runge Collection identified the reason for the \$4,200 in repair charges. The charges could have resulted from either a recent accident involving the ship, or more likely, they represented the additional cost of placing the vessel into service, expenses such as dismantling the masts and refurbishing the hull to create a barge. In either case, modern accounting would have probably shown this adjustment as a capitalization rather than an expense.

**EXHIBIT 2**  
**Financial Statement of the Barge *O. J. Hale***  
**November 1, 1900**

<i>1900 NO. 1 STATEMENT BARGE "O. J. HALE"</i>	<i>NOV. 1ST 1900</i>
	<i>AMOUNT</i>
<i>HARBOR TOWING</i>	494.10
<i>CREWS WAGES</i>	663.40
<i>PROVISIONS</i>	120.34
<i>TRIMMING</i>	26.95
<i>MISCELLANEOUS ARTICLES</i>	1.60
<i>REPAIRS</i>	4201.52
<i>DAMAGE</i>	7.50
<i>CARGO DAMAGE</i>	83.00
<i>LAY UP EXPENSE</i>	50.78
 <i>TONS OF SALT</i>	 83.84
 <i>TOTAL RECEIPTS</i>	 3356.52
<i>TOTAL EXPENSES</i>	5649.19
<i>NET LOSS</i>	<u>2292.67</u>
<i>PURCHASE PRICE [OF O.J. HALE]</i>	<u>1500.00</u>
<i>(1900 NOV.1 AT COST)</i>	3792.67

As the ship histories indicated, F. F. Bingham kept a ledger on the cost of the construction of the *Richard A. Bingham*. The cost of the *Bingham* (\$7,355) was used as part of the general recapitulation of the A. R. Bingham Shipping Company. The entries were titled *Resources and Liabilities* in the ledger. The form of these nearly 50 entries was a standard "balance sheet" with some indication that expenses and revenues were part of the adjustments. The focus on this recapitulation appeared to track changes in the net worth of the company. The *Richard A. Bingham* acted as the ledger's primary "debit," or asset, and the purchases of lumber from Southern States Lumber represented its primary "credit," or liability. These "balance sheets" were compiled on an intermittent basis, ranging from weekly to every six months, although they loosely corresponded to the arrival of various ships owned by the company.

The *Betsy Ann* also had a compilation account, which was more a current expense account that was closed periodically. Unlike the *Bingham*, it did not include the cost of the ship and the relevant net worth. There was not any indication of how the *Betsy Ann* herself was accounted for in the specific records reviewed for this study.

*Financial Accounting Principles*: Francis Gedney Clarke [1837] in his book, *Shipmaster Guide and Commercial Assistant*, pointed out that it was the shipmaster's or captain's responsibility to keep account of both the ship and the shipment for the absentee owners. Often they gave him a cash advance with which to conduct business for the owners and pay sailors during the voyage. His responsibility was to make an accounting of those revenues and related expenses. This type of arrangement was noted in the logs and ledgers of the *Richard A. Bingham* whose captain, Raymond Merritt, was obligated to deal the pine lumber he brought south in favor of the mahogany he was to bring back. Captain Merritt received part of the trip's profits, besides his salary of \$65 per trip.

Fleming [1846, p. 117] made it clear that the ship's personnel (especially the captains and bookkeepers) were surrogates for the owners and had the responsibility to account for and protect all of the goods consigned to the ship. Stone [1839, p. 24], in his book on steamboat accounting, made stewardship of the customer's assets a foremost concern. He wrote as follows:

In receipting for goods sent on board, great care should be given and exercised in examining their con-

dition, the number of packages, and their shipping marks etc; for any error in this respect by receipting more than actually received or by acknowledging the packages in good order when in fact they are not so, so lays the boat and owner's liable to be sued for damages or deficiencies which do not in fact exist, but for which there may be no remedy.

With the *Betsy Ann* and the *Adella Shores*, the owners of the ships acted as freight agents and received fares as such. In the case of all three ships, the type of business engaged in by the shipping company helped to dictate the type of accounting procedure used.

The review of books summarized in Table 1 suggests that the ship-accounting process could range from a sophisticated ledger and journal system to a more basic, single-entry accounting system. All the books agreed that the central focus of the financial accounting system dealt with the individual trips or voyages of the ship. The primary document was the *Voyage Report* or *Trip Report*. There may also have been related documents that supported the *Voyage Report* and accounted for specific areas of the business, such as the crew's wages, cash disbursements, commodities shipped, and fuel usage. Finally, a recapitulation that noted the profits or losses of the trip was prepared for the ship's owners. Dicksee [1876a, p. 90], explained the importance of this document as follows:

The Auditor of Single Ship Companies must bear in mind that, as regards to fraud, there is no such thing as 'safety in numbers' here, for the accounts are usually all in one person's hands — let him, therefore, not omit to examine the Voyage Account Book in detail.

The best example of this type of accounting comes from the flagship of the Neff fleet, the *Adella Shores* (Exhibit 3). The *Shores' Trip Report* was a wealth of information for the owners of the ship. It included a listing of revenues and expenses of the trip, a manifest of the cargo shipped, and a report of the fuel consumed by each ship. Unfortunately, this statement does not include the destination and purpose of the trip. According to the records of the *O. J. Hale*, that information was part of the ship's Captain's Log. The *Improved Vessel Book* [Anonymous, 1881] contained a *Voyage Report* very similar to the one presented for the *Adella Shores*.

**EXHIBIT 3**  
**Financial Statement of the *Adella Shores* June 1, 1900**

No. 2 Statement of the Steamer <i>Adella Shores</i> June 1, 1900				
	Trip 9	Trip 10	Trip 11	Total
				<i>Totals</i>
<i>Repairs</i>		3.11	22.86	25.97
<i>Miscellaneous Articles</i>	.61	1.07	2.99	4.67
<i>Fuel</i>	104.25	69.54	511.54	685.33
<i>Loading Salt</i>	72.18	85.85	73.00	231.03
<i>Unloading Salt</i>	140.35	150.23	121.65	412.23
<i>Stove Coal</i>	3.00		3.50	6.50
<i>Provisions</i>	24.07	40.90	106.72	171.69
<i>Cooperage</i>	24.06	25.75	9.90	59.71
<i>Shortage</i>	7.60	15.00		22.60
<i>Laundry</i>	.88		1.41	2.29
<i>Crew Wages</i>	122.21	122.21	537.83	782.25
<i>Loading Lumber</i>			385.09	385.09
<i>Unloading Lumber</i>			294.67	294.67
<i>Commission</i>			10.00	10.00
<i>Harbor Towing</i>			6.00	6.00
<i>Freight Receipts</i>	499.21	513.66	2087.16	3100.03
<i>Net Gain\trip</i>	721.80	513.66	4092.44	5586.89
<i>Draft of Water</i>	222.59	258.99	2005.28	2486.86
<i>Draft - lumber</i>	12.8-13.3	13.6-13.8	12.5-13.5	
<i>Draft - rock salt</i>		13.3-14.2	13.0-13.5	
<i>Tons of Coal</i>	30	20	157 1/2	207 1/2
<i>Barrels of Salt</i>	8020	8285	8110	
<i>Lumber - ft</i>			921.133	
<i>Tons - Rock Salt</i>				1304

As noted above, the vast majority of all of the books required a *Voyage Report* or *Trip Report*. However, the method and appearance of this accounting varied from book to book. For example, Fleming's *Steamboat Book-keeper's Assistant* [1846] required an actual ship's ledger. The *Richard A. Bingham* used a lengthy, double-entry ledger (Exhibit 4) similar to Fleming's requirements. In addition, the ledger of the *Bingham* acted as the *Voyage Report* and the *Ship's Log* to inform the owner of important events. The accounting system of the *Bingham* included a separate ledger for the outbound trip from Pensacola and inbound return trip to Pensacola. A cash ledger to keep a record of the captain's spending on the trip was also included in an accounting format.

The *Bingham* ledger highlights an accuracy shortfall in turn-of-the-century accounting. The credit column of this ex-



hibit should have added up to \$1,010.03, not \$993.38. Correct addition would have made the profits of the voyage \$490.64 instead of the \$502.69 actually reported. Such accuracy problems may have been the reason for Dicksee's admonition for the auditor to check the *Voyage Reports* for small shipping companies more closely.

**EXHIBIT 4**  
**American Schr. *Richard A. Bingham***  
**Trip #1 Pensacola to Belize with Pine**  
**& Return with Mahogany**

1903			DR		1903		CR.		
Jan	19	To: Loading	3	00	Ma	2	Mcorten-	2	25
"	31	"McHugh	87	83	r	5	overcharge		
"	31	"Water	2	00			Cr. Lumber	2	40
Feb	2	"Bill Health	2	44	Fe	2	Lumber	977	38
"	5	"Medicine Chest	4	40	b	5	Freight	8	00
Jan	31	loading	95	20	Ma	6	shingles		
"	28	"McHugh	5	45	r	6			
Feb	3	"clearance	1	50	"				
"	4	"serum <sup>25</sup> , wood <sup>75</sup> med. <sup>20</sup>	1	20					
"	24	"fumigation	15	62					
"		"light harbor dues	5	50					
"		"measuring deck	28	75					
"	26	"inward pilotage	45						
"		"labor discharging	12						
"	7	Riggers 10 <sup>00</sup>	13	50					
"		fresh stores	1	25					
"		To: Captain							
"		wages bill	22	50					
"		Mate	18						
"		Cook	15						
"		cub	15						
"		Mike	22	50					
"		Liberstein	65						
"		Merrit	62	83					
"		R.L. Merrit- Profit	439	86					
"		F. F. Bingham							
			993	38				993	38

The *Trip Report* of the *Betsy Ann* (Exhibit 5) was more detailed than the other ships and was completed on a series of preprinted forms by the packet's clerk, Charles Gordon. The system used by the packet company was very similar to the system that was outlined in George Soule's *New Science and Practice of Accounts* [1976]. His book required separate pre-printed sheets for the accounting of goods shipped, passengers,

expenses, cash, crew expenses, and fuel. Though the Natchez & Bayou Sara Packet Company combined several of these sheets into one, the system was essentially the same. Even with its sophistication, the basic plan of the accounting system still goes back to that outlined by Ely Stone in the late 1830s in his classic book, *The Steamboat Clerk* [1839].

**EXHIBIT 5**  
**Statement of the Receipts and Expenditures**  
**STEAMER BETSY ANN**  
**For TRIP 467 and Week Ending July 20th, 1902**

<i>RECEIPTS</i>				
<i>From 35 Cabin Passengers Down</i>	63	25		
" 85 Cabin Passengers Down	124	50	187	75
" 145 Cabin Passengers Down	81	00		
" 50 Cabin Passengers Down	29	25	110	25
<i>From Freight, Down</i>	291	01		
" <i>Freight, Up</i>	44	05	335	06
" <i>Rent Bar</i>				
" <i>Sale Coal</i>			15	00
			648	06
<i>Expenditures</i>				
<i>Stores</i>				
<i>Fuel</i>	333	13		
<i>Officers</i>	213	75		
<i>Mates Crew</i>	127	20		
<i>Cabin Crew</i>	26	85		
<i>Engineer's Crew</i>	48	85		
<i>Deck</i>	64	05		
	295	40		
<i>Expense</i>				
<i>Mate</i>				
<i>Engineer</i>	27	35		
<i>Office</i>	5	90		
<i>Pantry</i>	6	90		
<i>General Expense</i>	40	70		
<i>Agency</i>	73	89		
<i>Rebates and Bills Returned</i>	34	08		
<i>Extra Labor</i>	2	20		
<i>Last Friday</i>	15	94		
<i>Chas Gorden, clerk</i>			1316	19

Stone's book was a compilation of procedures used by steamboats on the Ohio River. These accounting procedures evolved from the first Fulton steamboats that sailed the Mississippi-Ohio River system in the early 1800s. For example, records from the second steamboat on the river, the *Vesuvius*

(1814-1822)<sup>7</sup>, showed both trip and freight accounting in the only records left from the Natchez Steamship Company. According to Flesher and Soroosh [1987], the *Betsy Ann* represented an exception to this system of individual trip reports because her trips were so short (two to four days) that the accounting was performed weekly for all of the trips completed that week rather than on the traditional trip-by-trip basis. The *Trip Reports* of the *Betsy Ann* were then integrated into the general accounting system of the owners.

The *Voyage Reports* were often summaries of other documents compiled by the ship's bookkeeper. For example, the *Betsy Ann* had a full range of supporting documents, including a crew's list and payroll, expense list, and cash receipts/cash disbursements book, all of which were then tied to the accounting system of the Learned Lumber Company. On the other hand, both the *Adella Shores* and the *R. A. Bingham* were limited in their supporting documents and seemed to put most information into one report. For the *Bingham* there was a captain's cash report but no general summary of all the voyages for a given year was recognized in the account books. The company's balance sheets that were discussed previously may have acted as a form of recapitulations of voyages with the purpose of finding the current net worth of the company rather than current income.

The *Adella Shores* did not have the sophisticated accounting system of the *Betsy Ann*, but as Exhibit 4 above indicated, it was very comprehensive. The supporting documentation available in the library collection showed that the Neffs did have a cash disbursements journal as part of their ships' logs. The *Adella Shores* log has been lost but the one for her sister ship, the *O. J. Hale* (Exhibit 6), revealed that the captain was responsible for the payment of all expenses on the voyage, ranging from groceries to crew wages.

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<sup>7</sup>The records of the *Vesuvius* are housed at the Mississippi Department of Archives and History and include a small leather-bound book which acted as a freight register. These records are among the oldest steamboat records in the U.S.

**EXHIBIT 6**  
**Partial Log of the O. J. Hale**

Trip 12 Barge <i>O. J. Hale</i> . Loaded at Terkley & Douglass		
From: So Chicago	To: Sept. 12	Left So. Chicago with Adella Shores
" "	" 13	Arrival Manistee
" "	" 14	Left Manistee
" "	" 15	arrives Ludington at Shelters
" "	" 17	left Ludington [with] Str Adella Shores
" "	" 18	arrive Chicago
H. J. Wilson, Master Seaman		W. Marks, Cook
Sept. 11 to Sept. 18		Sept. 11 to Sept. 18
included 8 days at \$ 70 per month		Included 8 days at \$45 per month
— \$18.64		— \$12.00
J. Johnson, Seaman		G. Claussen, Seaman
Sept. 11 to Sept. 18		Sept. 11 to Sept. 18
included 8 days at \$45 per month		Included 8 days at 45 per month
— \$12.00		— \$12.00
Wages of Master and Crew		\$54.64
Sept. 11 To William Runsfle - Provisions		\$ 2.83
" " 11 To Petersons Bro. - Groceries		\$ 1.46
" " 15 To A Prairies - Groceries		\$ 1.30
(at Ludington)		<u>\$ 5.59</u>
Whole Amount —		\$60.23
Sept. 19 John Johnson, Seaman 1 day \$1.50 per		1.50
Sept. 19 G. Claussen, Seaman 1 day \$1.50 per		<u>1.50</u>
Whole Amount —		\$63.23
Sept. 18 Payout from Capt. S. O. Neff	By Cash	\$60.00

Finally, the Neffs did compile reports of total income for all their ships and related general office expenses for each month (as shown in Exhibit 7) and for the entire year as well. Though Charles Neff may have used two columns to "balance out" his accounts at the end of the year, this exhibit, along with the previous Neff *Voyage Report*, shows that he used a very simple accounting system that can be properly classified as single entry.

**EXHIBIT 7**  
**General Statement of Samuel Neff and Sons Shipping**  
**Company — October 1, 1900**

<i>1900 General Statement Oct. 1st 1900</i>		
Receipts	Loss	Gain
Str Adella Shores		850.80
Str. Minnie Kelton		1028.44
Str. Edwin S. Tice		547.38
Str. Marion	43.31	
Gain	2383.31	
	2426.62	2426.62
Gain for September	2383.31	
General Expenses		276.35
Net Gain		2106.96
	2383.31	2383.31

*Management Accounting Principles* : A modern textbook defined accounting as “the process of identifying, measuring, classifying and accumulating, summarizing, and communicating information about economic entities that is purely quantitative and is useful to decision makers” [King et al., 1997, p. 688]. The ship-accounting procedures discussed above did identify, measure, and, in a limited way, communicate economic information about the shipping business. However, evidence that shows that the owners used this information to control operations and make informed business decisions is sketchy at best.

The ship-accounting model discussed in this paper did have several devices for control and analysis. First, the captain’s control over all financial and nonfinancial activities during a voyage helped to give a sense of accountability to the absentee owners. Next, the *Voyage Report* or *Trip Report* could either be used as the accounting of one business transaction, as foreseen by Bennet [1976] and Crittenden [1850], or be used as a micro-management tool for the control of the company’s overall financial operating activities. For example, the records show that the owners of the ships tracked the profits of the individual trips as well as the combination of all trips. Finally, the nonfinancial measures listed in the records could be used for controlling and monitoring operations.

Of the three ships, the *Richard A. Bingham* had the best example of a managerial accounting application. This sophistication can be seen in Exhibit 8, where the bookkeeper of A. R.

Bingham Shipping Company determined that it was important to show the cost and income per day of the voyage.

### EXHIBIT 8 Summary - Out and Back

			Trip #1 71 days	Trip #2 67 days	Trip #3 69 days
Gross Earnings	per day		24.55	17.29	31.68
Net Profit	per day	F. F. Bingham's share	10.77	4.22	9.10
Gross Expenses	per day	Including RLM's shore profit	13.78	13.07	22.58

Mr. Bingham's need for this type of information is difficult to surmise. One assumption is that he was viewing each voyage as a modern opportunity cost. Was he second-guessing himself about where he could have sent the ship for better profits? Could Bingham have made better profits elsewhere? The answers to these questions are unknowable. In any case, the practice of pegging costs or revenues to a base was widespread at this time. For example, the ICC required railroads to track passenger miles and loaded ton miles [ICC, 1907]. The concept of revenues or costs per passenger mile is still a mainstay for break-even analysis for modern airlines.

The *Adella Shores*, in Exhibit 3 above, shows some evidence of the usage of nonfinancial, managerial accounting measures. The exhibit indicates record keeping for the fuel usage of the ship and the draft of water that the ship would draw in certain situations. The second set of information was important because each harbor was dredged at a different depth. The harbor pilot who guided the ship to the dock area needed to know the draft of the ship when it was empty and fully loaded to eliminate the threat of grounding. The *Betsy Ann* showed no such managerial accounting methodology in its financial statements. However, all of the ships provided sufficient information to determine such information as a unit-cost per mile.

### SUMMARY AND CONCLUSIONS

As this paper shows, American ship owners developed and used a "standard model" of ship accounting during the 19th century. This system developed before the ICC began standardizing ship accounting in 1910. The ship-accounting model

could be seen in the accounting textbooks and manuals published during the 19th century. It was a system that was very utilitarian in nature and developed according to the needs of an ever-changing shipping industry. Though the ship accounting was widely standardized in procedures and nature, it was not necessarily standardized in presentation and style, with each of the three ships presenting its own version of a *Ship* or *Voyage Report*. Finally, as Table 2 below shows in summation, there was substantial usage of the 19th century ship-accounting model by the three ships reviewed for this study. The *Richard A. Bingham* most closely matched the procedures in the model. The other two ships, the *Adella Shores* and the *Betsy Ann*, showed substantial compliance with the model as well.

**TABLE 2**  
**A Review of Accounting Practices Noted**  
**in 19th Century Accounting Books**

ACCOUNTING PRINCIPLE	ADELLA SHORES SAMUEL NEFF	R. A. BINGHAM F.F. BINGHAM	BETSY ANN R.F. LEARNED
Double-entry accounting	NO	YES	YES
Purchase of ship as an asset with a ledger account	YES	YES	UNKNOWN (No purchase account found with records)
Shipments and profits accounted for against the purchase price of the ship	YES ( <i>O. J. Hale</i> )	YES	NO
Shipments, both revenues and expenses, are accounted for as individual voyages not in total	YES	YES	YES
Specific listing of expenses	YES	YES	YES
Captain made debtor of the voyage transactions	NOT APPLICABLE Captain was owner of ship in this case	YES	NOT APPLICABLE The ship was owned by a corporation.
The profits are closed to balance not the ship account	UNKNOWN (No balance sheets found in records)	YES	UNKNOWN (No balance sheets found in records)
Ship's Ledger	NO	YES	YES
Voyage Report	YES	YES	YES
Cash Book	YES ( <i>O.J. Hale</i> )	YES	YES
Fuel Book	YES	NOT APPLICABLE No steam engine aboard ship.	UNKNOWN Purchase of fuel mentioned but no amounts given.
Crew Book	YES Crew listed with Cash Book	YES	YES

**TABLE 2 (Continued)**  
**A Review of Accounting Practices Noted**  
**in 19th Century Accounting Books**

ACCOUNTING PRINCIPLE	ADELLA SHORES SAMUEL NEFF	R. A. BINGHAM F.F. BINGHAM	BETSY ANN R.F. LEARNED
Freight Book	YES	YES	YES
Passage Book	NOT APPLICABLE (Did not take passengers)	NOT APPLICABLE (Did not take passengers)	YES
Rating of comparison between ship practices and 19th century ship- accounting model — bases on applicable items	Nine out of twelve 75%	Twelve out of twelve 100%	Nine out of twelve 75%

The actual presentation of accounting records by the ships may have been different from that presented in the textbooks. However, the accounting model used by them was the same basic model introduced by Bennet [1976] and Gibson [1827] 75 years earlier. The same model was repeated and improved upon throughout the 19th century by authors such as Stone [1839], Duff [1846], and Soulé [1976]. Though some records of the three ships were incomplete, making a clear picture of the total accounting methodology by each ship impossible, the available records show that there was a “standard” ship-accounting system that met the information needs for the owners of the *Adella Shores*, *Betsy Ann*, and *Richard A. Bingham* at the turn of the 20th century.

#### REFERENCES

- Anonymous (1881), *Improved Vessel Book* (Cleveland: Brooks and Co.).
- Anonymous (1891), *Biographical and Historical Memoirs of Mississippi* (Chicago, The Goodspeed Publishing Company): 1108.
- Bennet, James (1976), *The American System Of Practical Bookkeeping* (New York: Collins Brothers, 1842), reprinted (New York: Arno Press).
- Bentley, Harry C. and Leonard, Ruth (1970), *Bibliography of Works on Accounting by American Authors* (Boston: Harry C. Bentley, 1934), reprinted (Augustus M. Kelley Publisher: New York).
- Bryant, H. B., Stratton, H. D., and Packard, S. S. (1860), *Bryant and Stratton's National Bookkeeping* (New York: Ivison, Blakeman, Taylor & Company).
- Boyce, Gordon (1995), “Accounting of Managerial Decision Making in British Shipping 1870 - 1918,” *Accounting Business and Financial History* Vol. 5, No. 3: 360 - 378.
- Clarke, F. G., (1837), *American Ship-master's Guide and Commercial Assistant Being an Enlargement of the Seaman's Manual* (Boston: Allen & Co.).
- Clarke, F.G. (1841), *A Synthetic and Inductive System of Book-keeping by*



- Crittenden, S. W. (1850), *Book-keeping by Single and Double Entry* (Philadelphia: E. C. & J. Biddle & Co.).
- Colt J. C. (1838), *The Science of Double Entry Book-keeping* (Cincinnati: Burgess & Co.).
- Dicksee, L. R. (1976a), *Auditing: A Practical Manual for Auditors* (London: Gee & Co., 1892), reprinted (New York: Arno Press).
- Dicksee, L. R. (1976b), *Advanced Accounting* (London: Gee & Co., 1903), reprinted (New York: Arno Press).
- Duff, Peter (1846), *The Western Steamboat Accountant* (Pittsburgh: Anderson & Co.).
- Fleming, J. (1846), *The Steamboat Book-keepers Assistant* (Pittsburgh: McDonald & Elliot).
- Flesher, Dale and Soroosh, Jalal (1987), "Riverboat Profitability: *The Betsy Ann*," *The Journal of Mississippi History*, Vol. XLIX, No. 1: 23 - 34.
- Foster, B. F. (1836), *A Concise Treatise on Commercial Book-keeping* (Boston: Perkins & Co.).
- Gibson, J. ( 1827), *A New and Improved System of Bookkeeping* (Philadelphia: published by author).
- Hemmeter's Improved Steamboat Book; Time and Wage Tables Comprising Shipping Articles Cash Account, Disbursement Journal, Towing Journal* (1888), (no publisher or copyright noted).
- Interstate Commerce Commission (1907), *Classification of Locomotive Miles, Car Miles, and Train Miles* (Washington: Government Printing Office).
- Interstate Commerce Commission (1910), *Classification of Operating Expenses of Carriers by Water* (Washington: Government Printing Office).
- Interstate Commerce Commission (1912), *Form of Balance Sheet Statement for Carriers by Water* (Washington: Government Printing Office).
- Jones, Thomas (1841), *Principle and Practice of Bookkeeping* (New York: Wiley & Putman).
- King, Thomas E., Lembke, Valdean C., and Smith, John H. (1997), *Financial Accounting: A Decision-Making Approach* (New York: John Wiley & Sons).
- Krepp, F. C. (1856), *Statistical Book-keeping* (London: Longman & Co.).
- Marsh C. C. (1831), *The Science of Double Entry Book-keeping* (Baltimore: McDowell & Co.).
- Mersevey, Atwood Bond (1875), *Mersevey's Book-keeping, Double Entry* (Boston: Thomas, Brown & Co.).
- Rucker, Brian R. and Woolsey, Nathan F. (eds.) (1991), *Log of the Peep-o-Day: Summer Cruises in the West Florida Waters, 1912- 1915* (Baghdad, FL: Patagonia Press).
- Sanborn, Arthur and Berryman, John R. (1898), *Wisconsin Statutes of 1898 Volume I* (Chicago: Callaghan & Co.).
- Soulé, George (1976), *Soulé's New Science and Practice of Accounts*, 7th ed. (New Orleans: G. Soulé), reprinted (New York: Arno Press).
- Stone, Ely (1839), *The Steamboat Clerk* ( Cincinnati: Lucas & Company ).
- Willets, Gilson (1903), *Workers of the Nation: An Encyclopedia of the Occupations of the American People* (New York: P. F. Collier and Son).

**APPENDIX A**  
**A Review of Ship-Accounting Practices Noted in 19th Century Accounting Books:**

The Bibliography of Books Used in the Study

#	DATE	AUTHOR	TITLES	PLACE	PUBLISHER	PAGE(s)
1	1827	Gibson, J.	A New and Improved System of Bookkeeping	Philadelphia	author	7-9
2	1831	Marsh C. C.	The Science of Double Entry Book-keeping	Baltimore	McDowell	69-70
3	1836	Foster, B. F.	A Concise Treatise on Commercial Book-keeping	Boston	Perkins	153
4	1837	Clarke, F. G.	Shipmaster Guide and Commercial Assistant	Boston	Allen & Co.	CB <sup>a</sup>
5	1838	Colt J. C.	The Science of Double Entry Book-keeping	Cincinnati	Burgess	41, 70, 99-102
6	1839	Stone, Ely	The Steamboat Clerk	Cincinnati	Lucas	CB
7	1841	Clarke F.G.	Book-keeping by Double Entry	Boston	Mussey	144-150
8	1841	Jones, T.	Principle and Practice of Bookkeeping	New York	Wiley & Putman	29,31,40,51,52,62
9	1842 <sup>b</sup>	Bennet, J.	The American System of Practical Bookkeeping	New York	Collins Brothers	69
10	1846	Duff, Peter	The Western Steamboat Accountant	Pittsburgh	Anderson	CB
11	1846	Fleming, J.	The Steamboat Book-keepers Assistant	Pittsburgh	McDonald & Elliot	99-116
12	1850	Crittenden S.	Book-keeping by Single and Double Entry	Philadelphia	Biddle	147-167
13	1856	Krepp, F. C.	Statistical Book-keeping	London	Longman	160-166
14	1881	_____	Improved Vessel Book	Cleveland	Brooks	CB
15	1888 <sup>d</sup>	Hemmeter	Hemmeter's Steamboat Book	_____	_____	CB
16	1903 <sup>e</sup>	Soulé, George	New Science and Practice of Accounts	New Orleans	author	340-343

NOTES: <sup>a</sup> CB = A complete book on ship accounting.

<sup>b</sup> This book was originally published in 1817.

<sup>c</sup> Soulé's book was originally published in the 1880s.

<sup>d</sup> Hemmeter's book did not have a copyright or the specific name of the author. Entries in the book at the Great Lakes Historical Society had dates of 1888 so that date was taken for its listing above.