The Wreck of the Rockaway: The Archaeology of a Great Lakes Scow Schooner

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THE WRECK OF THE ROCKAWAY: THE ARCHAEOLOGY OF A GREAT LAKES SCOW SCHOONER

by

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During the 19th century, Great Lakes shipping played a vital role in the development of the economies of the United States and Canada. Regional shipyards built thousands of vessels to distribute coal, lumber, grain, iron ore and other goods throughout the Great Lakes network. In time, certain designs were selected for the advantage they offered over others employed in the same trade. The scow schooner was one class of carrier which attained a high level of use in the Lakes region.

This study examines the scow schooner *Rockaway* and the economic factors which influenced the building and use of this design in the Lakes region. Maritime archaeology is used to document and interpret the structural remains of the ship. The cultural context and commerce of the *Rockaway* is also evaluated along with other scow schooner data found in the historical record.

The study challenges common theories regarding scow schooner construction and the economic factors which influenced the use of this design in the Lakes region. The study demonstrates the scow was a vessel of more varied and complex form than characterizations suggest and that quality of design and function was as important to builders and owners as ease and cost of construction.
# TABLE OF CONTENTS

LIST OF TABLES ..................................................................................................... v

CHAPTER

I. INTRODUCTION .......................................................................................... 1

II. HISTORICAL REVIEW: THE LIFE AND TIMES OF THE ROCKAWAY ..... 7

  Chandler, Alvord and Company (1866-1868) .............................................. 7

  Stone and McCarthy (1868-1869) ........................................................... 26

  Nelson S. Stone (1869-1872) ................................................................. 28

  Captain Charles H. Ripsom (1872-1873) ................................................. 35

  Rope, Bond and Waugh (1873-1878) ....................................................... 37

  Captain Thomas Martin (1878-1879) ....................................................... 49

  John W. Serles (1879-1880) ................................................................. 62

  Winfield Scott Gerrish (1880) ................................................................. 64

  Brinen, Munroe and Thompson (1880-1891) ............................................. 69

  Summary ............................................................................................. 92

III. ARCHAEOLOGICAL RESEARCH SUMMARY TOOLS, PEOPLE AND TECHNIQUES ..................................................................................... 96

  Site Discovery and Preliminary Survey .................................................... 96

  Research Objectives ............................................................................... 100

  The Ship .................................................................................................. 100
# Table of Contents—Continued

## CHAPTER

- The Artifacts ....................................................................................... 103
- Site Description ................................................................................... 105
- Fieldwork Organization ....................................................................... 108
- Fieldwork Operations ......................................................................... 111
- Fieldwork: 1984 .................................................................................. 113
- Fieldwork: 1985 .................................................................................. 116
- Fieldwork: 1986 .................................................................................. 121
- Fieldwork: 1987 .................................................................................. 123
- Fieldwork: 1989 .................................................................................. 125
- Fieldwork: 1991 .................................................................................. 125
- Summary ............................................................................................. 126
  - Site Identification ............................................................................ 126
  - Data on Shipboard Economy: A Preliminary Review ................... 128
  - Data on Ship Design ....................................................................... 129

## IV. SCOW SCHOONERS ON THE GREAT LAKES ....................................... 131

## V. DISCUSSION AND INTERPRETATION OF THE HISTORY,
    DESIGN AND CONSTRUCTION OF THE SCOW SCHOONER *ROCKAWAY* .............................................................. 145

- Summary and Conclusions ................................................................... 148
TABLE OF CONTENTS—Continued

APPENDICES

A. Chronological Listing of Newspaper References Used to Document the Voyages and Commerce of the Rockaway (1866-1891) .........................152

B. Glossary of Nautical Terms .................................................................176

C. Great Lakes Scow Schooner Database Listing for American Vessels .......184

D. Plates and Drawings .............................................................................196

BIBLIOGRAPHY ...........................................................................................217
LIST OF TABLES

1. *Rockaway* Cargoes and Dates of Delivery at Oswego, July-August 1875........45

2. *Rockaway* Cargoes and Dates of Delivery at Oswego,
   August-September 1876 ..................................................................................51

3. *Rockaway* Cargoes and Dates of Delivery at Oswego, June-October 1879 ......63

4. *Rockaway* Lumber Cargoes and Dates of Delivery to Chicago,
   July-November 1883.........................................................................................74
CHAPTER I

INTRODUCTION

The commercial career of the scow schooner *Rockaway* began with its launching at Oswego, New York, on November 13, 1866. The local press chronicled the event with the following short notice:

ANOTHER VESSEL LAUNCHED - The *Rockaway*, a staunch and trim new vessel, was launched . . yesterday afternoon. The launch went off successfully at 2 P.M., the *Rockaway* sliding gracefully down the ways, and out into her native element. We understand she sailed this afternoon (Oswego Commercial Advertiser and Times {OCAT}, 14 Nov. 1866: 3).

The christening of this "finely built vessel" (Chicago Tribune {CT}, 11 July 1867) coincided with the end of the War Between the States and the beginning of a new era of increased settlement, industry and commercial growth in the Great Lakes region. During the next quarter century, her captains and crews would set sail many times in answer to the demands of a dynamic and expanding American economy. She would be used by her owners to transport agricultural, mineral, and forest resources within a vast network of rivers, lakes, canals, and harbors characterized by one 19th century author as, " . . the most magnificent system of internal communication to be found on the surface of the earth" (City of Chicago, 1863).

The *Rockaway* was a type of merchantman once common to the Great Lakes region. Her story serves as a valuable example of the maritime traditions which played
such an integral role in the social and economic history of middle America during the
last half of the 19th Century.

Profitability in the maritime trades was influenced by the qualities of a ship’s
design for carrying cargoes and its related function in an often harsh environment
wrought with such hazards as shallow passages, unmarked obstructions, and sudden
violent storms. The economics of maritime ventures were also significantly influenced
by repairs, rebuilding, and other costs associated with the regular maintenance of a
vessel. In the most extreme of circumstances, an owner might suffer a total loss of his
investment by shipwreck. Related statistics indicate more than 1,000 ships of com­
merce were lost on the Great Lakes in the 19th century alone (Wright, 1975).

Great Lakes shipwreck sites represent fertile ground for controlled archaeolog­
ical study, due, in part, to the preservation qualities of the freshwater environment in
which they are found. Categories of material culture found on the site of a commercial
sailing ship or steamer might include the remains of the ship itself, equipment and
machinery used in the ship’s operation, the cargo, personal effects of the crew, and
sometimes the remains of the crew themselves. In many instances, the archaeological
study of these sites may provide new knowledge on subjects where few or no other
sources of pertinent information exist. In cases where the historical record has been
more generous, we can use information gathered through shipwreck archaeology to
complement or refute existing modes of thought on Great Lakes maritime traditions.

The interpretive value of Great Lakes shipwreck resources deserves further
elaboration here. First, the designers and builders of the Great Lakes commercial fleet
left few detailed plans or records of their accomplishments. Yet the vessels they produced represent one of the nineteenth century's most complex and skillful forms of technological achievement. The archaeological documentation and study of a ship's physical remains can provide valuable insight into its specific design and capabilities (Muckelroy, 1978). In turn, we can use this information to evaluate the engineering knowledge and technological abilities of the boat's planners and builders. In broader terms, we can begin to address those cultural factors that influenced the decision to build and use particular designs (Steffy, 1994).

The archaeological remains of a ship's tools, machinery, and personal effects can reflect the hierarchy of a crew, their work routines, and the quality of shipboard technologies and living standards (Murphy, 1983: 65-89). Cargoes found in association with a shipwreck site, whether raw materials, subsistence goods, or manufactured products, reflect the values, needs and organization of the society that produced and used them. When linked to manufacturing or processing centers they can tell us about the particular trade system and larger economic network of which they were a part. The analysis of individual cargo items can tell us about their qualities and the technologies associated with their production. These sites deserve our prompt and professional attention as they rank high on the list of the Great Lakes region's most valuable archaeological resources.

Archaeology on the Rockaway site was designed to produce new and supplementary information regarding the cultural and environmental factors which influenced Great Lakes ship designers, shipwrights, and shipping financiers to build and use the
scow schooner, in large numbers, during the 19th century. Much of the current discussion of the Great Lakes scow schooner has focused on the unconventional design of this vessel type, and the related belief that this model was markedly cheaper to build than other hull forms (Inches & Partlow, 1964: 289-294). Some historians have suggested that the scow schooner could be built by the average carpenter, without the participation of an experienced shipwright (Martin, 1991: 2-6), and that the widespread use of scows may indicate skilled shipbuilders were in short supply in the Lakes region (Inches & Partlow, 1964: 289-294). These combined factors allegedly made this category of vessel more affordable and more accessible to the average entrepreneur wishing to invest in a maritime shipping operation. Also, the outward appearance of scow schooners left some convinced that these craft were generally less seaworthy than the conventional schooner form (Martin, 1991). These commonly held assumptions had never been tested, however, through an adequate evaluation of the scow schooner data contained in the historical record, or through the focused archaeological study of one or more of the scow schooner sites which were known to exist in the Lakes region.

While it was recognized one archaeological study could not provide the data needed to fully address the above issues, it was believed the Rockaway site would contribute information to generally support or refute these commonly held notions about the Great Lakes scow schooner.

Archaeological study of the Rockaway was complimented in a significant way by historical documentation of the vessel’s commercial career. Additional research in the written record provided useful commentary on the construction, handling and
operation of other Great Lakes scow schooners. Also, a database was designed to collect information on a sample of more than 500 registered Great Lakes scow schooners built between 1820 and 1910. The database included the following categories of information: (a) vessel name, (b) gross tonnage, (c) net tonnage, (d) length, (e) breadth, (f) depth (of hull), (g) value, (h) class, (i) year built, (j) where built, (k) builder, (l) rebuild, (m) owner's name(s), (n) home port, (o) year of demise, (p) nature of demise, (q) place/location of demise (r) number of years of service, and (s) remarks. The database did not, however, include complete information in the above categories for all of the scows listed. For example, in some instances information was not found on the name of the builder, or the year of the vessel's demise, etc. Although not fully interpreted within the context of this report, it is believed these data will ultimately suggest patterns of design and application useful to a more expanded interpretation of the Rockaway, and the scow schooner, in Great Lakes maritime history.

Finally, it was also hoped that this study might set the stage for a series of related archaeological documentation projects. The collective information from this research could bring us closer to understanding the evolution of the Great Lakes scow, and would provide the basis for comparative studies of designs from other regions, such as Roger Olmsted's work on the scow schooners of San Francisco Bay (Olmstead, 1988).

In summary, the following questions are addressed in the present study:

1. Do the Rockaway's structural remains demonstrate simple, economical methods of construction characterized in various historical classification systems and
descriptions of Great Lakes scow schooners?

2. Do the Rockaway’s structural remains demonstrate the characteristics of scow schooner design and construction observed and documented by maritime historian, H. C. Inches?

3. Does an evaluation of the historical and archaeological record demonstrate any associated influence of economic methods of construction in the Rockaway’s design?

4. Would a combined evaluation of the Rockaway’s structural remains, sailing equipment, and historical career indicate a “seaworthy” design?
CHAPTER II

HISTORICAL REVIEW: THE LIFE AND TIMES OF THE ROCKAWAY

Chandler, Alvord and Company (1866-1868)

A series of historical narratives and documents have survived to provide a basic view of the Rockaway's physical appearance and insight into the nature of some of her many voyages. Examples of these materials include: (a) mortgage deeds, (b) certificates of license and enrollment, (c) shipping registers, (d) newspaper accounts and associated marine columns, and (e) U.S. Life Saving Service reports. These records and a host of other historical writings offer a valuable perspective on the life and times of the Rockaway. They reflect qualities of the ship's design, the nature of the men (and women) who built, owned or sailed her, the variety of her cargoes and ports of call, and even the tragic circumstances of her loss in 1891. The following historical summary of the Rockaway's commercial career was pieced together from a wide range of these 19th century resources.

It is important to note that newspaper accounts served as an especially prolific and vital resource for documentation of the Rockaway's commercial career. Because of the importance of maritime shipping to local and regional economies, many of the papers which served Great Lakes communities offered daily listings of the coming and going of ships (by name), their ports of call, and the cargoes they carried. Marine
columns applied in this study are derived from a host of contemporary publications ranging from the *Oswego Daily Palladium* to the *Chicago Tribune* and the *Muskegon Daily Chronicle*. Hundreds of the Rockaway's voyages were recorded from these and other similar sources. However, for the sake of the brevity and clarity of this report, newspaper sources and specific references for the Rockaway's many voyages are cited in Appendix A.

The Rockaway's launching was preceded by a brief announcement in the *Oswego Daily Palladium*. With the exception of enrollment certificates, this article provided the most detailed description of the vessel found in the historical record.

NEW VESSEL. - A first class spoonbow vessel is being built at the yard of Messrs. Chandler, Alvord & Co., in this city. She is designed for the lumber trade, and will carry about 180,000 feet. Her dimensions are as follows: 110 feet over all, 24 feet breadth of beam, 6 1/2 feet hold, fore and aft rigged. She is to be commanded by the veteran Capt. George Easton, one of the most experienced captains on the lakes. She will be launched on Tuesday next (Oswego Daily Palladium {ODP} 9 Nov. 1866).

Marine insurance records identified the builder of the Rockaway as "B. Morgan" (Board of Lake Underwriters {BLU}, 1871). These documents are complimented by Oswego city directories which provide listings for a, "Brower A. Morgan, "ship carpenter" and "shipbuilder" (Directory of the City of Oswego {DCO}, 1868, 1869). Raised for most of his life in Oswego, Morgan began to work in local shipyards as a young man. By 1866, at the age of 42, he had established a well deserved reputation as a master ship carpenter and designer. He worked most often at the Andrew Miller, Willard Kitt or George Goble yards. A sample of the vessels built under his direction, prior to the Rockaway, included the 431 ton steamer Norman in
1863, the harbor tugs *Tornado* and *Crusader* in 1863 and 1864, and the 382 ton schooner *Rising Star* in 1865. Remarkably, Morgan would remain active as a shipwright at Oswego until he was 81 years old; an obituary and other records suggest he made some of his most important contributions to the schooner building and repair industries there. Enrollment papers documented Morgan's *Rockaway* as a two masted "scow schooner" of 164.48 gross tons carrying one deck, a plain head, and a square stern (Bureau of Marine Inspection and Navigation Enrollment {BMINE}, 1866).

The Great Lakes scow schooner was a category of vessel distinguished by a predominantly fore and aft sail pattern and variations of a beamy, box-like, shallow draft hull. They were a type of craft built and used in large numbers on the Lakes for much of the 19th century. Some would even continue to function as commercial carriers into the early decades of the 1900s. An 1885 edition of *List of Merchant Vessels of the United States* provides a contemporary view of the American sailing scow:

Scows are built with flat bottoms and square bilges, but some of them have the ordinary schooner bow. They are fitted with one, two, and three masts, and are called scow-sloop or scow-schooner, according to the rig they carry. Some of them carry bowsprits. The distinctive line between the scow and regular-built schooner is, in the case of some large vessels, quite obscure, but would seem to be determined by the shape of the bilge, the scow having in all cases the angular bilge instead of the curve (futtock) bilge of the ordinary vessel (United States Department of Commerce {USDC}, 1885).

The Great Lakes scow schooner *Rockaway* was built of relatively large dimensions for her type, and this region. She carried no scroll work or fancy figurehead, and she may have appeared slab sided in contrast to the sharply curved design of other schooners moored in Oswego harbor. The *Rockaway*'s "spoon bow" and gently
rounded bilge offered a refined appearance, however, when compared to other scow forms she would encounter in her travels. Although some may have regarded her lines as less than picturesque, her owners undoubtedly appreciated the adaptability of their vessel's design to the navigation of shallow waterways and the greater relative stowage capacity this form provided over a more streamline sailing craft of a comparable length or tonnage.

The Rockaway's seven-foot depth of hold allowed for passage in most of Lake Ontario's shallowest harbors and coastways. Her dimensions were equally well suited for negotiating the natural waters and man-made canal systems which connected the Lakes. The Rockaway's designers and builders equipped her with a centerboard, an important innovation which had already seen several decades of development and use on the Lakes (Barkhausen, 1990). In simple terms, this device consisted of a large board, proportional in size to its companion ship, with attachments at its front and top end which allowed it to be lowered into open water through a watertight case or "trunk" built near the center of the hull.

The centerboard was of great value to a flat bottom vessel which traveled in both deep waters and shallow coastal zones. When sailing into the wind or with a wind "abeam," the lowering of the board added depth under the keel, enhancing the ship's resistance to being blown in a sideways direction and thereby improving its forward speed and efficiency. Centerboards were typically raised when the wind was pushing directly from the stern or from the after quarter of the ship's side; the boat could then travel faster having reduced its area underwater to frictional forces.
Another advantage was found in the ease with which the board could be lifted into its case to accommodate passage into shallow channels and harbors.

A view of the Rockaway's sail plan is suggested in her documentation as a two masted, schooner rigged ship (BMINE, 1866). Schooner rig, as a conventional term, referred to a fore and aft and sometimes mixed arrangement of sails. Schooners were most readily distinguished by the method of attaching the front edge of a vessel's principal sails either to the masts or to lines leading from the masts, thereby positioning the sheets in a pattern nearly parallel with the ship's length. In other words, the sails were angled from the "fore" or front of the boat, toward the rear or "aft" end of the vessel. These sails were either triangular or quadrilateral in form. The opposite pattern, that of a square rigged ship, was characterized by the use of predominantly rectangular or quadrilateral sails which were hung from horizontal spars or at right angles to the masts.

A version of the fore and aft rig was found in the topsail schooner where square sails were set above the gaff and boom of the foremast, mainmast, or mizzenmast sails. Some schooners carried a triangular sail above or in the place of a square topsail. Commonly called a "raffee," this sail was positioned like a square canvas to take advantage of a fair wind during long leeward runs. This innovation had a long and special tradition of use in the Lakes region. Unfortunately, no historical account or photograph has been discovered which would allow for a more detailed understanding of the Rockaway's sail plan.

At the time of the Rockaway's launching, the schooner was the sail plan of
choice on the Lakes. While square sail and combination rigs were used during the War of 1812 and for some time after, they proved relatively awkward to maneuver in such a confined environment of varied and unpredictable wind patterns. Although square sheets could be swung around slightly to catch a breeze coming at a right angle to a boat, their effectiveness was seriously handicapped by an inevitable sag in the cloth's leading edge. A fore and aft sail, on the other hand, could be shifted quickly to catch an air-current from almost any direction, thereby improving a vessel's ability to respond to variable wind conditions. The maneuverability of a square rigger was further challenged by the narrowness of harbor entrances, canal systems, and other limitations of the Great Lakes network. The following pair of accounts provide an interesting perspective on the decline of square sail rigs during the early years of the Rockaway's career.

Full Square-Rigged Vessels - among the important events which mark the history of Lake navigation for the year just closed (1869), perhaps the most notable are the disappearance of the last full square-rigged vessel, and the abandonment of the hermaphrodite square-rig in all classes of vessels. The change in the latter class has been going on slowly for a few years past, but at present the rage for the fore-and-aft rig is at fever heat, and a number of the largest of our (Milwaukee) grain-carrying vessels are to undergo the necessary alterations this winter (OCAT, 10 Jan. 1870).

Three Masted Vessels - Already the present season (1869) several of our (Buffalo) bark-rigged vessels have doffed their top hamper and adopted the rig and general fit-out of three masted schooners. It is generally conceded that the latter are far better adapted to our waters, more especially when sailing close haul or by the wind, and more easily manageable in bad weather. A few of those which have recently instituted the above rig carry square sails on both fore and main-masts. The time is not far distant, we apprehend, when a bark rigged vessel will become a thing of the past (OCAT, 6 Aug. 1869).

The adaptability of the schooner rig to variable winds was not the only factor
which placed it in the majority on the Lakes. Widespread preference for the "fore and after" was also influenced by the benefits it offered to economic concerns of the period. Because of its relative simplicity, the schooner rig was easier to operate and maintain. It could be worked mostly from the deck, decreasing the labor and associated risk of preparing a sail from aloft. This advantage was especially valued during the cold weather months when sailors had to contend with ice on the rigging and hand numbing temperatures. Schooners could also be managed by smaller crews than a square sail vessel, an important factor in an industry which constantly looked for means to economize its operations. This particular benefit is best represented in 19th century account books where crew wages often appear as the single greatest expense of a sailing vessel's annual operation.

A final advantage of the schooner rig was found in the ease with which its booms and running gear could be removed or swung out of the way to accommodate cargo loading and unloading operations. In contrast, the extensive network of "stays," or lines used in the standing rigging of square sail vessels, greatly hindered the process of loading and discharging most goods. Efficient cargo handling and adaptability to the needs of a changing marketplace would remain fundamentally important to the economic success of Great Lakes commercial sail throughout the 19th century.

In 1866, the Rockaway's home port of Oswego was a hub of local, regional, and international trade. The history of the harbor's use could be traced as far back as the late 17th century when the surrounding region was occupied by French forces. A strategic location at the mouth of the Oswego River made it a point of contention
between French, British, and American powers in the years to follow. By the end of the War of 1812, Oswego was in American hands. The harbor area was then characterized as an "open roadstead (a protected anchorage) between widely receding shores" which could only accept vessels of a very shallow draft (Mansfield, 1899: 280). In 1826, the federal government provided the first in a series of appropriations to correct this situation. Over the next forty years, no fewer than 14 federal grants totaling nearly $326,000 were given for local harbor improvements (Mansfield, 1899: 281).

The development of Oswego as a maritime center was also closely linked to the creation of the Erie (1825), Oswego (1828), and Welland (1829) canals and the opportunity these channels provided for the movement of raw materials and finished goods between eastern and western markets. The opening of these canals and other navigable links between the Lakes greatly extended the size and diversity of the network in which Oswego shippers would eventually operate.

The intimate relationship which developed between Oswego's maritime setting and the local economy led its citizens to regularly contribute to the development of their harbor's accessibility. For example, dredging operations were for many years financed by a combination of private contributions and city taxes (Mansfield, 1899: 281). These initiatives were reinforced by construction of the many different facilities which were needed to accommodate shipping operations. By the Rockaway's time, the Oswego waterfront was dominated by the buildings of shipping companies, sail making lofts, ship chandlers, and other businesses and industries which found this
location convenient for handling the goods they shipped or received.

Oswego was also a great shipbuilding center. By 1866, her yards had employed hundreds of men in the building of numerous sail and steam powered craft. This legacy already included such pioneering developments as the 1840 construction of the *Vandalia*, one of the first commercial propeller driven vessels in the world; the adoption and advancement of centerboard technology by the “Red Star” line (Loudon G. Wilson Collection); and the early application of wire rope in the rigging of Great Lakes ships (OCAT, 19 Apr. 1866; Toledo Blade {TB}, 21 Apr. 1866).

Oswego harbor saw a remarkable growth of shipping activity in the decade before the *Rockaway’s* construction. These developments were influenced in part by the implementation of a "reciprocity treaty" in 1855 which allowed for a period of duty free trade between the U.S. and Canada (Johnson, 1877: 75). Local citizens and politicians played an important role in the process that was necessary to see this trade agreement ratified. When it was first put into effect, the treaty was hailed by the local press as "a glorious consummation for Oswego" (Snyder, 1968: 111). These expectations were realized in the years that followed by a sharp increase in export and import business between mercantile communities at Oswego and various Canadian ports (Snyder, 1968: 111).

The conduct of tariff free trade between the U.S. and Canada was destined to last little more than a decade. Animosity during the Civil War period and complaints by American manufacturers that Canadians were reaping the greatest reward lead to an eventual annulment of the reciprocity treaty in 1865 (Snyder, 1968: 192). Despite
its short life, this arrangement contributed to a general increase of local maritime activity and the development of new and lasting relationships between Oswego and Canadian merchants. Shipping records in the years that followed indicate that Oswego's export trade was dominated by the movement of salt, cement, and coal to Ontario ports, while imports of wheat, barley, and lumber continued to arrive in significant quantities from Canadian sources. Trade with the western states included the import of wheat and corn needed to fuel Oswego's milling industry, which then produced nearly one third of the total corn starch supply of the United States.

The building of the Rockaway in 1866 coincided with a record year at Oswego for lumber receipts (Hotchkiss, 1898). The scow's deck arrangement, wide beam, extended hull, and generous under deck tonnage offered a model well suited for carrying this commodity. By this time, however, most of Oswego County's once abundant forests were no more. The lumber arrived instead from other regions, including the vast Canadian wilderness which surrounded much of Lake Ontario. Unlike some of the newer relationships established between Oswego and Canadian merchants, the lumber trade was already decades old. Records from as early as the middle 19th century indicate a Canadian source for up to three quarters of the total wood imported at Oswego (Andrews, 1854).

By 1866, much of the timber arriving at Oswego was being processed in a well developed industrial complex which included saw and planing mills, shingle manufacturers, cooperages, and other woodworking plants. The products of these businesses were frequently shipped to markets in the western Great Lakes region, or
north to commercial centers in Canada. This trend would continue with some regularity until the early 20th century when regional timber resources were finally exhausted.

The Rockaway entered the lumber trade only one day after her ceremonial launching on November 14, 1866. She set sail for the wharves of Shannonville, Ontario, and returned on November 24, carrying a load of 100 cords of cedar for Chandler, Alvord & Co. and 4 barrels of herring for a party identified as J. S. Doxy. It was not unusual that the Rockaway's owners would put their vessel into service so soon after launching. They were likely interested in having her captain test their ship, and most importantly, to begin providing a regular return on their investment. Two December voyages to Shannonville and Belleville, Ontario, resulted in return shipments of 100 and 90 cords of shingle bolts respectively. This trial season concluded on 15 December, when the Rockaway was stripped of her canvas and rigging in preparation for her winter lay-up at Oswego (ODP, 15 Dec. 1866).

The Rockaway's value in 1866 was no less than $8,000, a significant sum for the times (BLU, 1871). It is believed that the Rockaway's owners entered into an arrangement of cost sharing in order to finance the expense of building and outfitting their ship. Evidence for such a relationship is found in an 1866 enrollment document which identifies the proprietors and the percentage of interest they held in their vessel. Level of ownership was used to determine the share of profit one might receive at the end of the season. The names of the owners and the fraction of interest they held in the Rockaway, were recorded as: Henry S. Chandler 1/3; George S. Alvord 1/3; Alida
Partial ownership of a vessel was a common tradition in the Lakes region when the Rockaway embarked on her first trading venture. Great Lakes historian, J. B. Mansfield, characterized the year 1866 by its, "craze for lake craft," with the consequence that citizens from all walks of life were willing to mortgage their homesteads to "secure a timberhead of anything afloat" (Mansfield, 1899: 704). Many partnerships were composed of maritime people such as captains or shipbuilders. In other cases, the investors were shipping merchants who wished to control the profits which could be made from both the sale and distribution of the goods they produced. The condition of supply and demand in some markets was so great that investors could make a lucrative profit from the operation of a sailing vessel of modest size. Such schooners of relatively low tonnage were sometimes owned by a single family with relatives serving as crewmen in the ship's operation.

In 1866, investment in maritime shipping at Oswego went well beyond the building of new vessels to include the buying and selling of existing ships. In this one year alone, transactions were recorded for the full or partial sale of more than 100 working craft including 52 canal boats, 41 schooners, 6 sloops, 3 brigs, 2 scow schooners, 2 harbor tugs, and one vessel each listed under the respective classifications of "steam packet" and "propeller" (National Archives, General Reference Branch {NAGRB}, ship mortgage documents, 1866, Oswego, New York).

The Rockaway's first owners were well known investors in Oswego's
commercial shipping industry. Some had worked together in past maritime ventures or were cooperating in current business arrangements. City directories record the group under the title, “Chandler, Alvord & Co.,” with facilities at the foot of East First Street and East Second Street including a shipbuilding yard, a saw mill, and a shingle mill (DCO, 1867).

The major "share holders" of Henry S. Chandler and George Scriba Alvord are described in 1865 as a bank cashier and an insurance inspector respectively (DCO, 1865). Alvord is the best documented of the two partners, having served as an alderman for his ward in 1849 and on the City of Oswego's Common Council for a number of years between 1848 and 1862. His experience in maritime matters included the period he "superintended" the Oswego end of the "Old Oswego Line," a once prominent maritime forwarding business owned and managed by Henry Fitzhugh and DeWitt C. Littlejohn (ODP, 29 April 1875). Alvord was 61 years old at the time of his investment in the Rockaway. Chandler, at 26 years of age, was a recent employee of the newly organized Second National Bank of Oswego. Both men seemed to regard vessel ownership as the first step toward a new career. Each would find continued employment as a shipping and commission merchant in the years immediately following their disinvestment in the Rockaway venture. Alvord would also continue his association with shipbuilding and the operating of a dry dock at Oswego (DCO, 1868).

Francis B. Dane, Alida Littlejohn and Theodore W. Wells were associated through the shipping operations of Littlejohn, Dane and Co. of Oswego and F.B. Dane
& Company of New York. Dane was a resident of Brooklyn in 1866 and held significant financial and managerial interest in the two companies which linked New York, Canada, and various western districts with maritime concerns at Oswego (DCO, 1865). Alida Littlejohn was the wife of one of the company's other primary investors. Theodore Wells was an employee of the Oswego office of Littlejohn, Dane & Company. Records indicate he held the position of forwarding agent with this firm (DCO, 1867; 1869). Vessels owned by the partnership prior to their investment in the Rockaway included the steamers Oswego, Hiram Perry Jr., the Norman (built by Brower Morgan), and the schooner Carthaginian (NAGRB, 1866).

Alida Littlejohn, the Rockaway’s only female owner in 1866, had ties through family and marriage to two of Oswego’s most prominent citizens. Orphaned at an early age, the former Alida Tabbs was raised as the ward of an aunt and uncle, the Henry Fitzhughs. Over the years, Alida’s adoptive uncle held substantial shipping and milling interests at Oswego and also enjoyed a productive political career. He served as State Assemblyman in 1849, State Canal Commissioner in 1852 and 1855, and as the Mayor of Oswego from 1859 to 1861 (Finn, 1970: 217).

In the 1830s, Henry Fitzhugh developed the shipping business which came to be known as the "Old Oswego Line." He took on Dewitt C. Littlejohn as a partner in this firm in 1839. Alida and D. C. Littlejohn became acquainted through their association with the Fitzhughs and were married in 1846. Following the financial panic of 1857, the company of Fitzhugh and Littlejohn failed and Littlejohn joined the operations of F. B. Dane. Company advertisements suggest the firm maintained some of
the same trade routes and business associations of the "Old Oswego Line" (DCO, 1867).

Like Henry Fitzhugh, Dewitt C. Littlejohn was connected to business and politics for most of his life. His civic career was initiated during the affluent days of his forwarding business with Henry Fitzhugh. He was elected President of the Village of Oswego in 1847 and mayor of the city in 1849. In 1853 he was elected to the New York Legislature; in the same year he and several partners, including Henry Fitzhugh, completed the construction of a major dock and storage facility at Oswego. During the next two years of his legislative term, Littlejohn worked successfully to negotiate conditions for the enlargement of both the Oswego and Erie Canals, a development which would significantly enhance Oswego's position as a trade center between eastern and western markets. He also served as Speaker of the State Assembly in 1857, 1859, 1860 and 1861, and even gained Presidential recognition in 1860 when Lincoln offered to appoint him to the U.S. Consul in Liverpool, England, a position then considered to be one of the most lucrative foreign posts in the diplomatic service. For reasons unknown, Littlejohn declined the offer (Snyder, 1968).

Political setbacks in the 1860s led the Littlejohns to relocate temporarily to Albany. They would return to Oswego in 1866 with Dewitt's re-election to the State Assembly. At this time, Littlejohn was also involved in the development of a new railroad enterprise at Oswego and in the forwarding business with F. B. Dane. The same year saw a personal loss for the family with the death of Henry Fitzhugh on August 8th at Centralia, Illinois (Finn, 1970: 217).
Alida Littlejohn's investment in the *Rockaway* serves as an example of one of the rare arenas of 19th century American maritime tradition where women are represented with some degree of regularity. In the case of the Littlejohn's, we have already seen the interest and influence DeWitt held in political and business affairs at Oswego. It is possible that owners' records for the *Rockaway* carried Alida's name to avoid legal claims Dewitt might inherit if the maritime partnership was ever faced with a lawsuit. With legal ownership in Alida's name, the family's other financial and real estate holdings may have been better protected. Such business dealings may also have represented a conflict of interest with Dewitt's political initiatives. On the other hand, the investment may have simply been initiated to supplement Alida's personal or family finances. Aside from this and other maritime ventures, Alida also achieved special status as a philanthropist. Her most noted act involved the financing of a housing facility for the homeless at Oswego in 1872 (ODP, 30 Apr. 1872). Other records suggest Alida or her husband may have named the *Rockaway* in fond memory of the owner-relationship the couple once had with 200 acres of valuable beach property at Rockaway, New York (ODP, 22 July 1879).

In early 1867, Dewitt Littlejohn and Francis Dane continued to promote their services as forwarding and commission merchants under the business name of Littlejohn, Dane & Company. At the same time, they ran an advertisement in local newspapers offering to sell the "Old Oswego Line" including the vessels *Adriatic*, *Green Bay*, and *D. Whitehead*, (at Oswego); *Hiawatha*, *Minnehaha*, *Arabian*, *Caribbean*, *Nancy*, *J. Vanderbilt*, *Brockville*, and *Ithaca* (at New York) and the
Ivanhoe (at West Troy). The ad described the fleet as: "... recently rebuilt when they were all salted. Their timbers are sound and the boats strong and in good condition for business. They will be sold cheap." Interested parties were advised to contact Littlejohn, Dane & Co. at Oswego or F. B. Dane & Co. at New York (OCAT, 24 Jan. 1867). Later promotions in 1867 listed the company under the dual proprietorship of Elisha M. Fort & Co. (a prominent forwarding and commission merchant at Oswego), and F. B. Dane & Co. at New York, with D. C. Littlejohn listed as company agent. A short time later, Littlejohn parted ways with Dane and Fort to take the position of President of the New York and Oswego Midland Railroad, a freight line that linked Lake Ontario with major destinations on the Atlantic including Boston and New York (DCO, 1867).

The association of Chandler, Alvord & Co. returned the Rockaway to service in the spring of 1867. Captain Easton (listed in some records as Eason) made his first departure of the season on April 20 for the familiar destination of Shannonville, returning eight days later with 130 cords of shingle bolts for Chandler and Alvord. The Rockaway next cleared for Lexington around the 1st of May. She was reported in Oswego from Lexington on May 27 with a load of 950,000 hoops for the Mitchell and Brothers barrel making factory.

With their ship now tested through a number of successful voyages, the owners of the Rockaway expanded the scow's operations and diversified the goods she carried. The Rockaway left Oswego for her first interlake voyage on May 30, 1867. Bound for Sandusky on the western end of Lake Erie, she carried a cargo of 1,600
barrels of salt. Oswego had for some time served as a prominent outlet for the movement of salt west from vast natural deposits found in districts located along the Oswego Canal. By 1867 the trade began to decline due to recent discoveries of western sources of this valued commodity. A subsequent run extended the Rockaway's reach more than 1,000 nautical miles to the distant port of Chicago where she delivered a load of lumber (CT, 11 July, 1867). Little is known of the Rockaway's trading ventures in the months that immediately followed. Her next arrival in Oswego was recorded on October 9th, when she was listed with 9,285 bushels of corn from Chicago for the newly formed partnership of W. S. Nelson and W. R. Hosmer. Nelson and Hosmer were produce commission shipping merchants and the proud owners of a line of boats that plied the State canals between Oswego and the coast (OCAT, 9 Oct. 1867).

Once back on Lake Ontario, the Rockaway visited ports in Canada and New York carrying cargoes which included seasonal produce, packaged goods, and coarse bulk freight. Around October 10, she cleared Oswego for the nearby destination of Little Sodus Bay, New York. Her next known arrival was on October 22 at the Canadian port of Hamilton, positioned on the southern end of Lake Ontario. She departed with 10,300 bushels of barley for the produce commission merchants Theodore Irwin and George B Sloan, who were proprietors of Oswego's North-Western grain elevator. The Rockaway was back in Hamilton by the end of the month with a lading of package freight for several local merchants. The delivery included 3 cases of paper bags, 70 barrels of glassware, 17 boxes of clocks, 110 chests of tea, 20
tierces (large casks) of grease, one barrel and one box of unknown contents.

The return from Hamilton to Oswego (some 170 nautical miles by the shortest possible route) proved to be an eventful run for Captain Easton and his crew. Battling the high winds of a severe gale for most of the way, the scow ultimately "shipped a sea" as she made passage between Big Sodus Bay and her home port. The force of the water was so powerful that it broke in the cabin sky light, flooded the aft quarters, and carried away the ship's wheel (OCAT, 5 Nov. 1867). Despite this mishap, the Rockaway made port the same day and delivered 9,907 bushels of peas to the shipping merchants Alonzo H. Failing and William A. Rundell, who also shared interest in one of Oswego's grain elevators. She was back on the Lake one week later with 55 tons of coal bound for Wilson, New York. She returned to Oswego from Wilson around November 25th on her last run of the season, carrying 511 barrels of apples for the Oswego & Rome Railroad and 1 barrel for a party listed in shipping reports as J. C. Hubber. The scow was one of 77 vessels listed as laid up at Oswego at the end of the year (OCAT, 27 Dec. 1867).

In the first two years of service, the Rockaway shifted from hauling mostly lumber products in a limited economic system to shipping a wider range of goods within an expanded network. The initiative to travel to new and more distant American centers may have been influenced by the repeal of the reciprocity treaty with Canada in 1865 and the loss of some of the duty-free trading advantages that had existed before. The opportunity for a higher margin of profit, sometimes gained through long distance trade, may have also influenced the Rockaway's owners to
venture so far from home. Constant adaptability to changing economic conditions would remain key to the Rockaway's future success in the Great Lakes merchant marine.

The next twelve years of the Rockaway's career were characterized by six transfers of ownership and operations largely restricted to ports of call within Lakes Ontario and Erie. Her itinerary would include major trade centers, as well as a number of less prominent destinations. Oswego would serve as the vessel's home port throughout this period.

Stone and McCarthy (1868-1869)

The Rockaway's new owners in 1868 were Nelson S. Stone and James H. McCarthy (BMINE, 1868). Like their predecessors, both men were well versed in the business of maritime shipping. The 41-year old Stone was the son of Lake Captain Orace (Orris) Stone. Nelson was experienced as a grocer and a ship chandler and had applied some of his earnings to shipping interests prior to his investment in the Rockaway (ODP, 24 Oct. 1905). Research indicates McCarthy worked as a "speculator" in 1868 and as a sailor in earlier years (OCD, 1868). He was also familiar with scow forms through a past investment in the vessel Major Anderson in 1861 (NAGRB, 1866). The practice of partial ownership was continued with Stone and McCarthy each holding 1/2 share of the Rockaway's value. George E. Stone was named as Captain in 1868 (BMINE, 1868).

A long, hard winter and the prolonged presence of ice in the harbor resulted in
what was characterized as a "late start" for Oswego shippers in 1868 (OCAT, 4 Apr. 1868). Records suggest the Rockaway made her first run of the shipping season in mid or late April. Although a date for the Rockaway's departure from Oswego is not known, marine reports indicate she cleared the Oswego Canal on a return trip in early May delivering 8,213 bushels of corn from Troy, New York for the business of E. M. Fort & Company. A second return run, this time from Toronto to Oswego, was recorded on May 22nd. On this occasion, the Rockaway was listed as delivering 156,000 feet of lumber and 55,000 shingles to the forwarding and commission lumber merchant, Leverett A. Card. The scow departed for Toronto soon after and returned in five to six days laden with 197,500 feet of lumber for Daniel L. Couch, one of New York State's busiest and most successful lumber dealers of this era. She cleared Oswego for Port Hope, Ontario, around June 1, with an unknown cargo and returned via Toronto on June 12th carrying 202,471 feet of lumber for Albert F. Smith and John K. Post (later John K. Post & Co.), a prominent shipping firm known for its ability to load more than fifteen canal boats in a single day. Smith and Post were also owners of the Oswego towing fleet known as the "Green Tug Line" (ODP, 15 July 1889).

Reports of shipping activity in the Welland Canal in August of 1868 cited the Rockaway bound for Oswego from the ports of Toledo and Chicago. Her arrival in late August was reported in a special column, "Grain on the Lakes for Oswego," which appeared regularly in the Oswego Commercial Advertiser and Times. She was respectfully listed as having carried 9,999 bushels of grain for W. H. Herrick, a well
known forwarder and produce commission merchant and owner of the Continental grain elevator at Oswego (OCD, 1868).

In mid September, the Rockaway reportedly carried 123 "tuns" of salt and unknown quantities of cement and coal to Toledo. She delivered a cargo of peas from Oswego to Erie, Pennsylvania, in early October and returned with 30 tons of coal for the Oswego Gas Company. She then traded at Sodus and Toronto and returned to Oswego around October 25 with 168,900 feet of lumber for Smith and Post. Before October's end she cleared Oswego for the Niagara River community of Youngstown, New York, and returned safely on November 4 with a mixed lading of 7,000 bushels of wheat, 3,200 bushels of barley and 6 barrels of apples for the mill and elevator of Cheney Ames and Company. Around November 8th, the Rockaway left Oswego to deliver 200 tons of coal to Toronto. On December 11th she was listed by marina inspector William Williams as laid up at Oswego harbor along with 9 tugs, 2 barques, 1 brig, 50 schooners, 2 other scow schooners, 3 sloops and 2 barges (OCAT, 11 December 1868).

Nelson S. Stone (1869-1872)

Enrollment records in 1869 list Nelson S. Stone as "sole owner" of the Rockaway, and J. W. Curran as her Master (BMINE, 1869). Although one-party possession did not represent the prevailing pattern of schooner ownership on the Lakes, a review of enrollments and other primary records indicate this arrangement was not uncommon. The first known run for the Rockaway in 1869 saw Captain
Curran and crew depart Oswego around April 16 for Whitby, Ontario. They returned by April 25 with 157,000 feet of lumber for Charles D. Middlebrook and George B. Powell. She left next on May 4 with 250 tons of coal for Toronto and returned in the middle of the month with 174,333 feet of lumber for the merchant, John Mott Jr. The Rockaway cleared Oswego several days later for Toronto with 300 tons of coal, and returned around June 7th, this time with 196,549 feet of lumber for the firm of L.A. Card.

The Rockaway reportedly left for Detroit on June 8 or 9 with a cargo of 250 tons of coal. Her next known venture with cargo involved an eastward passage through the Welland Canal on July 8th and arrival at Oswego on the 17th, delivering 1,100 telegraph poles for telegraph builder and railroad ticket agent, A. A. Colby. She moved through the Welland Canal on July 26th, bound once again for Detroit with a 250 ton load of coal. She passed Detroit to other ports around August 16th and ran eastward through the canal with an unknown lading on August 18th. A reference to a run westward through the canal was recorded for August 31st. Her next arrival at Oswego was listed in marine columns on September 6th when she carried in 300 tons of coal from Erie for the Oswego Gas Company.

The autumn season of 1869 was an equally busy period for Captain Curran and his ship. The typically high level of shipping activity at Oswego this time of year is reflected in marine reports which list the arrival of hundreds of vessels in September alone. In mid September the Rockaway ventured to Hamilton with 191 tons of coal and 2 tons of undefined merchandise. A return run from Erie,
Pennsylvania, delivered 300 tons of coal to the Oswego Gas Company. Trade for the rest of the year was largely conducted between Oswego and ports of call at the southern end of Lake Ontario. In late September the Rockaway cleared Oswego for Youngstown with cargo unknown, and returned to Oswego around October 6 with 4,000 bushels of wheat and 5,000 bushels of barley for the commission merchants of Cheney Ames & Company. The Rockaway left for Youngstown again on 7 October and arrived in Oswego less than a week later with a cargo of 7,500 bushels of wheat and 2,000 bushels of barley for the Ames company. By mid October she set sail for another 145 mile run to Toronto with a coal cargo. She returned around October 21 with 181,000 feet of lumber for L.A. Card. She left on October 24th for Pickering (Liverpool), Ontario, approximately 25 miles east of Toronto, and returned by October 30 with 10,000 bushels of barley for Irwin & Sloan. She cleared several days later for the Canadian port of Oshawa, some 10 miles east of Pickering, and was back in Oswego by November 8 with a repeat load of 10,000 bushels of barley for Irwin and Sloan.

In mid November, the Rockaway and a host of other Great Lakes carriers were caught by a gale characterized as, "one of the most severe and destructive storms in the history of lake navigation" (Mansfield, 1899: 710-716). The storm blew over much of the Lakes region from November 16 to 19 and drove many vessels onto shore. J. B. Mansfield's, History of the Great Lakes, Volume I lists nearly 100 ships that were damaged by the storm and describes more than one third of these as total losses. The Rockaway is included in the list of vessels which were temporarily
stranded. The incident is corroborated by a November edition of the *Oswego Commercial Advertiser and Times* and the following brief report: "Scow Rockaway Ashore. - We learn that the scow Rockaway, laden with apples, is ashore in the vicinity of the Niagara River" (OCAT, 19 Nov. 1869). Other records suggest the Rockaway was sailing to or from Olcott, New York, when the gale struck (OCAT, 9 Nov. 1869). Although the duration of her stranding and the circumstances of her recovery are not known, reports indicate the Rockaway was back in Oswego from Youngstown by mid December with a lading of 6,300 bushels of wheat for Cheney Ames & Company. She and a host of other vessels were recorded laid up at Oswego in early January of 1870 (OCAT, 15 Jan. 1870).

In 1870, J. W. Curran continued in his position as captain of the Rockaway. A number of long runs, new patrons, and new ports of call would distinguish the year's shipping activities. Due to missing spring shipping records in Oswego archives, the earliest known voyage of the Rockaway in 1870 lists the vessel passing down the Welland Canal on July 2nd from Bay City, Michigan, carrying one million barrel hoops for Mitchell Brothers, and Rathbun & Company. She reached Oswego by July 5, and was off by July 8th with 1,325 barrels of carefully stowed waterlime for a client in Detroit.

Following her delivery at Detroit, the Rockaway sailed on to Wenona (West Bay City) where she picked up a second shipment of 1,017,400 hoops for Mitchell Brothers. The cargo was unloaded by August 4th, and the Rockaway cleared Oswego the following day with 130 tons of clay for Toronto. She traveled from Toronto to
Toledo without lading and was recorded in late August passing through the Welland Canal from Port Huron, Michigan, for Ogdensburg, New York, with an unknown quantity of lumber. The *Rockaway* arrived at Oswego from Ogdensburg, without cargo, around the 9th of September.

As with the prior year, the *Rockaway*'s itinerary in autumn and early winter was limited to trips on Lakes Ontario and Erie. She left Oswego for Toronto around September 12 with 280 tons of coal. Following this delivery, she moved "up" the Welland Canal to Erie without cargo. She was back at Oswego from Erie by the 26th of September with 229 tons of coal for the Gas Company. Before September's end, she cleared again for Erie, passing the Welland Canal in early October with a cargo of iron ore from Port Ontario. She returned to Oswego with a load of 304 tons of coal for the Gas Company on the 14th or 15th of October. James Curran and his crew departed from Oswego around October 20 for their last trip of the 1870 season. The scow reportedly passed the Welland Canal on October 3rd bound from Ontario to Erie with a load of iron ore. She returned to her home port by 18 November with 290 tons of coal for the Gas Company, and one tub of butter for Captain Curran. She was listed as laid up in mid December (OCAT, 19 Dec. 1870).

The year 1871 would feature the event of the great Chicago fire and an equally dramatic proliferation of shipping activity on the Lakes. Captain Frank Sussie (or Susie) would command the *Rockaway* for most, if not all, of the year's voyages. The first run of the season began around April 5 with departure from Oswego for Detroit. The ship's cargo was described in alternate terms as "waterlime, at 11 1/2 cents" and
"1,300 barrels of cement." The Rockaway returned from Detroit by April 29 with 190,000 feet of lumber for Edwin L. & Seymour Thornton who ran a wholesale and retail business in pine, hemlock, and chestnut lumber and products of lath, shingles, posts, and cordwood (OCD, 1870). She departed for Cleveland by May 1, reportedly with a Captain "Snow" in command, and stopped to take on a load of pig iron produced at "Bear Creek," a tributary positioned near the community of Sodus Point on Big Sodus Bay (ODP, 1 May; 9 May 1871). The Rockaway was recorded passing up the Welland Canal with her iron shipment around May 9th and down from Detroit around the 20th of May. She arrived at Oswego on May 24, with Captain Sussie at the helm, and delivered 176,000 feet of lumber to E. L. & S. Thornton.

The Rockaway cleared again for the port of Cleveland around May 27. She moved through the Welland Canal around the first of June carrying coal from Ontario. She arrived at Oswego on June 17 with 10,027 bushels of corn from Toledo for C. Ames & Company. Her next trip was to Erie with cargo unknown. She arrived at Oswego from Erie on July 6th and dockside crews proceeded to unload 300 tons of coal for the Gas Company. The unloading routine did not take place, however, according to plan. Details of the calamity that ensued were captured in the following brief account:

This morning the schooner Rockaway was being eased of her cargo of coal at the dock back of the Jefferson Block, when someone on a canal boat adjoining let go one of the ropes which held the derrick upright. The derrick fell instantly, breaking the neck of a horse owned by Daniel F. Donohue and valued at $200. Mr. Donohue, on Saturday last was offered $175 for the animal. When the derrick fell of course the bucket used in unloading the vessel fell too. It just grazed a man who was standing near the hatchway of the vessel, doing no further damage. Whoever loosed that rope came near furnishing us a
first class item. Several men were standing near it when it fell, and it was by sheer luck that some of them were not injured (ODP, 10 July 1871).

Less than a day after the accident, Captain Sussie and his crew were off again for Lake Erie. They would return by July 28 with another 300 tons coal for Oswego’s Gas Company.

On August 8th the Rockaway carried a second load of processed iron from Bear Creek through the Welland Canal, this time for Erie. She returned to Oswego by August 24 with 310 tons of coal for the Gas Company. The scow was reported next on September 13 traveling light from Toronto to Erie. She returned by late September with more coal for the furnaces at Oswego. On September 26th the Rockaway was reported bound for Whitby on northern Lake Ontario, although it is not known what trade was conducted there. Her next recorded cargo was 10,470 bushels of barley which she delivered from Port Darlington, Ontario, to the Oswego grain merchants Benjamin Hagaman and James E. Murdoch on October 6th. Hagaman was part owner of the local Merchants elevator which could store up to 220 thousand bushels of wheat. Like most other grain elevators at Oswego, Hagaman’s equipment was designed to allow one ship to load as another was being discharged of its cargo.

The Rockaway spent the rest of 1871 delivering seasonal harvests of grain and produce to distributors at Oswego. She cleared for Toronto on October 7th with cargo unknown and returned by October 14th from Youngstown carrying 10 thousand bushels of wheat for C. Ames & Company. Her next three shipments to Oswego were barreled apples harvested in the fruit country around Olcott, New York, on southern Lake Ontario. She shipped 2,800 barrels to elevator owners Alred A. Howlett and
Frederick B. Lathrop on October 27th; 2,760 barrels to merchant George A. Bennett on November 7th; and 2,500 barrels to the produce dealers Nelson & Hosmer around the 21st of November. On her final run of the season, the Rockaway carried a combined load of 7 thousand bushels of wheat and 3,200 bushels of barley from Oak Orchard, New York, to Howlett, Lathrop & Company. Delivery was made on 27 November. By December 15th, the Rockaway was resting in her winter berth along with 70 other vessels, including a number of fellow scows: the R. H. Becker of Cleveland, the Markwell and Sassacus of Oswego, and the Pearl of Napanee, Ontario (ODP, 15 Dec. 1871).

Captain Charles H. Ripsom (1872-1873)

In 1872 the Rockaway's owner, Nelson S. Stone, established a grocery and ship chandlery at Oswego with his former partner, James H. McCarthy (OCD, 1872). Motivated by a change of careers and a need for investment capital, Stone sold his scow early in the year for $6,000 to Captain Charles H. Ripsom (OCAT, 12 Feb. 1872). The 33-year old Ripsom began his Great Lakes career as a youth while sailing under the command of his captain-father (ODP, 6 June 1906). He had come a long way by 1872, serving now in the dual role of owner and master of the scow schooner Rockaway (BMINE, 1872).

Cold weather lasting into April resulted in a late beginning for the 1872 shipping season at Oswego. The schooner Caroline Marsh from Port Hope was recorded on April 13 as the first commercial vessel to enter the harbor. Seasonal reports also
anticipated a late opening for the Welland Canal due to the presence of thick ice and the need to make canal repairs (OCAT, 23 March 1872). The *Rockaway*’s first trip under her new captain-owner came on April 23 when she left Oswego for Bear Creek carrying 173 tons of coal. She returned around April 28 with 121 tons of iron ore and was off in early May to deliver a second cargo of 198 tons of coal to buyers at Bear Creek.

Ripsom continued to sail the *Rockaway* in the coarse bulk trade for much of 1872, limiting her travels to ports of call on Lakes Ontario and Erie. Trade with Erie, Pennsylvania, was especially common, carrying iron ore one way and returning with coal for Oswego's Gas Company. No fewer than five round trips were made between Oswego and Erie from June into early October of the year. One alternative voyage in early July saw the *Rockaway* carry an unknown measure of lumber from Sandusky, Ohio, to Oshawa, Ontario.

The remainder of the 1872 shipping season was spent carrying lumber and grain between Oswego and several Canadian ports on Lake Ontario. The *Rockaway* cleared Oswego for Oakville, Ontario, with cargo unknown, around October 12th. She returned to Oswego by October 17 with a mixed lading of over 9,000 bushels of barley for Hagaman & Murdoch, and 23,900 feet of lumber for the shipping business of J. K. Post & Company. Ripsom was off again for Oshawa by October 18, returning to Oswego several days later with nearly 10,000 bushels of barley for Irwin and Sloan. Another trip to Oakville was made around October 23rd. Arrival was recorded at Oswego on November 6th with 8,500 bushels of wheat for Irwin and
Sloan from Port Nelson, Ontario. A final November run carried 192 thousand feet of lumber from Whitby for the dealers Edward Monen and John B. Drewry. The incident of a collision with another vessel in Oswego harbor would mar the end of a seemingly productive shipping season for Ripsom and the *Rockaway* (ODP, 15 Nov. 1872). She and more than 60 other vessels were reported in winter lay-up at Oswego by the year’s end (OCAT, 17 Dec. 1872).

Rope, Bond and Waugh (1873-1878)

Charles Ripsom sold the *Rockaway* to a local partnership at the start of the 1873 shipping season. The *Rockaway*’s new investors were William W. Rope, Charles H. Bond, and Martha Waugh. Each party held 1/3 share of the ship’s value (BMINE, 1873). Rope and Bond were partners with Ozro M. Bond (Charles’ father) in the Oswego business of O. M. Bond and Company. The Bond Company worked as shippers, manufacturers, and wholesale dealers of Michigan and Canadian pine and black walnut lumber (OCD, 1872-1873). The new owners sent their scow on its first voyage of the year in late April, carrying 250 tons of coal to Bear Creek. The *Rockaway* was under the command of Captain Eugene Munson for this delivery and for most of her early runs in 1873. She would later sail under several different captains during the course of the 1873 season.

The *Rockaway* carried wood and coal cargoes for much of the remaining year. She occasionally ventured as far away as the shores of Lake Huron. In mid May, her captain and crew delivered a load of 180 thousand feet of lumber and 75 thousand
shingles from Port Huron, Michigan, to O. M. Bond and Company. She then cleared for Erie, Pennsylvania, with an unknown cargo and was next reported at Oswego on the 12th of June, delivering another 180 thousand feet of lumber and 68 thousand shingles to her owners. She left again for Erie and returned to Oswego around July 1 with 320 tons of coal for the Oswego Gas and Light Company.

The summer trade to Erie continued in 1873 with the Rockaway traveling up the Welland Canal light or with cargo unknown, and returning to Oswego with large lading of coal. One divergence from this trend occurred in early August when the Rockaway delivered coal from Cleveland to Toronto. By August 11 she was bound again from Oswego to Erie, returning by August 21 with more fuel for local buyers. She made another round trip by August 30 carrying 300 tons for the Gas Company while under the command of a Captain James Ferguson. Arrivals at Oswego from Erie were recorded on September 22, October 2, and on October 13, although this time with a Captain T. R. Wade as the commanding officer. On October 9th, while on the down bound run from Erie to Oswego, the newly appointed Captain Wade had the misfortune of puncturing the Rockaway's hull on a set of submerged pilings. Cost to repair the damage would amount to $250 (Detroit Free Press {DFP}, 16 Oct. 1873).

The following related account was published in the Detroit Free Press on October 9, 1873.

We are credibly informed that an accident happened to the schooner Rockaway on her last passage up through the Welland Canal, such as never happened before. In passing up the level between Allanburg and Port Colbourne, the Rockaway struck a sunken spile which had been pulled out of the canal bank with such force as to drive it through her starboard bow and thence up through the deck. The timber entered the hull of the schooner below
water mark, and so she was making water freely; her cargo of ore was shifted aft, thus bringing the hole above water. Not wishing to be delayed, the captain of the vessel sawed the timber off close to the hull, both on the bow and on deck, and putting canvas patches covered with tar over the breaks, proceeded on her voyage. The vessel went to Erie, discharged, and loaded with coal for this port and is now on her way down with the spile still in her (DFP, 9 Oct. 1873).

A number of the remaining voyages in 1873 proved challenging in other ways for the Rockaway and her crew. On October 21st, while passing up the Welland Canal for Erie, the scow was reported "in harbor" and "wind bound," by Port Colborne authorities. Weather conditions were described as "stormy; blowing a gale from the south with rain" (ODP, 22 Oct. 1873). The Rockaway was forced through more bad weather as she returned down the canal; this time in the form of hard blowing southeast winds (ODP, 31 Oct. 1873). The vessel's final run of the season, from Erie to Oswego with coal, was recorded on the 17th of November. By mid December she was laid up in her regular winter berth.

The three party arrangement between William W. Rope, Charles H. Bond and Martha Waugh was discontinued in April of 1874 when Waugh sold equal shares of her 1/3 interest in the Rockaway to her partners (BMINE, 1874). Although the specific reason why Waugh disposed of her investment is not known, it is possible she was discouraged by the general decline in profit felt by many ship owners as they weighed earnings against expenses at the end of the year. These sentiments were reflected by regional authorities with the following commentary:

There seems to be an impression among vessel owners that the (1874) season will prove a bad one for them . . . There is everything against the vessel owner and nothing working in his favor, and in order to live, he must war with man and the elements. (ODP, 12 April 1874)
Some of the specific factors working against the vessel owner included the rising cost of towing services, increasingly unfavorable freight and insurance rates, and changing standards for the classification and evaluation of ships. These and other concerns contributed to the formation of a Vessel Owner's Association at Oswego on April 10, 1874 (ODP, 9, 12 Apr. 1874). Comprised of local mariners and ship owners including past, present, and future masters of the Rockaway, the Vessel Owner's Association would play an influential role in the shipping business at Oswego for some years to come.

The Rockaway began the 1874 season with an early spring run to Port Hope with Captain T.R. Wade in command. She returned by April 20 with a capacity cargo of 200,000 feet of lumber for O. M. Bond & Company. No fewer than 19 additional round trips would be made to American and Canadian ports on Lake Ontario; the longest from Oswego to Hamilton and back. Surviving records suggest the majority of the year's voyages involved a one-way trade to Oswego with lumber cargoes for Rope and Bond and other wholesale dealers. Captain Wade would reportedly serve as master for all but one of these ventures.

By April's end the Rockaway made one additional trip to Port Hope and returned to Oswego with 190,000 feet of lumber for Bond and Company. By the end of May, she delivered at least three more lading of 200 thousand, 190 thousand and 187 thousand board feet from Port Hope, and an additional 180 thousand feet from Hamilton, all to Rope and Bond. The Rockaway's first voyage in June brought 166 thousand feet of lumber and 111 thousand shingles to her owners from Port Hope.
Bond and Company received another 181 thousand feet of lumber and 41 thousand shingles around 13 June. A day or so later, the *Rockaway* and her crew set sail for Toronto with 200 tons of coal. They returned by way of Hamilton on June 27 with yet another large lading of lumber.

The months of July and August saw a slight change in the *Rockaway*’s pattern of movement, the cargoes she carried, and the merchants she served. Summer winds moved the scow to Port Hope and back between June 26 and July 3 carrying 144 thousand feet of lumber, 8 thousand pickets (fence stock cut at a mill), and 32 thousand feet of lath for O.M. Bond & Co. She left soon after for Port Hope, and returned by July 18 with 192 thousand feet of lumber for J. K. Post & Co., and 78 thousand shingles for Rope and Bond. By July 18 she cleared again for Port Hope with 100 barrels of waterlime. She returned by July 25 with 163,308 feet of lumber for D. L. Couch, and 34,572 feet for E. W. Rathbun & Co. Captain Wade was bound for Port Hope again by July's end, this time returning with a mix of wood products including 50 thousand feet of logs, 72 thousand feet of lumber, 23 thousand pickets, and 198 thousand feet of lath. The month of August included separate movements of 225 tons and 292 tons of coal to Hamilton, and return runs carrying 173 thousand and 189 thousand feet of lumber for Rope and Bond.

By mid September, the *Rockaway* moved two more lumber shipments from Port Hope to Oswego for her owners. A third round trip completed by September 23 delivered 116 tons of coal to Hamilton and nearly 175 thousand feet of lumber to Oswego. The *Rockaway* then departed with cargo unknown for Cape Vincent, an
American port positioned at the head of the St. Lawrence River. Her next arrival at Oswego appears in an October 12 record, indicating she traveled from Hamilton with 175 thousand feet of lumber for Rope and Bond. A list of departures for October 13 state that she subsequently set sail for Charlotte Harbor, New York, some seven miles below the city of Rochester, again with cargo unknown. Her next noted arrival at Oswego was from Toronto on October 26th when she delivered 95,662 feet of lumber for E. W. Rathbun & Co. and 74,000 feet for D. L. Couch. After unloading, she cleared for Hamilton and was listed back in Oswego by November 9th with 175,000 feet of lumber for Rope and Bond.

Several new ports of call rounded out the Rockaway's itinerary in 1874. Records of departure for November 9th describe the scow bound from Oswego to Kingston, Ontario, with a Captain "McKee" in command. She is next listed arriving at Oswego around November 12 from the Canadian haven of "Mill Point," this time with Captain Wade in charge, carrying 173 thousand feet of lumber for E. W. Rathbun & Co. Mill Point was positioned on the Lake just seven miles from Napanee; at the time, it served as a regular exporter of lumber to Oswego. Much of the lumber from Mill Point was processed at a Rathbun owned mill which was prominent there. The final voyage of the season saw the Rockaway travel to Port Nelson at the southwestern end of Lake Ontario. She returned to Oswego in good time around November 19th with 10 thousand bushels of barley for Charles C. Morton, a commission merchant and proprietor of Oswego’s Corn Exchange elevator. She went into winter quarters soon after the November 19th delivery.
The 1875 shipping season was not yet underway before members of the newly formed Vessel Owner's Association of Oswego met to discuss the issues of high towing charges and low freight rates which had prevailed in 1874. Owners of forty local vessels came together in March to address these matters. Debate focused on the cost of towing charges at western ports and the general feeling that rates at Oswego were "considerably higher" than the norm. After some deliberation, resolutions were adopted to induce local tug owners and tug operators in the Welland Canal to reduce their fees (ODP, 31 March 1875). Some success was achieved early in the season when the prominent Green Tug Line offered lower towing rates for grain and lumber carrying vessels (ODP, 8 Apr. 1875).

Despite somewhat encouraging beginnings, the business of shipping at Oswego got off to a slow start in 1875. A long cold winter left behind massive sheets of "firm and immovable" ice that lingered well into the month of April. According to the memory of Oswego's "oldest inhabitant," ice had never blockaded the harbor this long (ODP, 24 Apr. 1875). The situation was not helped by the presence of strong, durable winds from the north and northwest which held the ice formations against the shore. Finally, at the end of April, the wind changed to the south with enough force to drive the ice away and open a channel for entry. The Canadian schooners Great Western and Garibaldi were reportedly the first to run the frozen gauntlet into Oswego harbor (ODP, 29 Apr. 1875).

With Captain A. Signor at the helm, the Rockaway made her first departure from Oswego on May 13, bound for Port Hope. She returned on a fast run around
May 15th, carrying 168 thousand feet of lumber and 22,455 pickets for O. M. Bond & Co. By May 17th she had left again for Port Hope, returning one week later with 184 thousand feet of lumber for her owners. A third voyage in May ended with the delivery of another 184 thousand feet of lumber to Bond & Company.

The month of June was initiated with a voyage to Port Hope to pick up 171 thousand feet of lumber and 130 thousand shingles for O. M. Bond & Company. Although Rope and Bond were able to keep the Rockaway active as a carrier, the early summer season did not bode well for many other vessel owners at Oswego. Local accounts listed numerous ships as "in ordinary" or in the "boneyard," suggesting inactivity due to high operational costs and the expectancy by owners of low returns on their investment. Other reports described some vessels being stripped of their canvas and rig for the season. One account offered the following cynical perspective on the state of maritime affairs at Oswego:

Two or three years ago it would have been a foolhardy thing for a bird to build its nest in or about a schooner, but now there's such an air of peace and quietude in Miller's cove that birds have taken possession of the vessels lying there, and a plump robin red breast has a nest on the triced martingal stays of the schooner Rising Star. Captain Finn, the owner of the schooner, says the robin shall remain undisturbed until it brings forth its young, no matter how freights may rule (ODP, 21 June 1875).

Conditions began to improve in mid June when coal freights took an upward turn and some inactive vessels began to sail again. Rope and Bond immediately joined in the new found prosperity and ordered their vessel to Hamilton on June 14 with 280 tons of coal. She returned to Oswego on the 24th with 161 thousand feet of lumber. She sailed next for Port Hope, and arrived home by the month's end with 168 thousand
feet of lumber and 162 thousand shingles for Rope and Bond.

The warm winds of July and August propelled the Rockaway on seven round trips to Port Hope to pick up lumber, lath, pickets, and shingles for Oswego dealers. With one exception, all cargoes conveyed in these months were destined for O.M. Bond & Company. Deliveries at Oswego are reported in Table 1.

Table 1

Rockaway Cargoes and Dates of Delivery at Oswego, July-August 1875

<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 06, 1875</td>
<td>184 thousand feet of lumber and 40 thousand lath</td>
</tr>
<tr>
<td>July 12</td>
<td>176 thousand feet of lumber and 81 thousand shingles</td>
</tr>
<tr>
<td>July 16</td>
<td>176 thousand feet of lumber</td>
</tr>
<tr>
<td>July 21</td>
<td>160 thousand feet of lumber</td>
</tr>
<tr>
<td>August 11</td>
<td>176 thousand feet of lumber</td>
</tr>
<tr>
<td>August 19</td>
<td>156 thousand feet of lumber and 81 thousand shingles</td>
</tr>
<tr>
<td>August 25</td>
<td>1,500 lath, 12 thousand pickets, and 78 thousand shingles for O.M. Bond, and 131 thousand feet of lumber for J. K. Post &amp; Company</td>
</tr>
</tbody>
</table>

September began with another delivery of 144 thousand feet of lumber from Port Hope to Bond & Company. Captain Signor was then ordered to the ports of Toronto and Hamilton to discharge cargoes of 190 and 100 tons of coal at each respective destination. He returned from Hamilton around September 21 with 117 thousand feet of lumber for Rope and Bond. The Rockaway’s next trip was to Belleville harbor where she loaded 175 thousand feet of lumber for E.W. Rathbun &
Company. Delivery was recorded at Oswego on 4 October. She departed two weeks later for Hamilton with 235 tons of coal, and returned from Port Hope around October 20 with 176,000 feet of lumber for the manufacturers and wholesale lumber merchants, Robert Millard and George B. Underwood. The *Rockaway* cleared Oswego the following day on her last known voyage of the season. She ran to Port Hope and returned by October 29 with 166 thousand feet of lumber for Millard and Underwood. Year end reports placed her in winter quarters at Oswego.

The shipping season at Oswego in 1876 began in early April with the arrival of grain laden vessels from Canadian ports. By the middle of the month, the harbor was also alive with the sounds and activity of local ships being made ready to sail (ODP, 12 April 1876). The *Rockaway* left on her maiden voyage of the year around May 4th for Port Hope. She was back in Oswego just four days later with 128 thousand feet of lumber and 53 thousand of lath for O.M. Bond. The rest of the month would be filled by three additional runs to Port Hope, returning with loads of lumber, lath, shingles, and pickets for Rope and Bond. Captain A. Signor would command the *Rockaway* for all of the year's voyages.

A significant fall off of trade in 1876 would result in hard times for many Great Lakes vessel owners, including those at Oswego. When the tallies were all in, port authorities would record the lowest annual receipts of grain and lumber since the year of the *Rockaway*'s launching in 1866 (ODP, 9 Dec. 1876). Captain Signor would complete only two voyages in June, on the 13th and the 30th, delivering 184 thousand and 180 thousand feet of lumber from Port Hope to O. M. Bond & Company. The
scow would lay in harbor for most of July and August. She would finally set sail on August 29 for Bronte, Ontario, returning on September 7 by way of Trenton, Ontario, with 125 thousand feet of lumber and 300 thousand lath for her owners. She would clear two weeks later for Port Hope and return with 176 thousand feet of lumber for the wholesaler, D. L. Couch. A voyage to Port Hope at the turn of the month would result in a second delivery of 176 thousand feet of lumber to Couch and company.

The Rockaway was outfitted in October with a new foremast at the George Goble & James D. Macfarlane shipyard in Oswego (ODP, 12 Oct. 1876). She then headed for Whitby on the north side of Lake Ontario and returned a week later from Baker's Island with 178 thousand feet of lumber for Charles H. Getman and Gardner Boyd. A second layover in October resulted in the addition of a new mainmast, stepped as before by workers at the Goble & Macfarlane yard. With two new spars in place, Captain Signor set his vessel on a course for Cobourg Harbor just seven miles east of Port Hope. She arrived from Cobourg on November 3 with 172 thousand feet of lumber for J. K. Post & Company. Two other November deliveries from Port Hope of 176 thousand feet of lumber rounded out the shipping season for Captain Signor and his crew. Harbor Master William Williams listed the scow in winter quarters at Oswego in his usual December report.

In late March of 1877, activity at Oswego began to "brisk up a little among the sailors" as they fitted out the commercial fleet for service (ODP, 19 Apr. 1877). The schooner O.M. Bond was among the first vessels to arrive at Oswego, delivering lumber from Toronto around April 19. The Rockaway also started the season in the
lumber trade, departing under Captain Signor around April 24 for Port Hope. Signor was off again on May 1 for Trenton despite the reports received from returning captains who alleged that "... plenty of lumber on the wharves but freight very low" (ODP, 1 May 1877). The Rockaway arrived at Oswego from Trenton on May 11 carrying 186 thousand feet of lumber for O.M. Bond & Company. Captain Signor left for Trenton soon after unloading, and was back in port one week later with another 197,300 feet of lumber for the partnership of Rope and Bond.

The Rockaway spent the remaining weeks of May and all of June in a succession of crossings to Port Hope to pick up wood for O.M. Bond & Company. Conveyances to Oswego were reported on the following dates, with one or two June deliveries assumed missing: May 23, 160 thousand feet of lumber, 161 thousand shingles; June 6, 160 thousand feet of lumber, 157,500 shingles; June 9, 176 thousand feet of lumber; June 22, 169 thousand feet of lumber, 82 thousand shingles.

The long standing relationship between O. M. Bond and Port Hope was based on the Bond Company's eminent position as a dealer of Canadian pine and the remarkable rates of pine production that occurred at Port Hope during the early 1870s. Accounts indicate that more than 340 million feet of lumber were shipped out from 1871 through 1876, mostly to Oswego buyers. Although annual production steadily declined from 76 million feet in 1871 to 28 million feet in 1876, projections for improved export rates in 1877 were high due to Port Hope’s offer of reduced port charges for carriers of lumber and shingle cargoes. The nearby location of Port Hope, approximately 110 miles sailing northwest by west from Oswego, added to its
attractiveness as a place of trade for lumber merchants such as Rope and Bond (ODP, 7 June 1877).

Marine columns at Oswego listed only one run for the *Rockaway* in the month of July. She was reported bound for Shannonville, Ontario, on July 26th and back in Oswego by August 8th with 197 thousand feet of lumber for O.M. Bond. She left on the same day for Port Hope and returned by August 13 with sizable ladings of 136 thousand feet of lumber and 250 thousand shingles for her owners. An immediate return to Port Hope resulted in delivery on August 20 of 39,400 feet of lumber to J. K. Post & Company and 114 thousand feet of lumber and 57,250 shingles to O.M. Bond.

More than a month would pass before the *Rockaway* was next reported clearing Oswego harbor. The delivery of 176 thousand feet of lumber from Port Hope to the manufacturers N. W. Dodge and T. B. Meigs coincided with the improvement of local markets for both grain and wood products (ODP, 24 Sept. 1877). The *Rockaway* conveyed a second load of lumber from Port Hope to Dodge & Meigs by the 6th of October. Other trips in October involved the delivery of 170,200 feet from Mill Point to E. W. Rathbun & Company; 182 thousand feet from Belleville to J. K. Post & Company at the end of the month. A final voyage from Belleville on November 10th delivered 104 thousand feet of lumber and 109 posts for James G. Ross & Company and 80,100 feet of lumber and 2 barrels of apples for J. K. Post.

**Captain Thomas Martin (1878-1879)**

In April of 1878, after six years of ownership, William W. Rope and Charles
H. Bond sold the *Rockaway* to ship and insurance agent, Captain Thomas Martin of Oswego (BMINE, 1878). Although the 1877 shipping season was generally regarded as more profitable for Great Lakes carriers than the 1876 season, particularly for the large vessel owners, the fact remained that few holders of individual sailing craft were able to declare significant earnings at the year’s end (Mansfield, 1899: 739). Relative inactivity by the *Rockaway* in 1877 suggest her owner’s profits may have fallen off, contributing perhaps to the decision by Rope and Bond to sell their scow in the following year. Whatever the case, the *Rockaway* was again in the hands of a prominent player in maritime circles at Oswego. Mortgage records indicate Martin once held interest in the schooners *Thomas Simms*, *Thomas Martin*, *E. K. Gilbert*, *Commander Foote*, *Augustus Ford*, *Victoria* and the brig *Saxon*, to name a few (NAGRB, 1866). Command of the newly acquired scow was given over to the owner’s 50-year old brother, Captain David Martin (BMINE, 1878).

Expectations for improved business ran high for some vessel owners at Oswego in 1878 (ODP, 19 Jan. 1878). These high hopes were encouraged by warm winds and a spring thaw which contributed to the opening of the harbor in early March of the year. The *Rockaway* made her first known run on May 30, traveling light to Port Hope. She returned by the 3rd of June with 168 thousand feet of lumber and 67,500 shingles for an agent of Ross & Company who specialized in the manufacture and sale of Canadian lumber. She cleared for Toronto on June 7 and was back by June 24 with 106,874 feet of lumber for Lauren L. Kinyon and Henry S. Wright, and 67,274 feet for the dealer David Page Fairchild. On her next venture, the
Rockaway picked up an unknown quantity of coal for the rate of twenty cents per ton from nearby Fairhaven and carried it on to Toronto. She reportedly returned to Oswego without cargo by the 8th of July. At the end of the month she loaded up with 275 tons of coal, at thirty cents per ton, and sailed down the St. Lawrence River to Ogdensburg. Captain Martin and crew returned to Oswego two weeks later by way of Brockville on the Canadian side of the St. Lawrence and delivered 121,795 feet of lumber, 47,450 feet of basswood, and 171 thousand shingles to the well known dealer, Issac Page Wetmore.

The next seven voyages of the Rockaway were all directed to Port Hope to pick up lumber for Dodge, Meigs & Company. Daniel L. Couch was frequently cited in shipping records as the Company’s receiving agent. Marine reports for lumber deliveries at Oswego for the rest of the summer season may be seen in Table 2.

Table 2

Rockaway Cargoes and Dates of Delivery at Oswego, August-September 1876

<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>August 19, 1878</td>
<td>176 thousand feet of lumber for D. L. Couch</td>
</tr>
<tr>
<td>August 28</td>
<td>184 thousand feet of lumber for Dodge, Meigs &amp; Company</td>
</tr>
<tr>
<td>September 6</td>
<td>184 thousand feet of lumber for Dodge, Meigs &amp; Company</td>
</tr>
<tr>
<td>September 13</td>
<td>192 thousand feet of lumber for D. L. Couch</td>
</tr>
<tr>
<td>September 19</td>
<td>184 thousand feet of lumber for D. L. Couch</td>
</tr>
<tr>
<td>September 23</td>
<td>176 thousand feet of lumber for D. L. Couch</td>
</tr>
<tr>
<td>September 27</td>
<td>176 thousand feet of lumber for Dodge, Meigs &amp; Company</td>
</tr>
</tbody>
</table>
The *Rockaway's* next consignment was in the grain trade, when she carried 9,768 bushels of barley to Buffalo at the freight rate of three cents per ton. She cleared Oswego on September 30, and was not mentioned again in marine reports until November 4 when she arrived at Oswego from Brockville, carrying 194,237 feet of lumber for James G. Ross. A final season run was recorded on November 25 when the *Rockaway* carried a second lading of 196,520 feet of lumber from Brockville to Ross & Company. Just two days later she was gone into winter quarters.

The period of the *Rockaway's* ownership by William Rope and Charles Bond, and later, Thomas Martin, were generally troubled times for the American economy. The year 1873 was distinguished by the abrupt failure of Jay Cooke and Company, a large banking firm heavily invested in the Northern Pacific Railroad. In a chain reaction, many other banks would follow suit contributing to a stock market crash in September of the year. A five-year depression of nationwide proportions followed that was generally characterized by falling prices, a decline in wages, a rise in unemployment, and widespread labor unrest (Walett, 1969: 180-181). Although Oswego would fare better than some Great Lakes centers, a fall off of maritime commerce would lead at least one chronicler to long for the prosperity of earlier days when it was alleged one could walk across the breadth of the harbor on the decks of trading vessels (Johnson, 1877: 116).

Many Great Lakes ship owners were seriously affected by the economic downturn of the 1870s. A reduced demand for transportation services was accompanied by a decline in freight rates and increasingly effective competition from other
forms of transport. The margin of profit for the shipping of such bulk commodities as lumber, coal, and grain was lowered for most schooner operators. Much of the trade that remained was picked up by the larger, more dependable steamers, or by the railroad companies which were able to remain in business. Large numbers of sailing craft became idle or they participated in a diminished trade which barely covered operating expenses. Lower profits left many without the financial resources to administer proper standards of ship reconditioning and repair and contributed to a general decline of the condition and value of many vessels in the schooner fleet.

Records from the 1870s indicate a general depreciation of the Rockaway's value in keeping with the hard economic times of the period. In 1873 the Board of Lake Underwriters estimated the schooner's worth at $7,000, a decrease of nearly 9% from her $8,000 evaluation of the previous year, or an average decline of approximately 3% per year since the time of her launching. The Rockaway's value plummeted from $7,000 to $5,000 between 1874 and 1875, to $4,500 in 1876, and $3,000 in 1878. This devaluation occurred despite initiatives to replace the ship's ceiling planking in 1875, the replacement of her masts in 1876, and a general rebuild in 1877. The Rockaway's insurance rating also fell from a B1 to a B2 standing in 1878 (BLU, 1873-1878).

The American system of classification used to judge the condition and value of the Rockaway was established by a Board of Marine Inspectors in August of 1856 and later approved by the Board of Lake Underwriters in February of 1857 (BLU, 1866). The letter classification (A, B or C) alluded to a vessel's structural strength
and seaworthiness, while a numbering system rated the condition of a ship's operational equipment and machinery. A vessel rated A1 was regarded as superior in overall quality to a ship holding an A2 or B1 classification. The results of these classification systems were regularly used to establish insurance rates charged to vessel owners for their ships and cargoes. Generally speaking, the lowering of a vessel's class resulted in a higher rate of premium paid by its owner or captain. The *Rockaway* received an insurance rating of B1 during the first eleven years of her service. The B1 rating was sometimes applied to distinguish craft which were "not fit" for transporting perishable cargoes such as grain which could spoil if carried over long distances in a damp or leaky hull (BLU, 1866). There was some flexibility in the application of the B1 rating, however, as reflected by the number of grain cargoes the *Rockaway* carried while operating under this classification.

Vessels categorized as scow schooners, even when brand new, did not ordinarily qualify above the B1 rating. None of the scows schooners evaluated in our database ever rose above the B1 level of classification. The only exception to this rule were craft regarded as partial scows, those having only a "scow bottom" or a "scow stern" such as the *A. C. Maxwell* and the *Fred J. Dunford* (USDC, 1870; 1873). The B2 category into which the *Rockaway* had fallen in 1878 was typical of many contemporary scow schooner classifications. It is the guarded opinion of some historians that the common B2 rating of scow schooners may have resulted from their relatively square, flat bilge design and an associated difficulty of access for pump out operations (C. Patrick Labadie, personal communication, 1996). In time, some scow
schooners would slip into a "C" level of classification which was even more restrictive regarding a vessel's fitness for carrying grain and other perishable goods. Throughout their careers, most Great Lakes scow schooners were generally classified as "safe" for the movement of coarse bulk freights such as stone, coal, iron ore, and lumber.

A ship's class was also based on its general physical condition and any changes which may have occurred over time from the effects of stranding, collision, dry rot, or deficiencies in repair materials. Several years of service were enough to warrant a change in classification and as much as 10% depreciation of value per year. With adequate restoration work, however, a vessel could be reclassified to a higher status and value. A ship's estimated worth was, in turn, calculated on a "gold basis" in keeping with current currency rates. This evaluation was intended to "... aid Underwriters and insurers in fixing a value in the policy of insurance." Insurers warned those who consulted this information that these figures were approximate, and should not be used to represent a ship's real market value (Thomas, 1864).

The B2 rating and $3,000 evaluation of the Rockaway in 1878 suggest the condition of her lower structural members had deteriorated due to neglect, damage, or a combination of influences. The lower rating coincided with a surge of vessel surveys administered at Oswego and other prominent Lake ports by inspectors representing the new marine underwriting organization known as "Inland Lloyds," which had ties to the well known Lloyds of London. Many other schooners and scow schooners were similarly reclassified during this early period of Inland Lloyd's development.
Evaluation of the fitness of equipment such as bilge pumps, masts, sails, and other rigging apparel may have served as a secondary yardstick in the lowering of the Rockaway's insurance rating and value. The maintenance of a "staunch" or seaworthy condition was an important component in the economy of a Great Lakes schooner's operation. Unfortunately, these wooden vessels had many regular enemies. The potential for leakage and decay was present from the day of launching. The shallow or narrow nature of many harbor entrances, canals, and other passages made navigation hazardous. Groundings, pier ramming, and collisions with other vessels were an all too common occurrence. The make-up of a ship's cargo and the way in which it was stowed, for example, with too much weight on too few of the frames, could also lead to excess strain and structural damage. A wooden Laker's condition was tested further by an environment which regularly produced tight, stressful wave patterns, and a frequency of sudden and severe storms.

The decks, upper works, and associated equipment of a sailing ship were seasonally exposed to the elements of sun and spray, wetting and drying, frost and ice, and the general wear and tear of everyday use. Planking seams had a tendency to open up in hot weather, ropes would become chafed or frayed, blocks and their sheaves would split, masts and spars might become strained and weakened, and sails could mildew or become so worn that they would tear under certain wind conditions. This equipment also required diligent examination and repair if a ship's handling ability was to remain in good order.

Many factors influenced the decision of owners and masters to invest in ship
maintenance. The seriousness of the problem, the profitability of shipping operations, the cost of a repair or refitting, and the desire to maintain or improve a vessel's rating might be considered. Routine tasks were many including carpentry work, blacksmithing, caulking, painting, sail and rigging repair, and salting for wood preservation. A ship's officers or crew sometimes administered maintenance tasks, and extra pay was received for some assignments. Jobs were frequently hired out to general laborers or specialized craftsmen who were paid the going rate. Maintenance decisions and the quality of the repair work administered aboard ship played an influential role in determining the duration of a vessel's commercial career.

The Rockaway's evaluation increased in 1879 to $4,000 and her insurance rating was restored to B1. Although historical records offer no absolute explanation for the ship's improved status, it is likely the B1 rating was influenced by the quality of the Rockaway's rebuild in 1877 (as cited in 1879 insurer's records), or that a refitting occurred which was not mentioned in these documents (BLU, 1879). It may be no coincidence that the Rockaway's restored status also occurred during a time of economic recovery and renewed trading opportunities for the maritime community at Oswego.

A resurgence of Great Lakes trade in 1879 was accompanied by a new sense of order and adjustment within maritime groups at Oswego. The months of March, April, and May were filled with meetings and initiatives by ship carpenters, sailors, longshoremen, and vessel owners as each party struggled to improve its position within the local economy.
The Vessel Owner's Association ranked high among Oswego's most active maritime organizations in 1879. Members of the Association including *Rockaway* owner, Thomas Martin, met at the start of the shipping season to discuss the subject of freight rates. The membership was most interested in establishing measures to control charges for the shipment of coarse bulk freights up the Lake. Their efforts were complicated by captains and shippers who established their own charters, often to the exclusion of vessel owners, and by the initiative of some Canadian traders who offered to move freight at reduced rates in order to expedite their ship's business. As a measure of their resolve, the Association sent a delegate to a Great Lakes vessel owner's convention in Cleveland with the express purpose to "... confer... and, if possible, adopt some plan which shall promote the interests of vessels, and do something to advance freights, which heretofore have been ruinous" (ODP, 6 Mar. 1879). The Oswego delegate returned with a list of new ideas taken from a constitution developed at the Cleveland meetings (ODP, 31 Mar. 1879). It was not long before many of these concepts were adopted for local use.

By early April of the year, a program was in place which encouraged vessel owners to accept standard freight rates for the bulk commodities they shipped to and from Oswego. A further agreement urged members to withdraw their patronage from any commercial agent who violated the standards established by the Association. A board of directors was formed to determine prices for the freighting of different articles, and to ensure that all vessel owners operating on Lake Ontario were informed of these values. Committees of local owners were organized to make rate change
recommendations in keeping with associated shifts in the regional economy (ODP, 21 March, 31 March, 4 April 1879).

Freight rates were not the only matter of concern for Oswego's vessel owners. By early April, members of the local sailor's union were meeting to discuss new rates they intended to charge for their services. By mid month they decided to fix early season wages at $1.50 per day (ODP, 7 April 1879). After some consideration, representatives of the vessel owners association declared they were not willing to pay the $1.50 rate demanded by union sailors. Some shippers moved to hire non-union men at the rate of $1.25 per day (ODP, 2 May 1879). John Sweeney, President of the Oswego Lake Seaman's Union, responded to these developments with a determined message to vessel owners:

Sailor's Wages

To whom it may concern: No member of the Oswego branch of the sailor's union has been employed at this port at less than the established rate, $1.50 a day, and none will accept employment at a lower rate, all reports to the contrary notwithstanding. The schooner Blazing Star which went out today, sailed with a crew of three boys, not connected with the union. There was but one union man aboard - the second mate. Union men of this port desire it to be understood once for all that they have fixed the rate with due regard to the prospects of the navigation season, and they intend to stand by it.

Vessel owners say that sailors on saltwater only get from $15 to $20 per month and cite this as a reason why lake sailors should work for nearly the same wages. They forget that the former ship for one, two and three years, while the latter are "knocked off" at every point, the trip often not lasting as many days as the saltwater sailors' does years. This argument is altogether too thin. All the lake sailors want is fair living pay and this they are determined to have (ODP, 3 May 1879).

Despite the reasoning of this appeal, most vessel owners stuck to the claim that they could not afford the higher wage demanded by Oswego's mariners. It was not long
before members of the sailor's union decided to abandon their cause, at least for the
time being. They made notice of their concession with the following public state-
ment:

Sailor's Wages Reduced

At a meeting of the Oswego branch of the Lake Seaman's Union, held today, it
was resolved that in view of low rates at which freights rule, the wages of sea-
men at this port be fixed at $1.25 per day until further notice. John Sweeney,
President. (ODP, 8 May 1879)

Longshoremen and ship carpenters represented two additional maritime trades
which joined in the struggle for higher wages at Oswego in 1879. A number of local
stevedores formed a union in April of the year and resolved to set rates for the labor
of loading and unloading commercial vessels and the barges which transshipped
materials between vessel and dock. Penalties in the form of fines were prescribed for
union members who were caught discharging cargoes below the established rate.
Those who repeated the offense risked permanent expulsion from the union. The
acceptance of a ten-hour work day was another standard sought by the longshoremen
at Oswego (ODP, 27 May 1879). Most of these objectives were eventually achieved
with only limited conflict.

Oswego's ship carpenters made their first big push for higher pay in late April
of the year. The movement began at the Goble & Macfarlane shipyard and at the
business of John Navagh, where several ships were under construction or in dry-dock
for repairs. The discontent of workers at these yards threatened to spread to other
shipbuilding concerns as well. The primary demand was for an increase of the daily
wage from $1.50 to $1.75. Navagh gave in almost immediately to his carpenter's
wishes. Goble hesitated while offering the explanation that he had accepted contracts "for the sake of giving the men employment," and had already budgeted the carpenter's jobs at the rate of $1.50 per day (ODP, 28 April 1879). Goble's sons and a few other men continued to work at the going rate. Most of the shipwrights elected to strike, however, arguing that Goble & Macfarlane were receiving $2.00 per day for their services. The shipyard owners were thus making a profit of 50 cents per day for each worker. This represented a rate higher than what they (the owners) had received during even the most prosperous Civil War years. Accounts indicate that Goble would eventually have to concede to the shipbuilder's demands (ODP, 29 April, 1 May 1879).

Amid this flurry of maritime activity at Oswego, the Rockaway was quietly undergoing preparation for commercial service. Earliest mention of the scow is found in a May 19 issue of the Oswego Daily Palladium: "The schooner Rockaway is having canvas bent today. She will probably be engaged in the lumber trade on Lake Michigan this season." Although the prediction of trading at Lake Michigan ports would not be realized, the Rockaway would have an outstanding season as a lumber carrier, making record numbers of deliveries from Port Hope to Oswego.

The Rockaway first cleared Oswego harbor on May 21 under the command of David Martin. Local marine reports list the scow as bound for Port Hope, but allege she returned by way of the St. Lawrence from Brockville, carrying 90,000 feet of lumber for Getman, Boyd and Company. By the end of October she had made no less than 24 additional voyages, all to Port Hope to pick up lumber ladings for customers.
at Oswego. Dates of delivery, quantity of cargo, and agents or clients names were recorded and may be seen in Table 3. Marine reports indicate this series of voyages concluded with an exciting and skillful tow into Oswego harbor.

The schooner Rockaway, captain Martin, came into this port at 10:30 this morning when the storm was at its height. Captain (James) Pappa ran the (tug) C. P. Morey out, though the sea was very heavy, and caught the Rockaway, both riding the great waves very gracefully and successfully. (ODP, 30 Oct. 1879)

The relative prosperity of the 1879 shipping season at Oswego was reflected in comparative statements compiled by customs agents for the period ending October 1, in both 1878 and 1879. Although the navigation season in 1879 opened one month later than in 1878, the number of vessels entering Oswego harbor rose from 1,650 to 1,713, or nearly 4 percent overall. Lumber imports increased by more than 12 percent, from 80,562,000 to 90,744,000 board feet. Other statistics indicate the combined duties collected during the busy months of July, August and September advanced from $128,296.44 to $133,173.58 (ODP, 8 October 1879). Maritime trade was on the upswing at Oswego in 1879, and Oswego’s shippers and vessel owners worked diligently to capitalize on the opportunities offered by an improved economy.

John W. Serles (1879-1880)

In spite of positive developments for maritime affairs at Oswego in 1879, Thomas Martin took steps to sell the Rockaway before the end of the season. By early November, negotiations were well underway with Captain John W. Surles of Detroit, who wished to purchase the scow. Official registers documented Surles as
Table 3

Rockaway Cargoes and Dates of Delivery at Oswego, June-October 1879

<table>
<thead>
<tr>
<th>Date</th>
<th>Cargo/Description</th>
<th>Date</th>
<th>Cargo/Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>June 13, 1879</td>
<td>200,000 ft., D.L. Couch</td>
<td>August 27</td>
<td>186,887 ft., C.H. Getman</td>
</tr>
<tr>
<td>June 18</td>
<td>200,000 ft., D. L. Couch</td>
<td>September 1</td>
<td>170,000 ft., Bond, Kinyon &amp; Co.</td>
</tr>
<tr>
<td>June 23</td>
<td>200,000 ft., D.L. Couch</td>
<td>September 6</td>
<td>176,000 ft., H. A. Crane</td>
</tr>
<tr>
<td>June 28</td>
<td>183,000 ft., D. L. Couch</td>
<td>September 11</td>
<td>187,043 ft., C.H. Getman</td>
</tr>
<tr>
<td>July 4 or 5</td>
<td>192,000 ft., D. L. Couch</td>
<td>September 17</td>
<td>193,000 ft., C.H. Getman</td>
</tr>
<tr>
<td>July 12</td>
<td>192,000 ft., D. L. Couch</td>
<td>September 25</td>
<td>178,794 ft., C. H. Getman</td>
</tr>
<tr>
<td>July 17</td>
<td>200,000 ft., D. L. Couch</td>
<td>September 30</td>
<td>170,311 ft., H. A. Crane</td>
</tr>
<tr>
<td>July 26</td>
<td>176,000 ft., D. L. Couch</td>
<td>October 6</td>
<td>184,000 ft., C. H. Getman</td>
</tr>
<tr>
<td>July 31</td>
<td>152,000 ft., 122,000 shingles, Bond Kinyon &amp; Co.</td>
<td>October 16</td>
<td>180,715 ft., C. H. Getman</td>
</tr>
<tr>
<td>August 9</td>
<td>168,000 ft., H. A. Crane</td>
<td>October 20</td>
<td>180,000 ft., C. H. Getman</td>
</tr>
<tr>
<td>August 15</td>
<td>118,000 ft., D. L. Couch, 72,000 ft., H. A. Crane;</td>
<td>October 24</td>
<td>176,000 ft., Bond, Kinyon &amp; Co</td>
</tr>
<tr>
<td>August 22</td>
<td>161,000 ft., D. L. Couch, 160,000 ft., H. A. Crane (this total load would seem beyond the vessel's cargo capacity)</td>
<td>October 31</td>
<td>180,000 ft., Bond, Kinyon &amp; Co</td>
</tr>
</tbody>
</table>
mariner and managing owner of the *Rockaway* (BMINE, 1879). For reasons unknown, Oswego reporters conveyed a decidedly dismal view of the Surle's business manner with the following commentary: "The Detroit person who made the negotiations here (for the *Rockaway*) will never grow round shouldered with the weight of his reputation as a gentleman" (ODP, 4 Nov. 1879). The sale and departure of the *Rockaway* was described in greater detail in a report taken from the *Detroit Free Press*:

Recently captain J. W. Serles sold the scow *L. May Guthrie* for $5,000 and made arrangements to purchase the *Rockaway*, a 164 ton scow, owned by T. Martin and hailing from Oswego, where he undoubtedly consummated the transfer, paid down $2,250 and, it is supposed, started to bring the scow up to Detroit. Yesterday private dispatches were received stating that the *Rockaway* had gone ashore and was a wreck. No particulars were ascertained and it is supposed that no one was lost (ODP, 19 Nov. 1879).

Later accounts suggest the *Rockaway* did not go ashore, but arrived safely at Cleveland. She was subsequently chartered at Cleveland around November 22 to carry a load of coal to Sarnia, Ontario (ODP, 25 Nov. 1879). On her last run of the season she carried 97,000 feet of lumber from Wallaceburg, Ontario, to Buffalo, New York, where she took her winter refuge (Buffalo Express, 9 Dec. 1879).

**Winfield Scott Gerrish (1880)**

The year 1880 was marked by the permanent transfer of the *Rockaway* to the upper Lakes region. For reasons unknown, J.W. Surles elected to sell his newly acquired scow to another Michigan investor. Winfield Scott Gerrish purchased the *Rockaway* in early March of the year (BMINE, 1880) and proceeded to move his
vessel by sail and tow from Buffalo, to Muskegon, Michigan, positioned on the middle western shore of the state. During the period of its transfer, the ship was placed under the command of Muskegon mariner, Porter S. Fuller. The trip was administered in several stages and took three full months to complete (DFP, 3 Apr. 1880).

The community of Muskegon, like the city of Chicago, was situated on a protected inlet which offered a natural advantage for the development of harbor facilities. Here the Muskegon River, one of the longest rivers in the state, broadened out into Muskegon Lake, a body of water 6 miles long and 1 to 3 miles wide. The lake held an average depth of 30 feet and furnished a narrow watercourse which fed into Lake Michigan. The channel's natural shallow depth was first deepened in 1863 with private enterprise. This work was continued in later years with government assistance. By the time of the Rockaway's arrival, dredging and pier construction had produced an entryway 180 feet wide and 12 feet deep. It provided year-round access to Muskegon Lake and the adjoining shoreline communities of Muskegon, North Muskegon, Lakeside, Bluffton, and Port Sherman (Ludlow, 1889: 3; Mansfield 1899: 882).

It was not unusual that a ship built for the lumber trade should be brought to Muskegon in 1880, for at this time Michigan was the nation's leading lumber producing state, and the forests near Muskegon turned out timber in quantities challenged only by the production of the Saginaw Valley to the northeast (Jochim, 1893; McCraken, 1876: 39-47). Muskegon's vast stands of timber and other natural advantages led to the development of an economy which based much of its livelihood on
lumber production and distribution. The area saw remarkable growth in population and lumber related businesses during the 1860s and 1870s. By 1880, scores of mills, docks, and associated facilities lined the shores of Muskegon Lake. A record 590 million feet of lumber and 58 million shingles were produced in 1880 alone (Hotchkiss, 1898: 223). In the same year, more than 6,500 commercial vessels were reported to have entered or cleared the harbor (Glasgow, 1939: 27). Such high levels of trade made Muskegon the second busiest port on Lake Michigan, rivaled only by Chicago (Glasgow, 1939: 26). Muskegon’s proximity to such large coastal communities as Chicago and Milwaukee was also of importance to the development of local shipping interests. Ties were particularly strong with Chicago, the nation’s most active wholesale lumber center of this era.

Soon after the Rockaway reached Muskegon, she was refitted with a new fender, some new sail, and a set of davits to support her "yawl" or small workboat (Muskegon Daily Chronicle {MDC}, 4 June 1880). The scow was being refurbished to serve in the lumber trade, for in 1880, her new owner, Winfield S. Gerrish, was one of Michigan's most prominent lumber producers. Gerrish's accomplishments suggest he was also one of the lumber industry's most innovative businessmen and engineers. The context of his achievements and relationship with the Rockaway, however short lived, are worthy of some elaboration.

Winfield Scott Gerrish was born the son of a Maine lumberman, Nathanial Gerrish, in 1849. In 1857, the Gerrish family moved to Wisconsin to take advantage of the opportunity its vast woodlands offered an experienced logger. They relocated
to Michigan's heavily forested Muskegon Valley in 1861 where the family had acquired timber interests, and moved throughout Newaygo and Osceola counties in the years that followed. At twelve years of age, young Gerrish was sent away to be educated at a private school in Grand Rapids. His success as a student led to an eventual appointment to the U.S. Naval Academy at Annapolis. Training for a career as a naval officer did not suit him, however, and at 18 years of age Winfield returned to Michigan to pursue the trade of a lumberman (Graham, 1970: 55).

Gerrish married in 1869, just two years after his return to Michigan. He landed his first logging contract in 1873, following several seasons of hard won experience in the forests around Muskegon. The contract called for the removal of 16 million feet of timber from a remote location in the vicinity of Freeman Township. Because of light winters experienced in the preceding two years, Gerrish was forced to contend with low water levels in the tributary he planned to use to drive the logs into the Muskegon River and on to the milling facilities surrounding Muskegon Lake. Although the problem was eventually overcome through some creative "damming, sluicing and banking" of the stream, it was not achieved without great physical hardship and a "fearful cost" (Bajema & Meek, 1991: 102). Much of Gerrish's eventual success may be attributed to this early experience and the interest he developed for removing logs from regions which many of his fellow lumbermen considered too remote, or too costly to explore. Soon after his work in Freeman Township, Gerrish joined with several partners to invest in 12 thousand acres of virgin forest in Clare County, some distance from the upper Muskegon River (Powers, 1912: 182-184).
The challenge of removing timber from this area would lead to the accomplishment for which Gerrish is best known; the development of the first successful logging railroad in the United States (Keenan, 1960: 292-302).

Historical accounts suggest Gerrish conceived the notion of a logging railroad while attending the U.S. centennial celebration at Philadelphia in 1876. Accompanied by his wife and young son, he witnessed the exhibition of a small locomotive which he thought could be adapted to the task of moving logs from the forested interior. When Gerrish saw the engine, it is said he remarked: "Just the kind of a horse to haul logs without snow" (Keenan, 1960: 295). The timing was ripe for such a venture. Many of the large tracts of timber which grew near to the fast moving rivers and streams of the Muskegon Valley had already been cut. Most potential investors considered the remaining woodland area as inaccessible to standard economical methods of harvesting and transport. Gerrish wasted little time in putting his newly formed idea to the test. Less than a year after his trip to Philadelphia, he brought together the financial and physical resources necessary to construct the "Lake George and Muskegon River Railroad." The operation employed small locomotives, railroad cars, and light, narrow gauge rail to move logs from Lake George to the headwaters of the Muskegon River, thus bypassing difficult streams and the need for teamsters or sleighs. The product return was enormous. Records indicate the first year's output was 20 million feet of lumber. The railroad subsequently delivered a remarkable 130 million feet in 1879 and 100 million feet in 1880 (Graham, 1970: 56).

The initial fiscal success of the Lake George and Muskegon Railroad allowed
Gerrish to invest heavily in milling and manufacturing interests at Muskegon and other locations. By the end of 1880, his holdings included several railroad systems, a shingle mill at Muskegon, two shingle mills in Hersey, and one-half interest in a mill at Big Rapids. He was also half-owner of two Muskegon lumber mills including, "Hamilton, Gerrish and Company," which ranked as one of the city's largest manufacturing concerns. In order to guarantee a steady supply of wood to his factories, Gerrish also continued to purchase timbered lands. By the year's end he rounded out his investments to include vessels like the Rockaway, which he used to move lumber to beckoning regional markets (Worden, 1881: 304-306).

Brinen, Munroe and Thompson (1880-1891)

Enrollment documents indicate that Gerrish did not maintain ownership of the Rockaway for a full season. The scow schooner was instead sold to the Muskegon lumbermen, William Brinen and Thomas Munroe, on August 22, 1880. Ole Thompson was selected to serve as the Rockaway's captain (BMINE, 1880).

Gerrish's sale of the Rockaway may have been driven by deficits incurred by the development and operation of the Lake George and Muskegon Railroad. Unfortunately, the relative success of prior years did not materialize in 1880. Accounts of the Railroad's operation in 1880 describe a modernization and expansion program which cost $242,959 for new roads and equipment. Gross earnings, however, were only in the amount of $86,043. Unfunded debt included advances of $80,839 by Gerrish, as well as $1,856 in taxes, and $1,063 in unpaid accounts. The company
eventually showed $56,400 in operating losses for 1880 (Bajema & Meek, 1991: 104). All of this occurred in association with a gradual decline in the market price for lumber from Muskegon.

In 1880-1881, Gerrish acquired much needed capital through the sale of the Rockaway and other local interests. The most significant assets he released included the Lake George and Muskegon Railroad, which was sold to the Thayer Lumber Company, and the Wilson Mill, which he passed on to a Chicago buyer (MDC, 2 June 1881). Gerrish would die one year later while considering the acquisition of forested properties in regions as far flung as Ontario, Georgia, and Louisiana. His untimely demise at 33 years would take place at a sister's residence in Evart, Michigan. His death was at first attributed to small pox. A more probable diagnosis linked Gerrish's death to a kidney disorder, an ailment he had suffered with for some time. To ensure the safety of the local population from a possible outbreak of the pox, authorities immediately buried Gerrish's body in the local cemetery. His remains were later transferred to a metallic airtight casket, and shipped to Muskegon for internment in the family vault (Keenan, 1960: 301-302; Powers, 1912: 184).

Winfield Scott Gerrish's passing marked the end of a brief, but significant career in the historical annals of Michigan's lumber industry. Although the financial success of the Lake George and Muskegon Railroad may have been short lived, Gerrish's innovation was an idea that would be readily adopted by many other enterprising businessmen. By the time of Gerrish's death in 1882, more than 30 logging railroads were operating in Michigan; by 1885 the numbers had increased to
49 operations statewide. The effect of these railroads on Michigan's forests, and the
general transformation of the industry would be felt for many years to come.

Although ownership of the *Rockaway* was limited to less than one full ship­
ning season, the enterprising partnership of Brinen and Munroe would make good on
Gerrish's original intent. They immediately entered the scow into the Muskegon lum­
ber trade and initiated a pattern of movement between timber production and proces­
sing centers which would characterize the vessel's commercial career for its remaining
years.

Like W. S. Gerrish, William Brinen and Thomas Munroe were important
players in Muskegon's lumber industry. Each moved to the region as a young man;
Brinen gained his first experience in logging camps driving an oxen team, while
Munroe's initial employment was as a book-keeper for the business of L. G. Mason &
Company (Moore, 1915: 862 & 1414). Both men would rise rapidly in the ranks of
the lumber trade through their skill, diligence, and pursuit of the many opportunities it
allowed.

Thomas Munroe founded the Munroe Manufacturing Company in 1880. By
1881 the firm employed 30 men, a kiln, and a sizable mill and planing operation
(MDC, 16 Dec. 1881). Munroe had earlier acquired an interest in the plant facilities
of his employer, L. G. Mason & Company, which after some success, was sold in
1878 to the Thayer family of Boston. The Thayer Lumber Company was a stock
company in 1881 and one of the largest lumber producing concerns in the state.
Investments included huge tracts of timberland in west Michigan as well as the newly
acquired Lake George and Muskegon Railroad. These lands were logged and their products shipped by rail, sail and steam from several different mill sites from 1878 to 1909. Thomas Munroe served as the Thayer Company's general manager from 1878 until his death in 1906. Brinen would act as the Company's Superintendent of Manufacturing for much of the same period. In 1885 Munroe and Brinen joined ranks to create the Munroe and Brinen Company, which purchased logs for processing into lumber (Moore, 1915: 864). The Rockaway was one member of a small flotilla used by the partnership to control the profitability of distribution operations for these and other business concerns.

Construction of the Munroe Mill and the expansion of other processing facilities indicate the optimism of Muskegon's lumber manufacturers in 1881. With some effort, the spring tally of logging operations would rise to meet these expectations. By April, record quantities of timber had been collected for delivery to the milling interests surrounding Muskegon Lake. This success was offset in the fall by an outbreak of labor unrest and a rash of strikes by mill workers and the men of the Muskegon Booming Company who sorted and moved the logs to their milling sites. These parties petitioned the mill and boom company owners for higher wages, safer working conditions, and a working day which did not exceed ten hours. Conflict with owners, walkouts, and the disruption of manufacturing and distribution operations occurred intermittently until the end of May, 1882. The protest was eventually called off in early June with only marginal success achieved by most of the striking factions (Muskegon Chronicle, 1937: 96-97).
In August of 1881, shortly before the eruption of the first of labor strikes at Muskegon, Thomas Munroe and William Brinen sold 1/4 ownership of the *Rockaway* to her Captain, Ole Thompson. Munroe and Brinen equally divided the remaining 3/4 share (BMINE, 1881). This partnership would be maintained for the rest of the scow's active years. Shipping records for 1881 suggest limited operations by the *Rockaway* in keeping with the labor unrest at Muskegon. On September 3rd, she departed from the Thayer Mill for Chicago with a load of 175 thousand board feet of lumber. On November 7th, she left the Rodgers Mill for Chicago with a similarly large lading. The *Rockaway* would winter at Chicago in 1881. This location was convenient for Captain Thompson who kept residence with his family in a nearby waterfront district.

The labor unrest of 1881-1882 slowed operations for the Thayer Lumber Company, and resulted in low levels of log delivery and milling production for the spring shipping season of 1882. The Thayer Company (a principal supplier of the *Rockaway*'s shipments) was only able to resume normal production rates for lath and lumber by the summer's end. On August 16, the scow carried 210,000 feet of lumber from the Thayer mill to Chicago. The only other discovered account of the *Rockaway*'s movements in 1882 indicate that she went into winter quarters around November 15 at the Thayer Company docks. Insurance records list the ship's rating at a lower B2 status and her valuation at $2,500 (Inland Lloyds 1882).

Marine reports from 1883 describe a generally improved shipping season for exporters at Muskegon, and for the owners of the *Rockaway*. Lumber stockpiled
during the two previous years was now readily available for processing and distribution. Captain Thompson and crew made no less than six trips from Thayer docks to the Chicago market with capacity loads of lumber. Approximate departure dates from Muskegon and ladingds (listed in board feet) can be seen in Table 4.

Table 4

*Rockaway* Lumber Cargoes and Dates of Delivery to Chicago, July-November 1883

<table>
<thead>
<tr>
<th>Date</th>
<th>Lading (Board Feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 7, 1883</td>
<td>215,000 ft.</td>
</tr>
<tr>
<td>August 4</td>
<td>200,000 ft.</td>
</tr>
<tr>
<td>August 13</td>
<td>200,000 ft.</td>
</tr>
<tr>
<td>September 5</td>
<td>200,000 ft.</td>
</tr>
<tr>
<td>October 13</td>
<td>190,000 ft.</td>
</tr>
<tr>
<td>November 10</td>
<td>200,000 ft.</td>
</tr>
</tbody>
</table>

The *Rockaway*'s November 10 voyage nearly ended in tragedy when the vessel and crew were caught in a violent seasonal storm. The ten day gale seriously affected other members of the Great Lakes fleet as well. Numerous ships and cargoes were either destroyed or damaged, resulting in significant financial loss for their owners and insurers. Far more tragic was the cost in human lives, as scores of mariners perished while attempting to sail their vessels to safety (Mansfield, 1899: 739). One newspaper account did well in articulating a sense of this tragedy and its far reaching effect on the maritime community:
During the late succession of storms on the lakes, sixty craft have been stranded or have foundered, and the sacrifice of life, so far has learned, has been fifty-seven. Death and desolation have come into numerous homes . . . The widows and orphans of drowned men are encountered at the tug offices, the Custom House and the telegraph office-wherever news is to be obtained—and their grief excites pity on every hand. Marine circles are said everywhere to be in mourning. (MDC, 20 Nov. 1883)

Details of the Rockaway's brush with disaster in 1883 were documented by the regional press and in a report prepared by the Captain of the U.S. Life Saving Station at Kenosha, Wisconsin. The scow and her six man company departed from Muskegon for Chicago on November 10th, heavily laden with lumber. On that Sunday afternoon they were overtaken in mid passage by the winds of a westerly gale, which proceeded to batter the ship's sails until the ship became unmanageable (Annual Report of the U.S. Life Saving Service {USLSS}, 15 Nov. 1883).

In a weakened condition, with waves crashing over the decks, the Rockaway was driven west for nearly two days before arriving in sight of the Wisconsin shore near Kenosha. The ship was spotted by a surfman from the Kenosha Life Saving Station (MDC, 15 Nov. 1883). The Station's crew hurriedly prepared to perform the service for which they had so frequently trained. The following account of the rescue of the Rockaway and her crew was extracted from the Annual Report of the Operations of the United States Life Saving Service, published in 1885. It is based on an official report prepared by the Kenosha Station Captain, Benjamin G. Cameron, in November of 1883.

At 9 o'clock in the morning the crew of the Kenosha Station (Eleventh District), Lake Michigan, sighted a schooner standing in on the wind towards the land under scant canvas, apparently in a crippled condition. They boarded her about two miles from the harbor and found she was the Rockaway . . .
The crew also were frostbitten and badly used up, they having been without
sleep for forty-eight hours. The life-saving crew took charge of the vessel to
enable the sailors to get rest, and went to work knocking the ice from the hull,
sails, and rigging, and after considerable labor succeeded in getting enough
canvas to take her close into the piers where she was anchored. A tug passing
up the coast toward Racine, from Chicago, was then hailed and employed to
tow her into the harbor, where the men could work to better advantage in
clearing off the ice and repairing the sails. By 5 o’clock in the evening the life­
saving crew had the repairs so far completed that with a favoring wind, and
the sailors refreshed by their few hours rest, the schooner was enabled to
resume her voyage down the lake to Chicago. (USLSS, 15 Nov. 1883)

Reporters with the *Chicago Inter-Ocean* interviewed Captain Thompson and
offered a more dramatic description of the 1883 incident.

The schooner having lost her canvas was at the mercy of the storm and was
run before the wind until Tuesday, when she brought up about ten miles off
Kenosha. The distress flag was hoisted by the famishing crew, none of whom
had eaten a morsel of food or left the deck for forty-eight hours. Captain
Thompson had not left the wheel in that time, and all had abandoned hope of
ever placing a foot on land again. The waves washed over the sides and
deluged the cabin, depriving the men of their dry clothing and of the comfort
of a fire in the stove. With sinking hearts they stared death in the face, and
were on the point of giving up the struggle when the life-saving crew sta­
tioned at Kenosha appeared on the water coming in their direction. The res­
cue was just in time. Captain Ben. Cameron and eight healthy young fellows
composing the life-saving crew came on board of the *Rockaway* and took
charge of her. The vessel at this time presented the appearance of a floating
iceberg, and the men were ice-covered to the eyes.

Captain Thompson is effusive in his praises of the work done by Captain
Cameron and his men, and declares that there is not a life-saving crew on the
whole chain of lakes superior to the men to whom he and his crew are
indebted for their lives. Had assistance not come when it did the *Rockaway*
would have gone out into the lake again and foundered. When the craft was
brought into harbor at Kenosha the life-saving crew cleaned her up, removing
all the ice from the rigging, and then got her under way for Chicago, where
she arrived yesterday morning with most of her cargo, the only loss sustained
being about five hundred feet of lumber. (Chicago Inter-Ocean {CIO}, 17
Nov. 1883)

As the account indicates, Thompson greatly appreciated the rescue service
performed by the Kenosha Station crew. It was reported in the *Muskegon Daily Chronicle* that as an expression of his gratitude, the Captain "... would send each of the life saving crew at Kenosha a plump turkey for either Thanksgiving or Christmas, he hadn't fully made up his mind which." Unfortunately, the historical record does not tell us whether Thompson honored his intention. Other records indicate, however, that the Captain did not elect to sail again that season (MDC, 16 Nov. 1883).

Despite the harrowing experience of the prior year, the *Rockaway's* owners had their vessel back in service by the spring of 1884. The Munroe Company mill and related operations then employed 55 men, and the adjoining yard of the Thayer Lumber Company was piled high with its products. Although cargo tallies were not given, the marine columns of the Muskegon Chronicle recorded twelve lumber laden voyages to Chicago, and one trip to Racine, by the *Rockaway*. Approximate dates for clearance from Muskegon to Chicago were listed as June 6, and 16; July 10, 15, and 21; August 20 and 30; September 5, 16, 23, and 27; October 7 (to Racine), and November 8th.

The *Rockaway* continued her trade with Chicago in 1885. No less than 17 voyages were made between early June and late October of the year. Lumber or lumber products were carried from Muskegon on or about the dates of June 4, 9, 22 and 29; July 7, 17 and 28; August 15, 20, and 25; September 1, 10, 16, 22, and 29; and on the 9th and 24th of October. On the 8th of June, it was reported the *Rockaway* collided with the tug *North Muskegon* while entering Muskegon harbor. Details of the account indicate neither vessel sustained serious damage (MDC, 8 June 1884).
Shipping activity from Muskegon was seriously affected in early 1886 by labor strikes in Chicago's lumber districts. The issue of better pay and a shorter 8-hour working day ranked high among the demands of the local Lumberman's Union. Vessels were idled at both the supply and receiving end of the Muskegon to Chicago connection. Some Muskegon captains received instructions to keep their loaded vessels in port. Many crews were discharged as vessel owners decided to wait until the dispute in Chicago was resolved (MDC, 1 May 1886). One newspaper account summarized the seriousness of the situation for Muskegon mills and associated shipping operations:

Light Shipments - Only a few Schooners Engaged in Carrying Lumber
The Situation in Muskegon

The strike in the Chicago lumberyard has knocked the bottom out of shipments by water from this port, and most of the schooners are in ordinary. The clearances from this port for several days have been astonishingly few, and the arrivals are about the same. This state of things not only affects our tugmen and sailors, but other businesses as well. There are between 400 and 500 vessel loaders around Muskegon Lake who are affected by the situation. Some of our sawmills will be shut down if the strike continues as they lack room and will not be able to pile their lumber. Others of the sawmills can continue work for some time yet as they have better facilities for piling lumber. (MDC, 3 May 1886)

Labor unrest at Chicago continued in the weeks that followed, sometimes taking a violent turn. In some areas police protection was needed for dock laborers who offered to load and unload those ships which remained active. Some vessel owners became so concerned for the safety of their crews that they ordered their captains to keep their men out of the lumber districts entirely (MDC, 8 May 1886). By May's end, negotiations led to the resolution of the labor problem at Chicago. Clearances
from the port of Muskegon increased accordingly, with most vessels bound for the
now booming lumber district across the Lake. Freight rates between Muskegon and
Chicago remained steady, or gradually improved, as the season advanced (MDC, 20
May, 25 June 1886). Although marine reports relate an active trade from Muskegon
for the rest of the year, only one voyage by the Rockaway is listed in local marine
reports. On November 3, the vessel was described as departing in consort with the
schooner Persia for Riverdale, Illinois.

An all time record high was achieved for lumber cut in Muskegon's mills in
1887. Reports indicate quantities of 700 million feet of lumber and 520 million
shingles were produced in this one year by local milling operations (Glasgow, 1939:
30; MDC, 29 Dec. 1887). Heavy cutting and the use of logging railroads in the
remote northerly forests was taking its toll. A pattern of steady decline in local
production rates for lumber and shingles would occur in the years that followed
(Glasgow, 1939: 30).

As the quantities of timber taken from Muskegon's forests gradually declined,
the efficiency of the lumber sorting, planing and production facilities of businesses
like the Thayer Company were expanded and modernized (MDC, 4 Apr. 1887).
These improvements allowed distributors to increasingly bypass the network of
Chicago's dockside businesses and laborers who ordinarily sorted and finished the
lumber, and to ship directly to a greater range of buyers. The opportunity for direct
trade in a more diverse market led the Thayer Company to increase its use of railroads
which had connecting lines to the Muskegon area during the 1870s and 1880s. In
1887, and in the years to follow, the *Rockaway* was increasingly used for hauling lumber produced at locations outside of the Muskegon district.

As in earlier years, the *Rockaway*'s trade in the late 1880's was focused on the movement of lumber and wood products to the insatiable markets of Chicago. During the period from May 1 through November 30, 1887, the scow delivered no fewer than 22 lumber cargoes from western and northern Lake Michigan ports to Chicago and to Riverdale at South Chicago. The primary distribution center was Muskegon with 15 shipments, while an additional four lumber ladings were carried from Manistique. Trips were also made from Holland, Manistee, and White Lake. All return trips from Chicago were listed as "light" or without cargo.

The 1888 shipping season at Muskegon got off to a rough start with labor problems among the men who made their living loading lumber onto ships. Throughout the month of April, strikes for higher wages by these experienced "dock wallopers" seriously affected local shipping operations. Frustrated ship masters and vessel owners were forced to hire special crews or to employ their own sailors in loading routines (MDC, 17 Apr. 1888). Ship captains received little or no support from lumber yard owners who claimed they had all they could do to manage their own sorters and (rail) car loaders without "... tangling themselves up with the vessel interest" (MDC, 23 Apr. 1888). Some barge owners took the initiative to hire new loaders, but all too often they could only come up with small and inexperienced crews. By mid-May, lumber shippers proposed to resolve the situation by paying four dollars per day for a dockman's services. This new standard rate was deemed acceptable by most of
the striking workers, and loading operations at Muskegon soon returned to a normal routine (MDC, 22 May 1888). The Rockaway's owners continued the regular pattern of shipping lumber from Muskegon and other supply centers to Riverdale, Illinois. She left Muskegon on April 28 for Riverdale and returned by May 23; soon after the strike by vessel loaders was resolved. Other deliveries from Muskegon to Riverdale were recorded in June, July, August, and October of the year.

Although lumber production at Muskegon reached significant levels in 1889, renewed discontent among vessel loaders and a depressed Chicago market seriously limited the opportunity for carriers to turn an easy profit. A number of vessel owners increased their trade at other lumber production centers such as Manistee, Ludington, and Manistique, Michigan, and various Wisconsin ports. Advancing competition at Muskegon from rail, steamships, and steam barges also limited the opportunity for commercial sail to remain competitive. These factors contributed to a reduced schooner trade at Muskegon in 1889 which included the activities of the Rockaway and related workers. A rash of articles appeared in the local press decrying the situation. They included such headlines as "A Vessel Loader's Views" (MDC, 10 Apr. 1889); "Vessel Loaders Versus Barge Owners" (MDC, 29 Apr. 1889); "The Lumber Situation" (MDC, 4 May 1889); "Blue Times for Lumber Carriers" (MDC, 27 May 1889); "The Last Advance in Lumber Freight" (MDC, 31 Oct. 1889) and others.

The year 1890 brought with it some improvement for the lumber industry at Muskegon. Thomas Munroe spoke out in an August interview with confidence about increased volumes of trade and stronger prices for the products of the Thayer Lumber
Company. Munroe's predictions of improved conditions were supported by other prominent Muskegon lumbermen in the same report (MDC, 2 Aug. 1890). As a possible reflection of Munroe's optimism, the Rockaway was commissioned to carry lumber from Muskegon to Chicago in April of the year. She continued in May with one delivery to Hammond, Indiana, and several to South Chicago. In June, she traveled once to Milwaukee and twice to Chicago. She delivered six lumber shipments to Chicago in July and August, and sailed twice to Chicago and once to Hammond in September. Voyages were mixed in October between Milwaukee, Hammond, Chicago, and South Chicago. Trade with other ports included a mishap at Holland, when rough seas threw the Rockaway against the south pier at the harbor entrance. During the collision, the scow's foreboom struck and demolished the structure which supported the south pier range light (Van Reken: 40).

In early 1891, the Muskegon market reflected low freight rates for lumber delivered to Chicago. The rates remained relatively low throughout the season and discouraged many small vessel owners from trading there, despite the greater time and cost which could accompany travel from more distant ports. The Rockaway began the season in April with a departure from Chicago to Pine Lake at Charlevoix, Michigan. She voyaged to Manitowoc and Milwaukee, Wisconsin, before arriving in Chicago in early May with lumber from Charlevoix. Subsequent trips included a delivery from Saugatuck, Michigan on May 21st; from Muskegon to Riverdale on June 2nd; and visits to Minorville and Sturgeon Bay, Wisconsin, in late June. Marine reports also recorded the Rockaway in Chicago with cargo unknown on July 3rd,
departing on July 6th for an unspecified location.

The *Rockaway* was removed from service in July of 1891 for a much needed restoration. Brinen and Munroe commissioned Thomas Notter to supervise a partial rebuild of the ship's hull at the Muskegon Booming Company yard (situated near the company dock) at the eastern end of Muskegon Lake. The Booming Company was a consortium of lumber producers who managed the business of sorting and delivering logs to Muskegon's mills. *Rockaway* owner Thomas Munroe was acting Secretary of the Company in 1891. The yard and dry-dock was one of a few local facilities used for shipbuilding, ship repair, and the building of tugs and dredges used in local operations. Chroniclers of the period blamed the lack of interest in shipbuilding on the preponderance of lumber related businesses which lined the shores of Muskegon Lake and the more "lucrative openings for investment" offered by related forms of industry (Harford, 1892: 81).

Thomas Notter was well suited for the task of restoring the *Rockaway*. Described as "one of those who believed Muskegon should build more ships", Notter established a reputation as a first rate ship carpenter during the time he managed a yard at Whitehall which employed 66 workers, including 10 men whose primary job involved the procurement of "good oak for shipbuilding" from purchased tracts of timberland (MDC, 5 Aug. 1891; Muskegon Weekly Chronicle {MWC}, 3 Feb. 1882). The following account reveals the nature of the repair work administered on the *Rockaway* by Notter and his crew:

The schooner *Rockaway* is on the ways at the Booming company's yard and is undergoing a thorough overhauling under the direction of Thomas Notter, a
veteran ship carpenter. Mr. Notter has fourteen men at work on the boat and is rushing the work along as rapidly as possible. The boat will receive new frames, forward and aft, new bilge keelsons, ceiling planking, and a thorough recaulking. The job will cost about $2,000. (Muskegon News Reporter {MNP}, 6 Aug. 1891)

The expense and thoroughness of Notter's job suggests the Rockaway's owners intended to operate their scow for several more seasons, if not longer. The ship was released from the Muskegon Booming Company dock around August 21 and was back in service on August 27 bound from Muskegon to Chicago with a load of lumber. Other known voyages in 1891 included lumber deliveries from Manistee to South Chicago in early September and from Muskegon to Benton Harbor, Michigan on October 6th. Just one month later, the partnership of Thompson, Brinen, and Munroe would unknowingly commit the Rockaway to the final voyage of her career.

The Rockaway left Ludington, Michigan for the southerly destination of Benton Harbor on November 16, 1891. She was heavily laden above and below decks with 200 thousand feet of green lumber (Holland City News {HCN}, 21 Nov. 1891; MDC, 18 Nov. 1891). Her late departure suggests she was making her final scheduled delivery of the season. Members of the ship's company were identified as Captain Ole Thompson; Mate, A. Thompson (the Captain's son); and seamen Andrew Larson, Martin Oleson, Louis Rees and James Swanson. Accounts indicate each man hailed from Chicago and that several had families there (MDC, 21 Nov. 1891). An inconclusive search of Chicago City Directories for 1890-1891 produced the names Ole Thompson, Andrew and Andreas Thompson, and Andrew Larson under the occupation of sailor; Martin Oleson, carpenter; Lewis T. Rees, machinist, and a James P.
Swanson, foreman. The profitable freight rates often charged for the shipment of cargoes in mid November and the tradition of higher wages paid this time of year may have tempted Thompson and crew to sail later in the season than was prudent. For as most Great Lakes sailors were readily aware, November was notorious for regularly producing the region's most dangerous and severe weather conditions.

On the afternoon of November 17th, having traveled nearly three-fourths of the 130 mile passage to Benton Harbor, the *Rockaway* and her crew encountered "fresh" westerly winds which soon developed into moderate gale force intensity (MDC, 20 Nov. 1891). High seas and a "tremendous surf" made navigation to the nearest harbor of refuge impossible. A vain attempt to work toward the west shore resulted in the boat's main canvas being "blown to shreds" and the loss of the foreboom and gaff sails. It was not long before high winds and freezing temperatures rendered most of the ship's remaining rigging unusable as well (HCN, 21 Nov. 1891).

By evening, the scow had drifted to a location northwest of South Haven, Michigan. Captain Thompson gave orders to lower the ship's main anchor in an effort to avoid being driven onto shore. The hull was now making water badly, the pumps had failed, and the vessel was dangerously close to becoming waterlogged. Deck cargo was thrown overboard in a desperate attempt to lighten the ship's load, to reduce stress on the vessel, and to provide maneuvering space for the crew, who were growing increasingly concerned for their lives. One account suggested the near helplessness of the situation.

The cabin was filled with water, and all night the men were compelled to huddle together on deck to keep from freezing. One of the men secured an iron
kettle from below and built a small fire in it which served the purpose of a signal and to warm their hands. At daybreak a flag was hoisted . . . (MDC, 20 Nov. 1891)

The Rockaway's plight was discovered on November 18th, around 5:30 A.M., by surfman, William Webster, while on lookout duty at South Haven's Life Saving Station. Webster reported his find to John H. McKenzie, a 40-year old veteran of the U.S. Life Saving Service and Captain of the Station at South Haven. McKenzie had first arrived in Michigan from Nova Scotia while in his early teens. Like many other young men in the region, he sought employment in the maritime trades, working at times as a sailor, a fisherman, and later, as a lifesaver. Prior to his appointment as Keeper at South Haven in 1888, he had held positions at Michigan stations at Thunder Bay, Muskegon, and North Manitou Island. His boat handling skills, "cool judgment," and "great courage" made him the right man for the job (Portrait and Biographical Record of Kalamazoo, Allegan and Van Buren Counties, Michigan: 405-406). The following accounts of the rescue of the Rockaway's crew were taken from Captain McKenzie's official log recorded on November 18, 1891.

I was called to . . . look at a vessel at anchor about 8 miles northwest from the station . . . she had part of her foresail set which ought not to be if everything was right. About 6 a.m. there appeared a light that looked like a lantern and we thought it left the cabin and went forward as far as the mainmast, and back to the cabin again. This afterwards proved to be a fire made in a little tin pail for the purpose of attracting attention. About this time day began to break and there appeared in the main rigging about half way up the lower mast something resembling a flag. (USLSS, 18 Nov. 1891)

Realizing the schooner was disabled, McKenzie sent one of the Life Saving crew to solicit the captain of the newly built steam barge Lorain L. to tow the vessel into port. During this time, the wind suddenly switched to the northwest while still
maintaining much of its strength. With strong air currents now traveling the length of
the Lake, the threat of higher seas was a serious concern. The captain of the Lorain L.
did not respond affirmatively and McKenzie felt obliged to launch the station's surf-
boat.

About 6:30 a.m., left for the vessel. I was slow going against the wind and sea
until the wind shifted to the southwest fresh, when we began to make better
headway. But... every drop of water that came on board formed ice.

It was fortunate that the Life Saving crew performed their service in such a
timely fashion, for according to all accounts, the men aboard the Rockaway were in a
critical state. McKenzie continued:

Arriving at the vessel we found the crew in a pitiable condition, and but two
of them were able to handle themselves, and they had to be assisted. The
Mate, the Captain's son, had his hand badly frozen the day before and could
not help himself at all. The Captain Ole Thompson and one of the crew could
scarcely move... and it was all we could do to keep those three awake on the
passage home. As soon as each man was taken on the surfboat, a cork jacket
was put on him, and made as comfortable with our clothing as could be.

The surfmen and beleaguered crew of the Rockaway arrived at South Haven Station at
10:45 a.m., suggesting the full rescue took approximately four hours to perform.
Once at the Station, the men were given "coffee, clothing and a good warm break-
fast." McKenzie commented, "... all felt like crew men, especially the sailors that
were out through the gale." Voluntary medical care was provided for the mate's hand
by a local doctor while dry attire in the form of pants, shoes, and shirts was given by
South Haven members of the Women's National Relief Association, an organization
with an established tradition of providing assistance through the Life Saving Service
to wrecked and stranded mariners. Reports indicate 20 days of "succor" were
provided to five members of the ship's crew, before they were finally able to leave for their homes (USLSS, 1892).

Captain Thompson was optimistic at the time of his rescue that the *Rockaway* was not in immediate danger of sinking. William Brinen was informed of the situation shortly after the rescue had taken place. He telegraphed word to Thomas Munroe of the crew's safety and made arrangements to have the schooner towed to Benton Harbor where her remaining cargo could be discharged (MDC, 19 Nov. 1891). A report taken from a South Haven dispatch summed up the events that followed.

The tug *L. S. Paine* and the life-saving crew, and the schooner *Daisy*, went to the water-logged schooner *Rockaway* to bring her in. They found her sunk in seventy feet of water. Part of her foretopmast is out of the water. Her captain has gone to Muskegon to see the other owners. (Milwaukee Journal (MJ), 21 Nov. 1891)

The November 19th entry in Captain McKenzie's log described a similar event, but with additional detail regarding the wreckage that was found. McKenzie's account stated that "... nothing above water except about 15 feet of the fore topmast, the fore boom and gaff, the main boom, gaff and main topmast held by some gear, the hull having sank at anchor. Nothing could be done." The Life Saving crew spent the rest of their busy day cleaning encrusted ice from the surfboat, and preparing for a station inspection by Captain Nathaniel Robbins, the Superintendent of the 11th Life Saving District.

An account from Holland may have recorded the discovery of some of the *Rockaway's* lumber cargo and upper works. The appearance of wreckage and lumber at this location would have been in keeping with the reported direction of prevailing
winds and the ship's anchored position.

Sunday (November 22) the life saving men at our harbor found pieces of a vessel strewn along the beach near the harbor, indicating a wreck somewhere in the vicinity. The vessel was thought to have been lumber laden, as lumber and lath also came ashore. (HCN, 28 Nov. 1891)

The wreck of the Rockaway and the destruction of its cargo of 200 thousand feet of lumber was a significant loss for the owners, particularly since the vessel was not insured for its recently restored value of thirty-five hundred dollars (MDC, 21 Nov. 1891). A report from the Weather Bureau of the U.S. Department of Agriculture estimated the combined worth of the ship and cargo at four-thousand one hundred dollars (U.S. Department of Agriculture, 1894). Life Saving Service records placed the value of the ship and lumber at two-thousand five hundred dollars each (USLSS 1892). A newspaper account considered market prices of the day and estimated the cargo's worth at nine-hundred dollars (DFP, 22 Nov. 1891).

Of the Rockaway's owners, Ole Thompson undoubtedly suffered the greatest misfortune. The physical hardship of the ordeal left Thompson and his son, "confined to their beds by sickness" for some time after the incident (MJ, 28 Nov. 1891). The financial loss to Thompson was also great as indicated in a Chicago Tribune article dated December 11: "His savings of a lifetime, worth $8,000, were covered by the waves" (CT, 11 Dec. 1891). Unfortunately, the journalist did not elaborate on how the figure of eight-thousand dollars was arrived at. Other accounts reflected the seriousness of the situation with such characterizations as, "Thompson lost all of his worldly possessions" (MJ, 28 Nov. 1891) and "Thompson . . . by the loss of the schooner Rockaway . . . was left almost penniless" (CIO, 28 Nov. 1891). His plight is
made even more evident with the realization that the average monthly wage of Great Lakes schooner captains of this period rarely exceeded ninety dollars (Mansfield, 1899: 486). It is not known how much Thompson's one-quarter interest in the Rockaway contributed to his income.

Fortunately, Ole Thompson was both well known and respected in the Chicago community where he lived. Appreciation of Thompson and his predicament was reflected in a benefit held in his honor. This important social event was chronicled in the following newspaper narratives:

The Thompson Benefit
It is expected that about 200 couples will participate in the pleasures of the evening, and many people who will not be present have purchased $10 or $15 worth of tickets to help the good cause along. An emblematic dance programme has been arranged, nautical names being given to the various dances, and the wives of the unfortunate Captain's friends are preparing an elaborate supper for the occasion. Peterson's orchestra is to furnish the music for the evening, and it is hoped from $200 to $300 will be cleared for the support of Captain Thompson's family during the winter. (CIO, 9 Dec. 1891)

Raised Funds For A Hero
A Handsome Sum Secured for Capt. Ole Thompson-Dance and Banquet

A benefit entertainment was given last night at Aurora Turner Hall to Capt. Ole Thompson, who lost his schooner, 'The Rockaway.' Aurora Turner Hall was filled last night with friends of the veteran lake Captain. There was dancing, and a banquet was served at midnight. The committees in charge of the entertainment were: Arrangement, Capt. L. R. Johnson, John Gray, Capt. Al Gunderson, Herman Anderson, C. T. Johnson, J. Gray, J. Mathieson, Peter Holter, Capt. Sam Christopherson; Floor, Capts. L. R. Johnson, A. Anderson, Al Gunderson, Al Johnson, Arthur Gunderson, James J. Johnson, Ole Johnson, Ed Johnson. The midnight supper was served under the management of Mrs. Lizzie Anderson and Mrs. Lingor. Dancing was continued until daylight and a handsome sum was realized for the heroic lake Captain and his family. (CT, 11 Dec. 1891)

Thompson was 51 years old when the Rockaway was lost. A U.S. citizen of
Norwegian ancestry, he had emigrated to Illinois as a young man around 1864 (City of Chicago, 25 Mar. 1899). Chicago was then a prominent maritime center and a haven to a burgeoning Norwegian population. By 1891, this ethnic community's numbers had grown to rival that of many cities in Norway itself (Gjerset, 1928: 72). The lists of surnames and associated research suggests the majority of the men who participated in the Thompson benefit were of Norwegian or Swedish heritage. This event demonstrates the economic importance ships held in the lives of the men who owned and sailed them and the level of organization and assistance one Great Lakes community was able to offer to a needy member of their own social and economic group. It also reflects an important cultural response to a late 19th century economy which did not always have programs in place to assist the families of mariners who had fallen on such hard times. It is not known whether Thompson was able to take advantage of the services of Chicago's marine hospital for sick and disabled mariners or whether he was a member of any other beneficial program of the day.

Ole Thompson recovered physically and economically from his loss, and was able to sail again. He returned to Muskegon to take command the lumber schooner *Lyman M. Davis* and reestablished a working relationship with the vessel owners, William Brinen and Thomas Munroe. Local lore suggests he earned the nickname "Slab Ole" in recognition of the quantities of slab wood he regularly shipped from Muskegon (Muskegon Chronicle, 1937). Thompson's passing was marked some years later following a lengthy but unsuccessful struggle with stomach cancer. The 59-year old Lake captain was laid to rest in March of 1899 at Chicago's Graceland
Summary

This history of the *Rockaway's* career represents one of the most detailed accounts of the operations of a Great Lakes merchant schooner ever compiled. It contains a valuable range of information on the cultural context of the vessel and an important example of scow schooner use in the Great Lakes region.

The *Rockaway* was launched in 1866 during a prolific period of shipbuilding in the Great Lakes region, and an especially active time for maritime trade and commerce at Oswego, New York. The *Rockaway* was commissioned by a partnership of prominent local entrepreneurs who were collectively well experienced in virtually all forms of maritime enterprise; they had even established and financed their own shipyard for this intent and purpose. In further testimony to this knowledge and experience, the partnership of Chandler Alvord and Company commissioned their vessel to be built under the direction of a skilled and accomplished shipwright, Brower Morgan, who was well known for his influence on the schooner building industry there. Vessels already built by Morgan included larger, more conventional schooner designs, as well as steam powered freighters. At 42 years of age, he had already gained considerable experience in the shipbuilding industry at, what was then, one of the Great Lakes region's most innovative and prolific shipbuilding centers.

Historical descriptions of the *Rockaway* indicate the vessel had a "spoon bow," a variation of the flat, bluff bow so often associated with scow schooners. This
design would not easily conform to a union with the type of flat-bottomed, slab-sided hull construction believed to be characteristic of scow schooner construction. Instead, the spoon bow description suggests a more curved and complex hull form than is often associated with scow schooner design and construction. This notion may be supported by other characterizations given by the press at the time of the ship's launching which include use of such nautical and complementary descriptions as "first class," "staunch," and "trim."

The combined dimensions and diverse cargo manifests of the Rockaway suggest the ship provided a significant carrying volume, above and below decks, for low density bulk cargoes. The Rockaway was commissioned for use in the lumber trade at a time when lumber receipts dominated the bulk cargo trade at Oswego, yet the vessel was used to distribute a wide range of other goods to local and interlake markets in both American and Canadian ports of call. As the historical record indicates, she rarely traveled "light" or without cargo. Cargoes included shipments of coal, iron ore packaged freight, and even grain, a commodity which the "unseaworthy" scow schooner as a vessel class was traditionally restricted from carrying. The Rockaway's commercial history indicates the vessel’s design was not only adaptable for carrying diverse cargoes, but was also capable of navigating effectively in both deep and shallow waters, and the narrow harbor entrances and restrictive canals which connected the lakes.

The Rockaway survived 25 seasons of active commercial use in a challenging maritime environment and a dynamic maritime economy. Her owners, overall, were
highly experienced and knowledgeable in maritime affairs, and respected members of maritime communities where they lived and served. This greater consortium, which ranged from prominent shipping financiers to veteran ship captains, knew their subject well. Such a high and consistent level of maritime knowledge and expertise among the Rockaway’s proprietors may suggest similarly high standards for the design and related functional qualities of the ship itself. Whatever the case, these men and women guided their ship and investment through a quarter century of booms and busts that ranged from the economic depression of 1873 to the ongoing rebuild of Chicago’s infrastructure following the great 1871 fire. In fact, records indicate her last owners, including the heavily vested Captain Ole Thompson, would have employed the scow for at least several more seasons in the Chicago lath and lumber trade if not for the ship’s tragic loss to a November storm in 1891.

The combination of historical information collected on the Rockaway contrasts with certain standard characterizations of the scow schooner given in both primary and secondary records. In more specific terms, the Rockaway’s history suggests a vessel of greater complexity of design, form, and function than is usually attributed to Great Lakes scows. Unfortunately, the historical record does not adequately answer all of our proposed questions about the complexity of the Rockaway’s internal construction and related qualities of function and design. It leaves us with the need to collect more definitive information about the ship itself, the scow schooner as a vessel class, and the influences of the cultural and environmental setting where they historically served.
Archaeological information is evaluated in the following chapters to provide a more thorough interpretation and understanding of the *Rockaway* and its cultural context. The archaeological methods used to gather information from the site are described, along with summaries of what was learned about the construction and design of the vessel, and the diverse role played by scow schooners in the annals of Great Lakes maritime history.
CHAPTER III

ARCHAEOLOGICAL RESEARCH SUMMARY
TOOLS, PEOPLE AND TECHNIQUES

Site Discovery and Preliminary Survey

On September 29, 1983, a previously unknown shipwreck site was discovered in lower Lake Michigan near the shoreline community of South Haven. The discovery happened by chance when the Captain Nichols, a local charter fishing boat, snagged its anchor on an object in 65 feet of water approximately 2 1/2 miles northwest of the South Haven harbor entrance. When the anchor could not be retrieved, the boat's owner and Captain, Donald Nichols, Sr., called on his brother, Robert, a trained diver, for assistance. A dive on the site later that day revealed an interesting irony; the Captain Nichols' anchor had grappled into the anchor chain of a wrecked wooden sailing ship. That same evening, representatives of the Michigan Maritime Museum at South Haven were informed of the wreck's discovery.

The Michigan Maritime Museum was founded in 1975 as a private, non-profit institution of Great Lakes maritime research, preservation and education. With a marine archaeologist on staff and research interests focused on maritime anthropology and the evolution of Great Lakes watercraft, the Museum was predisposed to conducting at least an examination of the shipwreck find.
A basic description of the wreck left little doubt about its general classification. The dimensions of the ship's hull, the prominent feature of a centerboard trunk, and a significant sample of wire rope and rigging equipment, combined to indicate a commercial sailing vessel of the late 19th or early 20th century. Following the provisions of Michigan's Public Act 184, Museum officials contacted representatives of the Department of State's Michigan Historical Center and the Submerged Lands Unit of the Department of Natural Resources, the two chief agencies charged with the management of shipwreck resources in Michigan waters. After conferring with State Archaeologist, John Halsey, and members of the DNR's Submerged Lands Unit, the decision was made to conduct an exploratory survey of the site, with the understanding that only a short period of seasonal opportunity remained to conduct diving and remote sensing operations.

The 1983 preliminary survey was designed to assess certain exposed features of the wreck including several prominent sections of structure and associated concentrations of artifacts. It was hoped this work might provide information useful to a further appraisal of the wreck's research value and help to establish a relationship with one of the ship losses believed to have occurred in this coastal area. The extent and intact quality of the ship's physical remains and the variety and rate of preservation of other material culture found on the site would be important to these determinations. The representation of a diverse range of artifactual materials on site already suggested this was a find that had not been previously discovered and looted by sport divers. Videography, photography, and simple manual mapping (tape-measuring) techniques were
employed on the exposed hull, keelson and bulwarks (upper sides) of the vessel by a team of local volunteer divers. This work was complimented by a swim-over of the site to determine its immediate boundaries and a side-scan sonar survey of the wreck and its immediate surrounding environs. The sonar survey suggested outlying targets within the range of several hundred yards to the north, east and south of the shipwreck site.

The findings of the 1983 survey and investigations into the historical record led researchers to tentatively associate the shipwreck site with the vessel Rockaway, a 106-foot, two-masted, scow schooner built in 1866 at Oswego, New York, and recorded lost to the ravages of a Lake storm at South Haven in November of 1891. More than 50 ship losses supposed to have taken place within a 10 mile radius of the port of South Haven were considered in the initial evaluation of the site. This list would later be expanded through additional historical research in local and regional archives, but with the same eventual result; the combined dimensions of the beam (width) and length of the lower hull and sides of this wreck fit exceedingly well with dimensions listed in the Rockaway’s registration documents. No other vessel discovered in our shipwreck research matched these criteria. Furthermore, the location and circumstances of the Rockaway’s loss, as recorded in official U.S. Life Saving Service records, were similarly well represented by the position and related documentation of the South Haven site (CIO 21, Nov. 1891; MDC 20, Nov. 1891; MJ 21, Nov. 1891).

The idea that the shipwreck at South Haven represented the Rockaway was
considered important. The scow schooner was a type of vessel built and used in all of the major coastal areas of the U.S. during the 19th century, but in comparatively large numbers in the Great Lakes region for much of this period (USDC, 1885). While certain basic historical information was available on this type of craft and its use on the Lakes, there were few examples of ship plans, builder's models, or written records which could be studied to reveal the details and related cultural influences of scow schooner design and construction. The remains of a shipwrecked vessel could yield hard data on everything from the specific nature of construction materials, to the economy and quality of building methods, and the overall integrity of a particular design. This was especially true in the case of the South Haven site. Despite the severity of the wrecking process, most of the diagnostically important components of the inner "skeletal" structure, needed to define and interpret the vessel's design, had been preserved. These features included the stemson and other remains of the bow structure, the longitudinal timbers of the keel and keelson, the frames and futtocks, the inner and outer planking, and the centerboard trunk. In addition, most of these hull remains were exposed on a relatively flat plain and thereby accessible to standard methods of archaeological excavation and documentation.

The 1983 site revealed not only the principal members of a ship's hull, but also a wide range of associated artifacts. General categories of material culture initially viewed on the site included steering and rigging equipment, galley wares, tools associated with ship maintenance routines, and items suggestive of personal effects. Based on these observations, it seemed reasonable to speculate that the site might also
provide information about life aboard a late 19th century Great Lakes scow schooner; another subject for which the historical record was limited in detailed information.

Following a careful review of the information collected in 1983, and with due consideration given to the logistical and financial needs associated with underwater archaeology, representatives of the Michigan Maritime Museum submitted a research plan to the Department of State requesting permission to conduct an intensive archaeological study of the South Haven site. It was intended that this work begin in the summer of 1984 and include three or more subsequent seasons of archaeological fieldwork. The Museum would be responsible for all management and financial considerations and would submit a report on the results of each year's fieldwork to the Office of the State Archaeologist. The conduct of each season's work would be subject to the review and approval of a revised research plan. The Museum's research proposal was approved by the state and fieldwork began in 1984, initiating the first full-scale archaeological study of an historic shipwreck site to be administered on the American side of the Great Lakes.

Research Objectives

The Ship

The research plan was specifically designed to contribute new and supplementary information to an understanding of the economic factors which influenced Great Lakes ship designers, shipbuilders, and shipping financiers to build and use large
numbers of scow schooners during the middle to late 19th century. Assumptions commonly held by historians regarding the general nature of these craft and their selection and development as a vessel type had never been tested through a proper examination of scow schooner data contained in the historical record or through the archaeological study of one or more of the scow schooner sites which were known to exist in the Great Lakes region.

As already mentioned, much of the discussion of the Great Lakes scow schooner has been focused on an alleged simplicity of design and the related belief that this model was considerably more economical to build than other hull forms (Martin, 1991: 2-6). This belief was based in part on 19th century standards of classification which suggested these vessels were generally bluff bowed, flat bottomed, and slab sided in their construction (Dorr, 1876). This relatively simple design did not require the time and investment of lofting, and the range of associated skills necessary for the shaping of frames, planking and other structural members which were inherent to the production of a wooden vessel with a greater sheer or streamlined form. It was even suggested by some that the scow schooner could be built by a common carpenter without the participation of an experienced shipwright, and that the common building and use of scows may indicate skilled shipbuilders were in short supply in the Lakes region during the 19th century (Inches & Partlow, 1964: 289-294). The simplicity of design and economy of construction allegedly made this category of vessel more affordable and more accessible to the average entrepreneur wishing to invest in a maritime shipping operation. Finally, the box-like design of scows, as described in the historical
record, left others convinced that this class of vessel was generally slower and less sea-
worthy than other schooner forms (Martin, 1991: 2-6).

Our research was designed to test these generalizations regarding the economic
and cultural motivations for the building and use of the Great Lakes scow schooner.
Our study was focused on the documentation and interpretation of related aspects of
scow schooner design, construction and use represented on the Rockaway site and in
the historical record. Would the Rockaway’s structural remains demonstrate simple,
box-like construction, or would there be a level of curvature and complexity to the hull
not commonly represented in Great Lakes scow schooner descriptions? What would
the historical record reveal about the functional qualities and commercial career of the
Rockaway and the related cultural and economic motives of the ship’s builders and
owners? What would the wider evaluation of scow schooner data contained in the
historical record suggest about this class of vessel and the Rockaway in particular?
While it was recognized that this study would not provide the data necessary to fully
address all of these issues, it was believed that the South Haven site would contribute
new information to generally support or refute certain commonly held notions about
the Great Lakes scow schooner. It was also intended that this project set the stage for
a series of similar archaeological studies on other known Great Lakes scow schooner
sites. The collective information from this research could bring us closer to under-
standing the nature and evolution of the Great Lakes scow and would provide the basis
for comparative evaluations of designs from other regions, such as Roger Olmsted’s
important work on the scow schooners of San Francisco Bay (Olmstead, 1988).
The Artifacts

The range of surface artifacts viewed in the 1983 survey suggested the Rockaway site might also yield valuable information on the subject of life aboard a common Great Lakes merchantman of the late 19th century. The organization of a schooner crew, the technologies they employed, and the tasks they performed, were vital to the success of a commercial vessel's operation. Although thousands of men worked as sailors on the Lakes in the 19th century, little scholarly attention has been given to the study of the standards and practices which were common to the lakeman's trade or the ways in which Great Lakes sailor's traditions were influenced by the land-based society and economy which they served.

The lack of scholarly study of the schoonerman's trade is due, in part, to limitations of the historical record. Many of the diaries, logs, and account books used to document Great Lakes voyages have been lost to time. Shipping records which have survived contain valuable information, but they are limited in number and in the range of detail needed to fully interpret shipboard life. They do not represent a complete chronology of the age of sail on the Lakes, nor are they so geographically diverse as to provide a proper perspective on the shipboard traditions practiced by mariners from different Great Lakes regions. Furthermore, logs and diaries tend to reflect the bias of their writers (usually the ship's captain), while the activities and perceptions of the common lakeman went largely unrecorded. The catalogues, invoice journals, and outfitting contracts of ship chandlers (marine supply houses) represent another
valuable source of information, but these also survive in only limited numbers.

The scow schooner site at South Haven offered a valuable opportunity to complement the historical record with the examination of a sample of the "real equipment" of a late 19th century shipboard environment. The interpretive quality of this type of artifact was already understood through the examples of a number of archaeological studies on shipwreck sites in other maritime regions of the world (Bass, 1982; Gould, 1983; Muckelroy, 1978; Smith, 1986).

There are many questions which need to be asked of the historical and archaeological record regarding shipboard operations on Great Lakes scow schooners. For example, what type of crew hierarchy was commonly employed, and how was this structure of command reflected in the performance of shipboard responsibilities, crew interaction, and in shipboard living arrangements? How did land-based industries and their practices influence the structure of authority on a vessel and the economics of shipboard operations? Did captains, mates, and deckhands perform maintenance routines of sail and rigging repair, recaulking, painting, and general refitting, or were these tasks usually contracted to other professional tradesmen? What dietary and sanitary standards were applied aboard ship? What quality of equipment was employed in the operation of a typical commercial schooner? How did standards of shipboard life applied in the Lakes region change over time, and how did they vary in different Great Lakes locations? What were the differences among the various cargo carrying trades, and how did these differences compare with the traditions of sailors in other parts of the country?
In the case of the *Rockaway* project, we selected to focus our study of the artifact collection on a description of the skills and work routines performed by the crew and the economy of life aboard the scow schooner. We also sought to determine whether the common historical hierarchy of master, mate, and seaman would be reflected in the ship's structural remains and associated artifact record. The results of this research will be forthcoming in a report prepared separately from this thesis.

Site Description

The shipwreck site was located approximately 2 1/2 miles northwest of the South Haven pierheads, and 1 7/8 miles directly offshore of Allegan County, Michigan. The site was given coordinate number UM201 by the Office of the State Archaeologist; the first such designation given to a shipwreck site found on Michigan's bottomlands. The wreck lay partially embedded in a clay base covered by a mixture of gravel and sand; this strata was covered in turn by a fine layer of silt which included a host of decomposing organic elements. The average water depth on site was 65 feet. Although the underlying clay bed was almost level, the depth of sediments deposited on the site varied greatly from several inches to as much as six-feet in some places. This variation was created in large part by the artificial barriers of the ship's projecting hull and sides.

The ship's architectural remains and associated equipment were spread over a rectangular area approximately 140 x 75 feet or 10,500 square feet overall. The vessel had settled on its keel nearly parallel to the shoreline, with the remains of its bow
pointing in a westerly direction. The windlass, a large mechanical drum used to heave in the ship's anchor cable, lay approximately 35 feet forward of the bow. The chain cable for the ship's main anchor extended away from the bow in a northwesterly direction; the anchor was not attached to the chain and was not discovered in later surveys of outlying areas surrounding the site. The proximity of the windlass to the hull suggested it was violently torn from its original deck emplacement just prior to the vessel's sinking. A portion of the ship's bow structure, an associated roller chock, and a small spar lay scattered between the bow and windlass. The location and distribution of structural remains and equipment was in keeping with the prevailing wind conditions and last known anchored position of the Rockaway recorded in U.S. Life Saving Service ledgers and other period documents (HCN 28 Nov. 1891; MDC 20 Nov. 1891).

The forward remains of the ship’s hull included a number of bow frames and some fragmentary ceiling planking. The stemson (the foremost upright member of the ship’s framework) remained in place attached by iron fasteners and a scarf joint to the keelson assembly. Most of the ship’s internal members (including the framing timbers and ceiling planking) remained intact until the point of the chine or the intersection where the ship’s sides and bottom met. The port and starboard sides had broken away at the chine and lay next to the ship’s bottom. The forward half of each side section was preserved with some regularity to a point just below or including the upper rails. Deck beam clamps and bulwark supports were also evident. From amidships aft, much of the bulwark (the wall built around the edge of the ship’s upper deck) of each
side was gone. Each of the collapsed side sections naturally narrowed as they drew
closer to the vessel's stern. The length of the port and starboard sides measured
approximately 106 and 110 feet, respectively. None of the boards which formed the
vessel's stern or transom were preserved. Also, no remains of the superstructure were
evident; the upperworks including the decks, masts, cabin, and lumber stored below
decks were either carried away in the initial wrecking process or by the relentless
forces of wind, waves, and ice of the following winter.

The ship's backbone assembly including its keel, keelson, sister keelsons, and
centerboard trunk were largely intact. The forward end of the centerboard trunk
began approximately 30 feet after the stemson. Mounted atop the vessel's keelson,
this arrangement of stacked timbers provided a watertight case for the ship's center­
board. The centerboard was in place, but inaccessible to documentation. The trunk
measured 22 1/2 feet long and stood over 5 1/2 feet tall, presenting the site's most vis­
ually prominent feature. The keelson and accompanying hull structure continued for
approximately 28 feet after the end of the centerboard trunk. The keelson ended
abruptly at this point, its remaining length having broken away with the rest of the
stern. The ship's canvas covered wheel and attached steering gear lay partially buried
on the ship's port side floor, near to the after end of the centerboard trunk.

Approximately 65% of the ship's remaining structure was covered by drifts of
gravel, sand, and silt. This covering on the site was influenced by the movement of
sweep currents, which were in turn directed by prevailing surface winds. The wreck
created its own special environment by catching lake borne sediments in its shallow,
trough like shape, and along the outside perimeter of its slightly raised sides. Outlying areas more than 20 feet away from the wreck exhibited a much shallower layering of sediments over a clay base.

Artifacts exposed on the surface of the site appeared scattered except for those in the forward area. Several significant concentrations of equipment including a chain pile, hand tools, fasteners, and rigging gear lay atop one another in the starboard bow quarter. The variety and placement of these materials suggested the combined assemblage of a chain and boatswain's locker. Other general classes of artifacts initially observed on the site included navigational gear, galley wares, and personal effects, most of which lay exposed in areas along the ship's keelson. The presence of the ship's wheel and numerous small and easily identified nautical items suggested the wreck had not been previously visited by other divers. This judgment was supported by interviews with members of the regional sport diving community and a number of retired commercial divers. The wreck's undisturbed integrity was considered of great importance to the site's overall interpretive value.

Fieldwork Organization

The number of people studying the Rockaway varied during the different periods that archaeological fieldwork occurred on the site. The staff was of small to medium size compared to most expeditions in shipwreck archaeology, rarely exceeding fifteen field crew members for any single season. Professionals, students, and volunteers were employed in a variety of work routines. This crew was supported by
personnel who conducted related forms of research and analysis in periods between fieldwork sessions.

Student interns were invited from departments of history, anthropology and archaeology at Michigan institutions of higher education. Each received experience and academic credit toward their respective undergraduate degree for participating in the project. Some students worked exclusively in areas of artifact conservation, historical research, or as archaeological field assistants. Others, by virtue of their interest and skills, were able to participate in several categories of project operations. Participating institutions included Michigan State University, Western Michigan University, Michigan Technological University, and Kalamazoo College.

The "diver volunteer" represented a somewhat unique, but important category of membership on the project team. It was part of the mandate of the original research plan that this project provide an opportunity for members of the sport diving community to participate in the methods and operations of a professionally administered shipwreck study. It was hoped that through such direct involvement, these individuals would become more familiar with the goals and values of marine archaeology and the associated motives of Michigan's larger underwater cultural resource management program. In order to provide some level of orientation to interested parties, the Museum sponsored a special six-session introductory course on maritime archaeology on three separate occasions. Each session was filled to its 25 student capacity. Special presentations were also offered to regional sport diving clubs to inform their members of the goals and values of this initiative.
Diver volunteers were selected on the basis of a formal application and review process which included an evaluation of their diving experience and project related skills, their interest in the project's goals, their availability to participate over an extended period of time, and other qualifications. More than 80 applications were eventually received and sixteen persons were chosen to participate as regular or semi-regular assistants during the six annual fieldwork sessions that were to follow. A number of these volunteers would remain actively involved for several seasons and would make significant contributions to the study of the site.

Artifact conservation was another aspect of the archaeological process which required special forethought and attention. Although archaeologists are typically required to have a working knowledge of at least field conservation techniques, the more involved activity of artifact treatment in the lab is most often the responsibility of a professional trained in conservation science. This is especially true in the case of waterlogged sites where the care, treatment, and restoration of materials is a particularly complex and demanding process.

The professional conservator brings a special understanding and expertise to the tasks of artifact conservation. First, they must be knowledgeable of the methods and materials used in the manufacturing of historical technologies and material culture. This knowledge is usually extended to include a familiarity with water chemistry and other natural properties of an underwater site, and an understanding of the potential effects of long-term immersion on artifacts found there. Finally, the conservator must have a thorough understanding of the modern materials and procedures which are
available for the immediate and long-term care and treatment of artifacts recovered from submerged sites.

The Museum hired the services of Katherine Singley to direct the operation of a laboratory and conservation facility. Singley was a professional conservator with extensive experience in the treatment of cultural materials recovered from both saltwater and freshwater environments. In 1984, she prepared a plan for the design and equipment needs of a temporary lab which was put into place at a location adjacent to the Museum site. As lab director, Singley was assisted by Museum staff, student interns, and occasionally by other trained volunteers who worked under her direct supervision.

Fieldwork Operations

From 1984 through 1991, five full seasons and one partial season of archaeological fieldwork were conducted at the South Haven site. The Michigan Maritime Museum and nearby waterfront facilities served as the base from which project crews departed and returned each day. The Museum and conservation lab served as the primary repositories for the artifacts and data collected during each field operation. Fieldwork sessions were administered from July 1 through September 30 to coordinate optimal seasonal diving conditions with the schedules of student participants. Smaller crews typically carried archaeological operations into the middle or end of October.

Transportation to and from the site and associated working platforms were provided by a number of different vessels. They included the Wilhelm Baum, a 50-foot ex-Army Corps of Engineers tug operated by James Bradley, the Elsie J., a converted
commercial fishing tug operated by Charles Jensen, and the *Sculpin*, a 40-foot steel tug redesigned as a dive boat and captained by Robert Nichols. These vessels and two pontoon boats played a regular role in one or more fieldwork seasons. Piloting services for the operation of the tugs by Bradley, Jensen, and Nichols represented a most important contribution to the project's eventual success.

For reasons of project safety, all divers were limited to bottom times which fell well within U.S. Navy standards for non-decompression diving. A designated "dive master" worked with the project director to coordinate each day's dive schedule and to maintain a log of bottom times and associated working conditions. The site's 65-foot depth limited team members to two dives per day for a maximum bottom time of approximately 70 minutes. On some occasions it was not possible to conduct two dives in one day, thus allowing an individual less than 45 minutes on site per a 24-hour period. The site's location in open water created other limitations, including the loss of numerous working days to bad weather and rough seas. In order to maximize the opportunity for site work, the crew was required to be on call seven days a week throughout the entire field school period.

Other site conditions which effected the efficiency of the project team included low water temperatures and limited visibility underwater. Bottom temperatures could vary from 40 to 60 degrees Fahrenheit within a period of less than 24 hours. The average site temperature for the combined seasons' operations was approximately 45 degrees Fahrenheit. Despite the use of dry suits, cold water had a noticeable effect on rates of air consumption, associated bottom times, and the general effectiveness of
dive personnel.

Visibility on the site ranged from 3-6 feet on average. A maximum distance of 20 feet was recorded, but that occurred on only one occasion throughout the project's duration. Conditions of near zero visibility were an all too common occurrence. Details of weather, wind direction, surface and water temperatures, and surface water clarity were diligently recorded at the site along with conditions of visibility, temperatures, and currents at depth. Unfortunately, we were not able to apply this data with a high degree of reliability in the prediction of site conditions. The natural variables effecting the wreck environment were ever changing and too complex to allow for this luxury. Our inability to predict site conditions occasionally resulted in the suspension of field operations when the first dive of the day revealed visibility so limited that project assignments could not be administered safely, or with a reliable degree of accuracy. For the project overall, one in three working days were lost to either high winds and waves or conditions of low water clarity.

Fieldwork: 1984

The 1984 field season focused on the creation of a photomosaic of the ship's exposed hull structure and artifact scatter. This work produced a two-dimensional visual record of the site which illustrated locational relationships between the ship structure, artifacts, and the distribution of sand and silt covering the site. This photo record, accompanied by manual probes and metal detector surveys provided information useful to the planning of our excavation strategy. It would also compliment a
more precise method of grid mapping which we planned to administer in the seasons to follow. The relatively flat, open layout of much of the ship's structure contributed to the success of the preliminary method of site documentation.

The 1984 field season was initiated in late June with the placement of four mooring buoys to position surface vessels and working platforms over the site. A series of reconnaissance dives was administered to record changes in the site's condition since it was last observed, to investigate outlying features suggested by the 1983 sonar survey, and to prepare for the early stages of photomosaic work. With the exception of a slight shifting of overlying sediments, there was no apparent change in the site's condition observed in 1984. Extensive swim-line surveys indicated outlying targets observed in the sonar record were actually natural features, including several distributions of large glacial rock and one significant clay ridge formation.

Project photographer, Harley Seeley, and underwater technician, James Bradley, devised the plan for the photomosaic system. The first step of the photomosaic process involved setting up two parallel baselines on either side of the vessel's well centered keelson timber. Each line of 1/8-inch cable was passed through a 250 pound weight positioned beyond the vessel's bow and stern areas. The cables were leveled, made taut, and secured along either side of the keelson. Each cable was also tagged in precise intervals for purposes of orientation and accurate grid and photo tower placement. A portable metal grid consisting of five three-foot squares was attached to the cable and leveled and squared at the first three-foot interval on the vessel's starboard side, its fifteen-foot length perpendicular to the keelson.
A photo tower with a three foot square base was designed to integrate with the grid frame. A camera with a 20 millimeter lens was mounted on a bracket and sliding bar that fit into two positions at a distance of 20 inches above the grid. Four strategically placed lightbulbs connected to a surface battery offered continuous lighting. Each three-foot grid square was photographed twice with an overlap in the middle third of each square. The tower was placed on each grid section and 10 photographs were taken before the grid was repositioned, leveled, and squared and the procedure continued. When the starboard side of the vessel was completely photographed, the grid was repositioned on the port side and the process was repeated. A similar procedure was used to incorporate the upright members of the keelson, centerboard trunk, and stem into this photographic plan.

The resulting mosaic consisted of 702 individual photos and measured nearly 9 x 3 feet in an approximate 1 inch to 1 foot scale. The original composite was reproduced into a single mural size print for purposes of evaluation. Photos of specific site features, such as the concentrations of artifacts in the starboard bow quarter, were blown up for the diagnostic detail they provided.

The collection of historical research material was an ongoing assignment administered jointly by the project director, professional and avocational historians, librarians, and student interns. In 1984, research was focused on primary and secondary resources which included 19th century accounts of ship losses for the southwest Michigan coastal region. This season's work, spearheaded by intern Jay C. Martin, was designed to provide evidence to support or refute the idea that the site
represented the wreck of the *Rockaway*. Martin's work included use of the Museum's archive and the files of two local researchers, James Bradley and Jeanette Stieve, who had built up impressive collections of information on the maritime history of South Haven and shipping mishaps of the southwest Michigan region.

Other principal sources consulted in 1984 included newspaper microfilm of the *South Haven Sentinel* (1867-1874), the *South Haven Messenger* (1881-1903), and the *Saint Joseph Traveler* (1859-1864). Researchers also reviewed microfilm copies of the logs maintained by United States Lighthouse Service Keeper, James S. Donahue. This four-volume collection provided a remarkably detailed record of maritime activities at South Haven for the period from 1874 to 1889. This search was supplemented by a review of the *Master Abstracts of Enrollments* for the centers of Grand Haven, Port Huron and Marquette, Michigan, and Duluth, Minnesota for the years 1866-1911, and the U.S. Department of Agriculture's *Report of Wrecks Which Occurred on the Great Lakes from December 17, 1885 to November 15, 1893*. United States Life-saving Service records for the South Haven Station were also consulted. Although this combined research produced a significant list of accidents and founderings for the southwest Michigan region from 1860 to 1900, it did not produce a candidate which fit the criteria of the South Haven site, other than the scow schooner *Rockaway*.

**Fieldwork: 1985**

Following a review of site data collected in 1984, fieldwork in 1985 was designed to include the controlled surface collection of artifacts and excavation of the
vessel's starboard bow quarter. The selection of this area for excavation was based upon the research questions on shipboard life we wished to address in this study, the observed surface sample of artifacts, and known traditions regarding the use of this area of a ship for the storage of supplies. The lab facility, under Katherine Singley's supervision, was by this time fully equipped to address the needs of artifact recovery and conservation.

The removal of sand and silt overburden on the site was accomplished with standard airlift and hydrolift equipment. We used the airlift primarily in areas where the depth of sand and silt was great, and where metal detector survey suggested levels of strata might be sterile of artifacts. We employed the hydrolift in situations where a greater degree of control was required in excavation procedures, and in areas where the positioning of the more cumbersome airlift was not feasible.

We coordinated hand held photography with excavation work to illustrate locational relationships among artifacts and the relationship between artifacts and the physical remains of the ship itself. In this way, photographic work served as a useful backup to the precise recording of artifact locations through grid survey methods. Wherever it was practical, newly exposed objects were tagged with a coded number indicating their general placement within a fixed six foot square area on the site and the order of their discovery within that grid unit. Fragile materials such as lengths of rope did not undergo the tagging process, but were provided with a free standing label after recovery.

Our artifact sampling strategy was simple. We planned to recover all artifacts,
with several pragmatic exceptions. Some artifacts would only be documented on site; these articles included rigging apparel still attached to the ship's structure, certain duplicate items (for example, one of two large identical windlass levers), and other large or cumbersome objects, such as the ship's windlass, which due to its size and complexity of construction, could not be properly treated or conserved within the confines of our temporary lab facility.

A classification system based on form, function, and context was used to order, describe and analyze artifacts recovered from the site. Primary categories of classification included: (a) Operational Tools, (b) Maintenance Tools, (c) Rigging Equipment, (d) Navigational Tools, (e) Fasteners, (f) Containers, (g) Galley Wares, (h) Personal Possessions, and (i) Unknowns. Further levels of classification described the artifacts contained in each of the primary categories. A range of artifact-associated materials and supplies were also recovered from the site.

After an artifact was tagged and photographed, its precise horizontal and vertical location was recorded on site. Site datums, baselines, and grid frames were employed in a standard range of applications to locate all artifacts and physical remnants of the ship itself. Portable grids were designed to be leveled and squared in relation to the existing baseline datums. The site's nearly level elevation, murky waters, and related low range of visibility, influenced our decision to use this method of site mapping. Hand held tapes measured the axis of each grid quadrant to determine x and y coordinates or the horizontal position of each artifact, while a sliding bar and tape were used to record the “z” or vertical dimension. One drawback to this technique was the
amount of time it took to record the position of each artifact. The tapes were
awkward to employ underwater, and even a practiced team could document the posi-
tion of no more than six artifacts in the course of a single dive. A revised grid system
developed in 1986 would greatly increase the efficiency of this survey method.

During the 1985 field season, more than 130 artifacts were mapped and recov-
ered from eight grid areas within the starboard bow quarter. Approximately 75% of
these items were found on the surface of the sand, while the rest were discovered in
the course of excavation. Nearly one third of the objects found in the starboard bow
quarter were concentrated in a single 6 by 6 foot square area. Several artifacts were
plotted but not immediately recovered for reasons of their size, the complexity of their
conservation needs, or a combination of these considerations. All recovered materials
were turned over to lab personnel who then implemented cataloguing and conservation
procedures.

The artifact collections provided interesting circumstantial evidence which sup-
ported our notion that the wreck represented the scow schooner *Rockaway*. A variety
of tools used to handle and move lumber or lath materials (the *Rockaway*'s last known
cargo) were discovered, and a cast iron cookstove door carried the manufacturer's
marks: "Brand & Co., Milwaukee, Wis., Patd. 1882." This patent date confirmed that
the vessel under study was lost after 1882.

Standard techniques of trilateration and tape measurement were used to record
the placement and dimensions of the ship's most vertical structural members, such as
the stem and the centerboard trunk assembly. These parts of the ship were also
systematically photographed to compliment the measurements taken. Unfortunately, the time and personnel needed to administer all these tasks did not allow us to complete our survey of the excavated starboard hull area in 1985.

Historical research in 1985, and in the seasons that followed, was increasingly focused on the collection of information pertaining to the Rockaway's commercial career. A database was also designed to collect and evaluate information on a sample of nearly 500 American Great Lakes scow schooners built between 1820 and 1910. This database ordered such specifications as vessel name, gross and net tonnages, dimensions of length, beam and depth of hull, the year and place where each scow was built, the year and place where each scow was rebuilt or refurbished, the names of builders and owners, insurance ratings, the year each vessel went out of service, and the nature of each ship demise. It was believed that these data would reflect patterns of scow schooner construction, design, and use over time and provide a context for our interpretation of the Rockaway as an example of this class of working vessel. We also collected information on 19th century maritime technologies mentioned in historical records of the day and began to cull through accounts of shipboard life in the Great Lakes sailing trades as they were represented in collections of more than forty 19th century logs and account books.

To promote public awareness of the archaeological work we were administering, the Museum agreed to a venture proposed by Charles Soukup of VideoTalk Inc. to produce a documentary which would illustrate the goals, methods, and preliminary findings of the South Haven study. Video documentation was collected on the
Rockaway site, at the conservation lab, and at other associated work sites in 1985 and 1986. The resultant 30-minute documentary aired on PBS stations throughout the Great Lakes region in 1987 and 1988. The Museum also made the production available for distribution to libraries, educational institutions, and the general public.

The museum staff responded to further public interest in the Rockaway project with numerous newspaper and magazine articles, radio and television interviews, and slide lecture programs. The effort to provide educational programs and other information current with project operations required an ongoing process of photographic documentation at both the field site and the lab. This work was an important secondary assignment of the project photographer during each fieldwork session.

Fieldwork: 1986

Field operations in 1986 began with the mapping and recovery of exposed artifacts in the ship's forward port quarter. A preliminary survey of this surface scatter of artifacts suggested that this area may have functioned in part as stowage space and possibly as living quarters for members of the crew. Excavation of the forward starboard quarter also continued.

Early reconnaissance dives indicated that areas excavated in 1985 were covered by sand and silt that had been driven onto the site by the winds, waves, and current actions of the intervening winter and spring seasons. Excavation of certain areas would have to be repeated to record the details of underlying structure we were not able to document in the prior season. The movement of sand back into excavated
areas was an ongoing problem. Although we understood the site would become reburied during the stormy months between fieldwork sessions, it was especially frustrating during fieldwork to have to contend with the movement of sediments into excavated areas when a summer storm passed over the site. For these and other reasons, the tight coordination of excavation and documentation procedures remained a high priority.

Special new grids, comparable to the units used for artifact mapping, were designed for recording the ship's hull and collapsed structures. The inside of these rigid and adjustable six-foot square modules were segmented into one-foot square units with 1/4" cable. A 2 1/2 foot x 2 1/2 foot galvanized recording slate was similarly "gridded" in a comparable scale and overlain with mylar to enable the excavation team to draw and record dimensions of the ship structure while on site. Standard equipment of ruler, tape, plumb bob, and carpenter's pencil were employed in this process. Individual site drawings were transferred to a larger site plan and to a computerized index for evaluation.

Grid systems for documenting artifact location were revised in 1986 to function without hand held tapes. Waterproof tapes were affixed to the inside of the grids and to horizontal and vertical sliding bars which could be precisely adjusted within the grid's framework. Although the movement and repositioning of the grid was best accomplished by two divers, it was now possible for a single diver to effectively employ this system in plotting artifact provenience. This new grid system was designed and assembled by diver volunteers Jerry Middleton and Brian Brumbaugh.
Approximately 60 artifacts were recovered and turned over to lab personnel for treatment during the 1986 field season. These represented artifacts that lay exposed on the starboard side, and a number of other objects discovered during the course of excavation in the ship's forward portside quarter. Nearly 25% of the starboard hull section was manually recorded during this season. Documentation of the centerboard trunk and stem assembly was also completed in 1986.

Fieldwork: 1987

The 1987 field season focused on the excavation and detailed recording of the ship's hull. Our original plan to manually record the details of all remaining ship structure was revised to include only the starboard bottom and side sections and certain other key structural features. Documentation of the separated port side section was considered unnecessary as its most diagnostic features were mirrored in the collapsed starboard side. Our final revised plan also proposed excavation of the entire port floor area, and the application of an improved photomosaic system to record the same.

To facilitate the use of grids and controlled mapping of both starboard sections, it was necessary to deploy a new baseline twelve feet out from, and parallel with, the keelson. This outer baseline was marked at precise intervals in direct alignment with the already established keelson baseline. Total excavation of the port and starboard hull sections, and systematic trenching in the breaks between the ship's bottom and its collapsed sides, revealed only 11 new artifacts in 1987.

Project operations in 1987 were plagued by inclement weather. During the
period from July 1st to September 30th, 52 per cent of all possible fieldwork days were lost to high winds and associated rough water conditions. Consequently, we were not able to complete all of the fieldwork planned for this season. It was evident that at least one additional session of operations would be necessary to complete all of our primary objectives of site excavation.

With the end of the 1987 field season, a special photographic exhibit detailing project operations and preliminary findings was prepared by museum staff. This exhibit was designed to travel for purposes of public education; it included 16 glassed and framed panels with associated photographs, drawings, and interpretive text. A premier showing occurred at the Michigan Maritime Museum at the end of the year. The exhibit continued its educational role for several more years at museums and other institutions in Michigan, Wisconsin, Minnesota, Ohio and New York.

Fieldwork did not take place in 1988 due to the lack of an adequate transport vessel. Project assignments were instead focused on historical research, artifact conservation, and the evaluation of site data collected in the prior four seasons. This year also saw publication of: *The Conservation of Archaeological Artifacts from Freshwater Environments* by project conservator, Katherine Singley. Up until this time, virtually all texts written about the conservation of cultural materials from underwater sites had been written with regard to saltwater contexts. Singley’s manual filled a very important niche regarding freshwater sites. Currently in its second printing, it has been regularly used as a textbook in several university programs and is widely distributed in Europe where a great deal of freshwater archaeology is taking place.
Fieldwork: 1989

Field operations in 1989 took place during a period that extended from early July to the middle of November. The photomosaic of the port hull and excavation of the starboard hull and starboard side section were finally completed by the season’s end. Efforts to excavate the deep layers of sand that covered the broken end of the stern keelson and underlying keel were not as successful. Unfortunately, the keel was so deeply embedded in sand and the site’s hard clay bottom that it could not be adequately exposed to allow measurements to be taken. A small concentration of galley wares was recovered in the course of this work.

A detailed top view and profile of the vessel's keelson assembly was prepared in 1989, and the dimensions and spacing of all framing timbers on the port side were recorded in similar detail. The ship’s detached windlass was carefully measured and drawn, and a series of wood samples were taken from a selection of the vessel’s frames, planking, keelson, stemson, and centerboard trunk to analyze the species and quality of woods employed in the vessel’s construction and in areas of suggested repair. Historical research in 1989 and 1990 was focused on the Great Lakes scow schooner database and the story of the Rockaway’s commercial career.

Fieldwork: 1991

A final but vital phase of fieldwork in 1991 collected data on the deadrise or curvature of the Rockaway’s hull. This work was administered on the more intact
starboard side of the vessel. Six stations were established, 15 feet apart, along the vessel’s centerline. From each of these positions, a plane of equidistant measurements was carefully plotted along the vessel’s floor toward the ship’s chine or the point where the vessel’s sides and bottom met. Measurements were administered twice to control for their accuracy. This data was then applied as a table of offsets to a *Fairline/2* hull analysis program for further description and interpretation (Letcher, 1982). The measurements projected a rounded bottom of considerably greater slope than was expected. Although the bulwarks of the vessel were largely broken away at the point where the sides and bottom met (the chine) measurements taken to reconstruct the angle of this intersection was also achieved with a reasonable degree of accuracy. These combined data indicated a more curved and complex hull form than the angular, box-like construction that was so often associated with Great Lakes schooner scow design.

**Summary**

Archaeological fieldwork was highlighted by a number of important discoveries. Photomosaics, controlled excavation, and other forms of site documentation contributed valuable new data to our corroboration and interpretation of the *Rockaway* site.

**Site Identification**

The wreck’s location in 65-feet of water, 2 1/2 miles northwest of the South
Haven pierheads, fit well with historical records which documented the place of the vessel’s sinking. The lay of the hull on a westerly axis and the associated positioning of the anchor chain was in keeping with the described scenario of an anchored vessel attempting to ride out a northwesterly storm.

The most telling information was collected in the documentation of the ship itself. Measurements taken amidships matched beam dimensions (24-feet) of the Rockaway listed in enrollment documents. Supporting data was also found in the combined linear measurements of the ship’s keelson and the port side section which fit the 106-foot length given in registration records. The placement and position of steps for the ship’s masts (in the keelson timber) and the presence of the centerboard trunk added further evidence to support the hypothesis that we were studying a two masted ship of the precise size and description attributed to the Rockaway.

The artifactual record also supported the idea that we were studying the wreck site of the Rockaway. The scattered remains of the ship’s cookstove included a cast iron door which carried the maker’s marks: “Brand & Co., Milwaukee, Wis., Patd. 1882.” The patent date clearly indicated the vessel under study was lost after 1882. This discovery allowed us to focus our subsequent research to identify the ship on wrecks which occurred in southern Lake Michigan after 1882. In the end, no discovery in the historical record other than the Rockaway would qualify for further consideration.

The Rockaway was employed almost exclusively in the lumber trade during the last decade of its use. The cargo carried on its last voyage was described in the
historical record as 200,000 board feet of lumber (HCN, 21 Nov. 1891), a load which would have filled the ship's upper and lower decks to its designated capacity (ODP, 9 Nov. 1866). Accordingly, a selection of the ship's equipment excavated on site included a cant hook, a pickaroon, a jam pike, a peavey and a bale hook. These were tools specifically designed to move and re-position deck loads of logs, lath and lumber, and bundles of wood, shingles and bark. Similarly related cargo lifting equipment including iron hooks, shackles, blocks and tackle, and wire rope were also found on site.

A wide range of the type of technology used to raise and lower the sails of a schooner rigged ship was also discovered in the course of excavation. These rigging items included, but were not limited to, wire rope, single and double sheaved rigging blocks, wooden sheaves and roller bushings, a single sheet block, a shroud and stay plate, deadeyes and associated chain plates, jib hanks, and belaying pins. This collection included both standing and running rigging that was in use at the time of the ship's sinking, and other materials found in association with the bosun's locker, a forward section of the ship where spare equipment and supplies were stored aboard ship.

Data on Shipboard Economy: A Preliminary Review

A classification system based on form, function and context was used to evaluate and interpret the broader range of artifacts recovered from the Rockaway site. Artifact classes were eventually broken down into the following approximate percentages of representation on the site: (a) operational tools 12%, (b) maintenance tools 11%, (c) rigging equipment 21%, (d) navigation equipment 2%, (e) fasteners 29%,
(f) containers 6%, (g) galley wares 10%, (h) personal effects 7%, and (i) unknowns 2%. A more detailed evaluation of these materials suggests between 50 and 60% of the overall assemblage was associated with ship maintenance routines or adaptive reuse. This would have been in keeping with the marked need to economize operations during a period when it was decidedly more difficult for vessels powered by sail to effectively compete with their steam powered rivals.

Artifact analysis was supplemented by the ordering and study of data from the surviving logs, ledgers, and/or account books for 45 Great Lakes schooners active between 1850 and the turn of the century. These records were generally revealing regarding the frequency of work routines performed by officers and crew while in port, as compared with the use of specialized craftsmen such as riggers, sailmakers, carpenters, blacksmiths and general laborers. Information was less clear regarding work routines performed when a vessel was underway. Valuable indirect data was contained, however, in the records of supplies taken aboard various ships.

Data on Ship Design

Our primary intent to test existing theories regarding the economy of Great Lakes scow schooner design and construction required detailed documentation of the ship’s structural remains. Standard archaeological methods were used to collect relevant data on the following site features: (a) centerboard trunk, (b) keelson and bilge timbers, (c) framing patterns, (d) construction materials, and (e) deadrise and curvature of the hull. Collectively, these data would provide valuable insight into the complexity
and qualities of the Rockaway's form and function that could not otherwise be derived from the historical record. This information would be evaluated in association with information on the Rockaway's commercial career and a scow schooner database to provide a more informed interpretation of the cultural and economic factors which influenced the building and use of this vessel design.
CHAPTER IV

SCOW SCHOONERS ON THE GREAT LAKES

The merchant fleet which traveled the Great Lakes in the 19th century was the result of a complex evolutionary process. In the early 1800s, designers and builders generally applied sea going models to these inland waterways (Hall, 1880: 137). As the years passed, the Great Lakes merchant marine gradually developed its own special character. The nature of these vessels was influenced by such variables as: (a) regional environmental conditions, (b) the availability of boatbuilding materials and skilled craftsmen, (c) the economic vitality and organization of the communities they served, (d) the cargoes they carried, (e) harbor and canal improvements, and (f) the introduction of nautical plans and technologies from other regions.

During the first half of the 19th century, a number of designs applied on the Great Lakes were found to offer distinct advantages over others employed in the same trade. As the era progressed, these advantageous forms would achieve widespread use as commercial carriers. The scow schooner was one such class of sailing vessel which eventually attained a high level of acceptance and application in the Lakes region.

In order to appreciate the design features which contributed to the success of scow schooners on the Great Lakes, it is useful to begin with an evaluation of the descriptive evidence which has survived in the historical record. Fortunately, a range
of resources are available which allow us to begin the process of piecing together an image of the Great Lakes scow, including some of its variations of design over time.

The historical materials which provide a view of scow schooner development include many of the same records used to trace the Rockaway's commercial career. Navigation enrollments and insurance documents provide basic data on ship dimensions, tonnages, place of build, the names of builders, owners and masters, vessel ratings and values, and home port locations. Supplementary information may be culled from period newspapers and personal accounts, ship's logs, photographs, ship's plans, and builders models where they are available.

Early Great Lakes sailing vessels built with scow hulls and schooner rigs are linked by enrollment records to the decades of the 1820s and 1830s. While no single place has been determined for the introduction of this design to the Lakes region, it is known that the leading examples of these craft were often built at yards adjacent to the riverine settlements and harbors which they served. Many early shoreline centers were linked to shallow passages and anchorages. Most fought an ongoing battle with the elements to maintain a depth of passage free from restrictive silt deposits and sand bars. These communities depended upon waterborne transport to sustain their local economies, and the shoal draft scow offered a more reliable means of access to loading and unloading facilities than the curved deeper hulls of other Lake carriers (Inches & Partlow, 1964: 289-294).

The efforts of Jay C. Martin to trace the early 19th century history of the Great Lakes scow schooner resulted in the collection of an interesting and somewhat
revealing range of statistical data (Martin, 1991: 1-6). One of the earliest enrollments for a Great Lakes vessel fitting the criteria of a scow schooner is found in the papers of the Bolivar, a craft of 60 tons built at Erie, Pennsylvania, in 1825. The Bolivar's tonnage figure was near to the 70 ton average recorded for all commercial sailing craft on Lake Erie in 1831 (Mansfield, 1899: 438).

A review of enrollment records for the decades from 1830 to 1860 suggest a pattern of increasing numbers and average capacity for the Great Lakes scow. Official tonnage figures for this period were based on estimates of the cubic capacity of compartments below decks. The statistics for 11 vessels built in the 1830s suggest a mean capacity of approximately 34 tons, while a sample of the larger figure of 61 scows built during the 1840s indicates a rising average of just over 63 tons. The mean size of 172 scows built during the 1850s is even greater, averaging just over 90 tons. The waterways of Lake Erie served as the place of origin and home port for a significant number of the vessels discovered in Martin's research. It is important to note that vessels under 20 tons burden were not always officially registered or enrolled in this early period. Due to the incomplete nature of the historical record, the statistics for these smaller craft are not well known.

An increase in the number and capacity of the Great Lakes scow schooner fleet coincided with the need for a vessel suited to carry bulk cargoes in a coastal and open water trade. During the first half of the 19th century, the faster sailors and more accommodating steamers captured much of the commerce of passengers and packaged goods. By virtue of their more "seaworthy" design, these craft would also dominate
the rapidly developing grain trade. An active role for the scow schooner was enhanced by the growth of the Great Lakes coal and lumber industries. These resources were of fundamental importance to the nation's economy and each existed in abundance in vast regional forests and natural deposits throughout the midwest. The scow schooner's accommodating rig, open deck space, voluminous capacity below decks, and shoal draft combined to provide an effective alternative for the transport of these commodities. The design of these craft would also demand less outlay of financial resources and related risk of investment than some merchant schooners and virtually all commercial steamers of a comparable size.

The middle decades of the 19th century saw greater numbers of scow schooners trading in local markets and in the expanding interlake network offered by connecting canal systems. The evolving scow fleet was commonly employed to carry standard coarse bulk freights of lumber, coal, stone, and at times, iron ore from mines in the north of the region. Some scow operators added to the income they made in the bulk trades with the shipment of agricultural produce and packaged goods to and from the smaller and more isolated coastal communities (Barkhausen, 1947; Hirthe, 1986; Toronto Evening Telegram {TET}, 13 Dec. 1933). Scow schooners were also occasionally used as salvers in situations where other carriers had either run aground on an offshore bar or been driven onto the shallows of a beach zone (Hirthe, 1986: 38, 57, 91-93). Due to their shallow draft, the scow was often the best vessel available to draw near to a wrecked or stranded ship for purposes of cargo recovery or salvage.

Registration records for the 1860s suggest a peak decade of scow schooner
construction on the Great Lakes and a pattern of gradual decline of tonnage capacity from the 1850s onward. Research by Michigan Maritime Museum staff discovered 242 ships built as Great Lakes scow schooners in the 1860s. These vessels averaged 81 gross tons, a slight decline from the 90 ton average recorded in our sample of 172 scows built in the previous decade. A sample of 89 scows commissioned in the 1870s averaged 57 gross tons. A selection of 70 vessels built in the decade of the 1880s averaged 45 tons. Research on scows built in the 1890s turned up 23 new vessels with the low mean figure of 34 gross tons.

Historical descriptions written after the middle of the century indicate certain standards for scow schooner and schooner-barge construction. One of the most detailed official descriptions of the American scow is contained in the *Rules for the Construction, Inspection, and Characterization of Sail and Steam Vessels*, published by the Board of Lake Underwriters in 1876. It reveals the following criteria:

> Scows and barges, or other vessels of box model, characterized by straightness and squareness of body, by corners at the bilges and ends; or, of extraordinary fullness of bottom, the radius of the moulding of the bilge, according to the draft of water, being less than in the Table, Sec. 17; or, the internal admeasurement under the main or upper-deck exceeding seventy eight per cent. of the capacity given by a square figure of the same principle dimensions, (length, breadth, and depth), if framed, not cross planked, and otherwise built by standard, may be classed up to, but not above B1, on account of unseaworthy form. (Dorr, 1876: 37-38)

The document goes on to provide certain proportional dimensions for the construction of vessels classified as scows: "The width of outside bilge strakes, if in due proportion to the length of planks, shall vary according to the radius of the bilge, and the draft of water." This correspondence may be seen in Dorr's accompanying table:
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<tr>
<th>Draft of Water Strake: Feet</th>
<th>Radius of Bilge: Inches</th>
<th>Inside Width: Inches</th>
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The above ratios reflect rules of the day for the dimensioning of planks which formed the radius of the chine or that part of the boat where the sides intersected with the bottom. The chine is the most important load carrying and transferring structure of a relatively flat-bottom vessel. A properly formed or increasing radius would serve to transfer loads from the bottom to topsides, thereby avoiding the development of stress concentrations which could contribute to structural failure. It appears that rule-makers of this period wanted no more than 5 to 6 proportioned strakes to form the chine of scow or barge hull forms.

The grouping of scow schooners with schooner-barges in classification systems and the common use of such terms as "boxlike" and "squareness of body", has naturally resulted in the belief among maritime historians that these craft were generally cheaper and easier to build than the conventional molded-hull schooner of a
comparable size. The overriding view also persists that ease of construction and low investment costs ranked high as an influence among the entrepreneurs who financed the building and use of scow schooners on the Great Lakes. Some have taken this notion a step further to suggest the widespread use of scows may indicate skilled shipbuilders were in short supply in the Lakes region.

One of the only surviving contemporary essays on Great Lakes scow schooner design and construction is found in the writings of Captain Hiram C. Inches. Born the son of a Lake captain at Port Huron, Michigan, in 1882, Inches spent time during his youth roaming the shipyards which lay along the St. Clair River and in traveling with his father, Captain Joseph R. Inches, aboard various sail and steam powered craft. During these years he had the opportunity to witness a number of scow schooners undergoing construction and repair and to observe others in commercial use. Hiram would continue the family tradition in later years as a Captain with the Interlake Steamship Company. Some years after his retirement in 1948, he took the time to reminisce on the age of sail, shipbuilding, and scow schooners in two works entitled *Great Lakes Driftwood Schooner Scows*, and *The Great Lakes Wooden Shipbuilding Era* (Inches, 1962). His writings suggest an overriding theme of simple, economical design for the Great Lakes scow:

... the chances that anyone ever fell in love with a schooner scow at first sight are rather doubtful. She was just not built with the kind of lines that incite romance ... except for some sheer, she had no curves at all-period! Deck over an outsized cement mason's mud box, add a jib-boom, a couple of masts, rudder and deck house, and the result will be close to the appearance of the average schooner scow (Inches & Partlow, 1964: 289-294).
Inches' reflections on scow schooner construction also emphasize a boxy, barge-like form.

Schooner-scows had the simplest construction of any sailing vessel built to carry freight. All had sides, square chines, flat bottoms and centerboards. The one characteristic of all scows was that they were "gunnel built" with few if any frames. In place of the keelson found on conventional Great Lakes craft, the scow had "chine timbers." These . . . square stringers were the principal framing members of the hull, fitted along both sides of the bilge where the bottom met the sides. (Inches & Partlow, 1964: 289-294)

Inches elaborated on "gunnel-built" construction with the following commentary:

In gunnel-built construction, driftbolts were driven edgewise through two or more side planks, thus they not only served to clamp the planking together under pressure, but the driftbolts also provided re-enforcement against horizontal forces eliminating the need for frames . . . . The side and bottom planking of the average 60 to 90-foot scow was four inches thick. An auger drilled a hole edgewise through the planks to be joined together 1/16" under the size of the driftbolt to be used. This would be an 11/16" auger for the usual 3/4" driftbolt. Two men would stand on either side of the driftbolt and drive it home with spike mauls. Once installed, there was no removing the driftbolt and with time it rusted to become more firmly embedded. When properly installed, no amount of working of the vessel's hull ever loosened a driftbolt; when repairs were necessary, they had to be cut off. (Inches & Partlow, 1964: 289-294)

The statements made by H. C. Inches must be carefully considered within the larger context of scow schooner development on the Great Lakes. For example, the assertion that all scows were "gunnel built" with few if any frames and without keelsons, seems a gross exaggeration, based on even the most limited examination these craft have received from historians and archaeologists (Inches, 1962; McWilliam, 1983). The Rockaway represents an especially strong diversion from this description.

The Rockaway's inner hull was heavily framed. Sets of double and sometimes triple frames extended outward from the keelson for the entire length and breadth of
the ship. Double frames, measured in immediate proximity to the keelson, carried a combined top width of 7-10 inches and a depth or thickness which rarely varied from 9 inches. Spacing between sets of frames averaged 11 inches. This pattern of curved members gave shape and strength to the hull and provided a sturdy framework for attachment of the inner and outer planking; the Rockaway's hull planking was consequently not edge-bolted as described by Inches.

The Rockaway's builders incorporated a keelson (mounted atop the keel) and sister keelsons (adjacent to the keelson) into their design. These members enhanced the longitudinal strength of the vessel and provided a central place for the attachment of structural components ranging from the floor timbers to the centerboard trunk to the ship's masts. Chine timbers, as described by Inches, were evident in the Rockaway's construction. These 4 x 8 "stringers" were strategically placed along the inside length of the hull where the bottom meets the sides. They did not, however, serve as a substitute for framing. They were seemingly put in place to provide additional longitudinal support and to absorb and distribute stress which was exerted internally and externally at this important juncture of the ship's hull.

The deadrise, or curvature of the hull, may represent the most significant variable of this Rockaway's design which strays from the characterization of scow schooners given by Inches. Field measurements taken from the Rockaway's relatively intact starboard hull and side sections indicate a rounded bottom of considerable curvature and a union with the sides that was gently rather than sharply angled. Clearly, these combined features did not reflect the flat-bottomed, slab-sided "mud-box" described by
Inches.

It is possible that H. C. Inche's opinions were confined to the observation of standards of construction common to shipbuilding yards along the St. Clair River where he spent most of his time. Also, the scows he saw in commercial use were the last of their kind to be used on the Lakes. It is unlikely they would have represented the full range of this class of vessel as it evolved here. Nonetheless, Inches was a keen and knowledgeable observer and his work represents one of the few detailed first-hand descriptions of the design and internal construction of Great Lakes scow schooners available for our evaluation. His views remain an important focal point for further comparative study of the archaeological and historical record.

The classification of scow schooners with barge hull forms also implies that these craft were, on the whole, clumsy and inefficient sailers. In some respects, such views may appear well justified. A bluff bow and flat bottom design would seem to offer little advantage, particularly when beating to windward against a heavy or choppy sea, or when traveling light (without cargo) high in the water. Examples of the problems frequently associated with the sailing of scows are given in accounts recorded by Captains John Duff and Soren Kristiansen while in command of the vessels *Belle Eliza* (1872), and *Michicott* (1891-1893) respectively.

*Belle Eliza*

... at 5 got underway again the wind having hauled to West again. The vessel works very badly being altogether too much in the head. (Duff, 1872)

It is very discouraging working against a fresh breeze and a head sea with such a vessel, as this is especially light. (Duff, 1872).
Michicott
The wind is NE, strong and cloudy. I do not see any use in going out to beat with this vessel, her draft of water is only about 30 inches and she will not come astay, so we will only be drifting to the southwest instead of gaining. (Kristiansen, 1891)

The current is generally running to the north and these shallow draught vessels is always making more leeway than a person is figuring on. On that account the vessels place is always forced more to the north in crossing the lake. I am going to explain the difference between a scow and a schooner one day when I get room for it. (Kristiansen, 1891)

Unfortunately, no records have been discovered which include further elaboration by Captain Kristiansen on the difference between the scow and conventional schooner forms.

Further historical research indicates, however, that all Great Lakes scow schooners were not as simply constructed or as "unseaworthy" as some records might suggest. The well known maritime historian, Howard Chapelle, offered the following perspective on the American scow:

The sailing scows were very often quite remarkable for their surprising weatherliness and turn of speed under sail; in spite of their clumsy appearance the scows often had the elements of great speed in their hull design. Many of them, due to their beam and flat bottom, were very powerful craft that could carry a large spread of sail in proportion to their displacement. Some had long, sweeping lines in sides and bottom that also produced speed and steadiness on the helm as well. The large . . . schooner rigged scows were often smart sailers when light, and there are numerous instances recorded when these big scows showed their sterns to fast commercial sailing craft and yachts. (Chapelle 1951: 50-51)

Although much of Chapelle's commentary was based on designs from other mari-time regions, the historical record indicates that the qualities he described were com-mon to the Great Lakes scow schooner fleet. References to speed,
seaworthiness, and efficiency can be found in many contemporary accounts. One example of a particularly productive voyage by a scow was recorded on December 16, 1863:

Quick Time - The (scow) schooner *Kate Kelly* made two trips to Buffalo from Port Ryerse, loading and unloading, in the short time of six days, lay in Port Ryerse one day during that time; thus making the two round trips in five days, being without a precedent at this season of the year and extraordinary quick time at any season. (Bannister, 1960: 308)

The efficiency of another scow's operation was recognized in an 1870 report from the lower Lake Michigan region:

Capt. D. Cummings has made 14 round trips from Saugatuck to Chicago with the scow *Flora* in the short space of seven weeks and five days, stopping at the mill in the time to have two cargoes sawed. This speaks well for a scow to sail 2,576 miles in 54 days besides loading and unloading cargoes averaging 82,000 feet, with lath and pickets. (Lane, 1992: 92)

The *Milwaukee Sentinel* similarly commended the scow *Planet* for her "quick" sailing speed in 1869 when she traveled "round trip" between Milwaukee and Kewaunee in just forty-eight hours. While some of the success of the voyages of the *Kate Kelly*, *Flora* and *Planet* may be attributed to logistical considerations other than speed and seaworthy design, they nevertheless reflect a positive attitude on the sailing characteristics of the Great Lakes scow which appear with some regularity in the historical record. Support for the sailing quality of the scow schooner is also surprisingly found in the reflections of Captain H. C. Inches who states that under most conditions, "... scows were considered nearly as fast as (other) schooners of the same dimensions" (Inches & Partlow, 1964: 289-294).

The idea that the design and ability of scow schooners was more diverse than
some historical characterizations suggest, remains fundamental to our understanding of the evolution of this class of vessel on the Lakes. A quote from one 19th century Lakeman nicely reflects a sense of the varied form and sailing ability which appears to have been characteristic of the Great Lakes scow fleet: "Another craft we had in plenty in my early days was the scow schooner; some were box car models, but others had lots of deadrise, a graceful sheer, and could sail and carry like blazes" (TET, 18 Jan. 1936).

The research files of maritime historian Loudon Wilson (1903-1988) include some discussion of the variation of scow schooner design on the Lakes. While much of the information Wilson collected on the age of sail was taken from personal interviews with retired Lake captains, most of what he compiled on the scow schooner was extracted from existing writings including the unique "Schooner Days" column which appeared in the *Toronto Daily Telegram*. Wilson supplemented this information with research in photo archives and through an exchange with other historians who held a similar interest in documenting disappearing maritime traditions of the Lakes region.

Wilson's research acknowledged the widespread use and importance of the Great Lakes scow schooner. He devised a classification system for scows based on three primary bow configurations and also provided regional affiliations for these designs. The designs included what he described as "V bow," "spoon bow" (the design attributed to the *Rockaway*), and "barrel bow" vessels. He suggested the V-bow was most common to Lake Erie, the spoon-bow to Lake Ontario, and the barrel-bow to the Bay of Quinte, Lake Ontario. He added that V-bow and spoon-bow vessels were
found on all the Lakes, while upper Lakes scows were most often of the V-bow design. Although Wilson's writings concede that many Lake scows had a box-like form, he carefully notes that other examples of these craft were found to be "tapered toward the bow and stern just as in a regular type hull" (Loudon G. Wilson Collection).

The photographic record used by Wilson and others remains as an important source of documentation for Great Lakes scow schooner design. Photographers began to capture images of Great Lakes watercraft with some regularity during the latter half of the 19th century. Over the years, they produced enough views of scow schooners at dock and under sail to allow for a sample study of these craft. A selection of the images housed in regional archives confirm the notion that scows were of varied form, particularly in their bow configurations, which range from very bluff straight planked construction to designs which appear to integrate with more conventional hull forms. Unfortunately, historic photos of scows being built and views of their internal construction are exceedingly rare.
CHAPTER V

DISCUSSION AND INTERPRETATION OF THE HISTORY, DESIGN AND CONSTRUCTION OF THE SCOW SCHOONER ROCKAWAY

The combined historical and archaeological documentation of the Rockaway indicates a scow design that falls somewhere between the hard chine, flat-bottomed models described by chroniclers such as H. C. Inches, and the hull form of a more conventional Great Lakes schooner.

The vessel’s spoon bow integrated with a bottom that was not flat, but shaped by a gentle deadrise. The projected lateral plane of this design was greater than that of a bluff-bowed, flat bottomed hull, and would have offered an improved sailing ability and maximum storage for low density bulk cargoes such as coal and grain. Although the ship’s chine was determined to be angular, it did not have the distinctly box-like transition attributed to some scows. The vessel’s gently rounded bottom and angled sides were instead deliberately joined to form an obtuse angle. This created a stronger, more secure union than a square chine, and a side that would not be as likely to engage pilings or wharf structures and sustain costly damage during loading and unloading routines.

A pair of massive stringers provided longitudinal strength on the ship’s port and starboard sides. These timbers and associated planking also formed a radius proportioned to transfer loads from the bottom to the topside, or to control for stress concentrations in this most critical area of the vessel’s design. As an added measure
of strength, bow frames were more tightly spaced than elsewhere in the hull to absorb stress which would have been naturally exerted on the spoon bow design while underway, and to provide the pattern of members needed to lay in the planking.

A “master frame” was placed forward. This appears to have served as a batten for other frames, as there was remarkable consistency represented in the dimensions and shape of the frames which formed the rest of the hull. This measure would have greatly diminished the need for lofting and could have saved considerable related expense in construction costs. Frame spacing averaged 20-21 inches on center and approximately 11 inches between each set of frames. Noticeable changes in framing patterns on the sides were most consistent with the need to provide strength where rigging loads were the greatest. Central hull framing was similarly strengthened to contend with the weight and stress of cargo ladings. The presence and pattern of framing represents a significant divergence from the scows described by Inches.

The *Rockaway* was built for strength and durability. The dimensions of the keel, keelson, stemson, chine timbers and other members met or exceeded all recommended standards of the day for a wooden sailing vessel of 164 gross tons. The accompanying centerboard assembly provided an obvious advantage for a ship with a relatively shoal draft design. It offered wide ranging versatility for sailing in both deep and shallow waters and served to generally enhance the speed, efficiency, and associated economy of a trading venture. The centerboard trunk was also heavily constructed. Remarkably, it would remain intact despite the severe wrecking process experienced by the *Rockaway* and more than a century of immersion on the site.
No description or characterization of the quality of shipbuilding materials used in the construction of the *Rockaway* was discovered in the historical record. To compensate for this lack of information, wood samples were selectively removed and tested from the stemson, keelson, centerboard trunk, windlass, and a distribution of frames and planking on the ship’s port and starboard sides. Associated analyses were administered by the Center for Wood Anatomy Research at the U.S. Forest Products Laboratory, Madison, Wisconsin. Planking was found to be predominantly white oak, with some hemlock represented in what appeared as areas of repair or restoration. Several aft frames were chestnut. All other sampled members, including the rest of the frames, were of the white oak group - a classification considered “first class” by underwriters of the day (Bates, 1866). The extent to which these material samples may represent restoration work administered in 1891 at the Whitehall yard is not known.

The *Rockaway’s* fore and aft rig (as briefly described in the historical record and represented on site) was highly adaptable to varied wind patterns on the Lakes and relatively simple to operate and maintain. As addressed in earlier sections of this report, this system of blocks, tackle, and sheets could be worked mostly from the deck and by a small crew, an important factor in a period when sailor’s wages were often the greatest single expense of a vessel’s annual operation. There was also the relative ease with which the running gear and booms could be removed or swung out of the way for cargo loading and unloading operations, a distinct economic advantage for a vessel engaged in the lumber and bulk cargo trades.
The Rockaway was launched in 1866, a year distinguished by a “craze for lake craft” according to 19th century Lakes historian, J. B. Mansfield. This characterization is supported by mortgage documents, which in 1866, record the buying and selling of more than 110 vessels at Oswego alone. The Rockaway was built under the direction of a skilled and accomplished shipwright, known for his influence on the schooner building industry there. The ship’s launching was even heralded in the local press with such nautical terms as “staunch,” “trim,” and “first class.”

The building and equipping of the Rockaway was financed by Chandler, Alvord & Company, a partnership of four men, and one woman, well established through past experience in maritime commerce. The female owner, alone, Alida Littlejohn, had ties through family and marriage to two of Oswego’s most influential maritime entrepreneurs and politicians. This group of shareholders commissioned their scow to be built at a cost near that of a conventional schooner of comparable size and dimensions, at a yard established and financed with their own resources.

The Rockaway was built for the lumber trade at a time when lumber receipts at Oswego reached an all time high, yet her recorded voyages indicate she was adaptively used to distribute a wide range of other materials. In her first 13 years of service, the vessel carried cargoes ranging from salt, produce and packaged goods, to the more common coarse bulk freights of lumber, coal, and iron ore. Her trade even included shipments of grain, a commodity which ships rated B1 were restricted from carrying per their “unseaworthy” design. The coming decade was also characterized
by six transfers of ownership and numerous voyages within a network that included both short and long distance trade.

The year 1880 was marked by the transfer of the *Rockaway* to the upper Lakes region. She was acquired for service by Winfield Scott Gerrish of Muskegon, Michigan, a man then regarded as one of the most prolific lumber manufacturers in the world. She was later sold to lumber barons, William Brinen and Thomas Munroe, who faithfully employed their scow in the Lake Michigan lumber trade for 11 more seasons before her untimely demise in 1891. It may be important to note that the *Rockaway*’s owners were all well experienced in the maritime trades. This legacy of review and ownership by highly knowledgeable investors may suggest a level of quality that was inherent to the vessel’s design.

The *Rockaway*’s spoon bow, moderately curved hull, centerboard, and fore and aft rig proved to be a seaworthy and economically effective combination on the Great Lakes. The ship’s sailing qualities were complimented by a length, beam and depth ratio which afforded a significant carrying volume, above and below decks, for low density bulk cargoes. Supporting data for these statements are represented in an extended review of the ship’s commercial career and the quality and quantity of the cargoes she carried. Finally, it should be noted here that the *Rockaway*’s registered dimensions and gross tonnage placed her well within the top 10% of the largest scows recorded in the database study.

Although the archaeological record demonstrated some cost cutting measures were taken in the *Rockaway*’s construction, these measures were not typical of the
compromise so often attributed to the building of scows. In fact, there is no strong evidence to indicate that economy of build was a significant influence in the choice of this vessel’s design. Although classified as a scow schooner, the *Rockaway* was built of relatively complex form and with materials characterized as “first class” by 1866 Lake Underwriters Rules.

Our study of the *Rockaway* clearly indicates that the Great Lakes scow schooner was a vessel of more varied design and construction than historical characterizations suggest, and that the desire for a certain quality and versatility of function was at least as influential in the minds of the vessel’s builders and owners as cost of construction. Similarly, our evaluation of the *Rockaway* does not support the concept that scow schooner construction in the Great Lakes region was influenced by a shortage of skilled shipbuilders. Instead, the *Rockaway*’s architectural characteristics indicate a sophisticated level of knowledge, skill, and innovation on the part of its designers and builders. Further study of the scow schooner database is beginning to suggest several variations of scows and patterns in their development. It is hoped these data may eventually be applied to further studies and a more thorough understanding of the cultural and environmental factors which influenced this design.

In order to interpret change or variations of the Great Lakes scow schooner, we need to continue to investigate the broader range of variables which affected their building and use. Their dimensions and tonnage, internal and external construction, the risks and hazards of the natural and man-made environment in which they sailed, the cargoes they carried, the trade networks in which they operated, competing forms
of transport, the economic organization and vitality of the communities they served, the status of builders, owners and financiers, their economic success as carriers, should all be considered within a proper context of time and place.

These views do not reflect a desire to make a simple subject more complicated; instead they evoke the need to properly evaluate an important component of our Great Lakes maritime heritage which appears more complex than we may have realized. It is a subject which warrants further study; one for which we can be grateful that a relative abundance of historical and archaeological material exists.
Appendix A

Chronological Listing of Newspaper References Used to Document the Voyages and Commerce of the *Rockaway* (1866-1891)
Oswego Daily Palladium 14 Nov. 1866.

Oswego Daily Palladium 24 Nov. 1866.

Oswego Daily Palladium 3 Dec. 1866.

Oswego Commercial Advertiser and Times 20 Apr. 1867.

Oswego Commercial Advertiser and Times 29 Apr. 1867.

Oswego Commercial Advertiser and Times 1 May 1867.

Oswego Commercial Advertiser and Times 27 May 1867.

Chicago Tribune 11 July 1867.

Oswego Commercial Advertiser and Times 9 Oct. 1867.

Oswego Commercial Advertiser and Times 10 Oct. 1867.

Hamilton Spectator 22 October 1867.

Hamilton Spectator 23 October 1867.


Hamilton Spectator 30 Oct. 1867.

Oswego Commercial Advertiser and Times 4 November 1867.

Oswego Commercial Advertiser and Times 5 November 1867.

Oswego Commercial Advertiser and Times 6 November 1867.

Oswego Commercial Advertiser and Times 4 May 1868.

Oswego Commercial Advertiser and Times 22 May 1868.

Oswego Commercial Advertiser and Times 24 May 1868.

Oswego Commercial Advertiser and Times 30 May 1868.

Oswego Commercial Advertiser and Times 1 June 1868.
Oswego Commercial Advertiser and Times 13 June 1868.
Oswego Commercial Advertiser and Times 31 Aug. 1868.
Oswego Commercial Advertiser and Times 1 Sept. 1868.
Oswego Commercial Advertiser and Times 8 Sept. 1868
Oswego Commercial Advertiser and Times 11 Sept. 1868.
Milwaukee Sentinel 14 Sept. 1868.
Milwaukee Sentinel 8 Oct. 1868.
Oswego Commercial Advertiser and Times 12 Oct. 1868.
Oswego Commercial Advertiser and Times 6 Nov. 1868.
Oswego Commercial Advertiser and Times 9 Nov. 1868.
Oswego Commercial Advertiser and Times 17 Apr. 1869.
Oswego Commercial Advertiser and Times 26 Apr. 1869
Oswego Commercial Advertiser and Times 4 May 1869.
Oswego Commercial Advertiser and Times 15 May 1869.
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Oswego Commercial Advertiser and Times 8 Oct. 1869.
Oswego Commercial Advertiser and Times 2 Nov. 1869
Oswego Commercial Advertiser and Times 8 Nov. 1869.
Oswego Commercial Advertiser and Times 15 Jan. 1870.
Oswego Commercial Advertiser and Times 5 July 1870.
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Oswego Commercial Advertiser and Times 4 Nov. 1870.
Oswego Commercial Advertiser and Times 15 Nov. 1870.
Oswego Commercial Advertiser and Times 18 Nov. 1870.
Oswego Commercial Advertiser and Times 19 Dec. 1870.
Oswego Daily Palladium 5 Apr. 1871.
Oswego Daily Palladium 6 Apr. 1871.
Oswego Daily Palladium 29 Apr. 1871.
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Oswego Daily Palladium 7 Nov. 1871.

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Oswego Daily Palladium 27 1871.

Oswego Commercial Advertiser and Times 13 Apr. 1872

Oswego Commercial Advertiser and Times 23 Apr. 1872.

Oswego Commercial Advertiser and Times 30 May 1872.

Oswego Commercial Advertiser and Times 10 July 1872.

Oswego Commercial Advertiser and Times 3 July 1872.

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Oswego Commercial Advertiser and Times 6 Nov. 1872.

Oswego Commercial Advertiser and Times 15 Nov. 1872.

Oswego Commercial Advertiser and Times 17 Dec. 1872.

Oswego Commercial Advertiser and Times 24 Apr. 1873.

Oswego Commercial Advertiser and Times 17 May 1873.

Oswego Commercial Advertiser and Times 12 June 1873.
Oswego Commercial Advertiser and Times 27 June 1873.

Oswego Daily Palladium 1 July 1873.

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Chicago Inter-Ocean 7 Aug. 1890.
Chicago Inter-Ocean 9 Aug. 1890.
Chicago Inter-Ocean 11 Aug. 1890.
Chicago Inter-Ocean 13 Aug. 1890.
Chicago Inter-Ocean 14 Aug. 1890.
Chicago Inter-Ocean 16 Aug. 1890.
Chicago Inter-Ocean 25 Aug. 1890.
Chicago Inter-Ocean 30 Aug. 1890.
Chicago Inter-Ocean 12 Sept. 1890.
Chicago Inter-Ocean 19 Sept. 1890.

Chicago Inter-Ocean 22 Sept. 1890.

Chicago Inter-Ocean 3 Oct. 1890.

Chicago Inter-Ocean 9 Oct. 1890.

Chicago Inter-Ocean 17 Oct. 1890.

Chicago Inter-Ocean 20 Oct. 1890.

Chicago Inter-Ocean 24 Apr. 1891.

Chicago Inter-Ocean 5 May 1891

Chicago Inter-Ocean 8 May 1891.

Chicago Inter-Ocean 9 May 1891.

Chicago Inter-Ocean 21 May 1891.

Chicago Inter-Ocean 2 June 1891.

Chicago Inter-Ocean 9 June 1891.

Chicago Inter-Ocean 13 June 1891.

Chicago Inter-Ocean 23 June 1891.

Chicago Inter-Ocean 26 June 1891.

Chicago Inter-Ocean 3 July 1891.

Chicago Inter-Ocean 27 Aug. 1891.

Chicago Inter-Ocean 1 Sept. 1891.

Chicago Inter-Ocean 4 Sept. 1891.

Chicago Inter-Ocean 6 Sept. 1891.

Chicago Inter-Ocean 9 Sept. 1891.
Appendix B

Glossary of Nautical Terms
<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abeam</td>
<td>Bearing at right angles to the length or fore-and-aft line of a vessel.</td>
</tr>
<tr>
<td>Aft</td>
<td>Toward or near the stern of a vessel.</td>
</tr>
<tr>
<td>Amidships</td>
<td>In the middle of a vessel, lengthways or crossways.</td>
</tr>
<tr>
<td>Bark/barque</td>
<td>A three masted sailing ship, which is square rigged on the two forward masts and fore and aft rigged on the third mast.</td>
</tr>
<tr>
<td>Beam</td>
<td>The width of a vessel at its widest point.</td>
</tr>
<tr>
<td>Belaying pin</td>
<td>A pin or bolt of wood or metal around which ropes are “belayed” to make them fast.</td>
</tr>
<tr>
<td>Boatswain’s or Bosun’s Locker</td>
<td>The “boatswain” is the officer or crewman in charge of hull and rigging maintenance and related equipment. The locker is where ship maintenance equipment was traditionally stored.</td>
</tr>
<tr>
<td>Boom</td>
<td>A long pole or spar used to extend the lower edge of a sail, and to maneuver the sail so it can catch the wind.</td>
</tr>
<tr>
<td>Bowsprit</td>
<td>A spar extending forward from the stem, on which the jib sails are set.</td>
</tr>
<tr>
<td>Bilge</td>
<td>The lowest point of the inside of a hull where water tends to collect. This term is sometimes used to describe the interior of the hull from the keel to the sides.</td>
</tr>
<tr>
<td>Bilge pump</td>
<td>Pumps used in the lower interior of a hull to clear water from the bilge area.</td>
</tr>
<tr>
<td>Bow</td>
<td>The front part of a vessel, from the forward part of a ship’s side to where the planking curves to meet at the stem.</td>
</tr>
<tr>
<td>Breadth</td>
<td>A measurement of width taken from edge to edge of the outside planks at the vessel’s widest point.</td>
</tr>
<tr>
<td>Brig</td>
<td>A two masted sailing ship, square rigged on the forward mast and schooner rigged on the mainmast.</td>
</tr>
<tr>
<td>Bulwark</td>
<td>The part of the hull which extends above the deck</td>
</tr>
<tr>
<td>Canvas</td>
<td>A general term for sails.</td>
</tr>
<tr>
<td>Canvas bent</td>
<td>A reference to sails being readied for use.</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
</tr>
<tr>
<td>--------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Caulk</td>
<td>To make the seams between planks watertight by driving fiber into them and then covering the seams with pitch or resin.</td>
</tr>
<tr>
<td>Chandler</td>
<td>The proprietor of a business (ship’s chandlery) which sells marine supplies, otherwise known as a ship chandler.</td>
</tr>
<tr>
<td>Chine</td>
<td>The place where the bottom and side of the hull meet in a line or projection. Where there is a sharp angle, the ship is said to be “hard-chined.”</td>
</tr>
<tr>
<td>Deadrise</td>
<td>Vertical distance between the keel and the chine.</td>
</tr>
<tr>
<td>Deadeye</td>
<td>A round flattish wooden block pierced with holes through which a line is run to support the masts. Some feel the term dead alluded to the absence of the motion of a pulley in the eye of the block.</td>
</tr>
<tr>
<td>Depth</td>
<td>The depth of a ship’s hold was determined by measuring the vertical distance from the lowest plank which runs alongside the ship’s keelson to the underside of the uppermost deck plank.</td>
</tr>
<tr>
<td>Displacement</td>
<td>The weight of the water, displaced by a ship, measured in tons.</td>
</tr>
<tr>
<td>Dock Whollopers</td>
<td>A type of stevedore or longshoreman who assists in loading or unloading lumber.</td>
</tr>
<tr>
<td>Draft or Draught</td>
<td>The depth of water required for the ship to float freely. Essentially, the distance from the water-line to the lowest part of the keel.</td>
</tr>
<tr>
<td>Driftbolt</td>
<td>Long iron rod used to fasten planking and other wooden members of the ship.</td>
</tr>
<tr>
<td>Fasteners</td>
<td>The various iron rods, pins and bolts used to hold wooden parts of the ship together.</td>
</tr>
<tr>
<td>Figurehead</td>
<td>The wooden figure that was carved into a ship’s bow. Figureheads were not a common feature on Great Lakes sailing ships.</td>
</tr>
<tr>
<td>Fore and aft</td>
<td>Sails set on gaffs, booms and stays to run lengthwise with the ship.</td>
</tr>
<tr>
<td>Foremast</td>
<td>Forward mast in a sailing vessel of two to three masts.</td>
</tr>
<tr>
<td>Fore-topmast</td>
<td>A short, attached spar which extends above the highest point of the foremast used to carry additional sail or pennants.</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
</tr>
<tr>
<td>----------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Forwarder</td>
<td>In a maritime economy, an agent who performs services which assure and facilitate the receiving, transshipping or delivering of goods.</td>
</tr>
<tr>
<td>Frame</td>
<td>The transverse members of a ship's internal skeleton, they branch outward and upward from the keel, giving shape and strength to the hull and providing a framework for planking.</td>
</tr>
<tr>
<td>Futtock</td>
<td>A middle section of a frame.</td>
</tr>
<tr>
<td>Gaff</td>
<td>A spar to which the upper edge of a sail is attached.</td>
</tr>
<tr>
<td>Gale</td>
<td>Term used to distinguish the force or velocity of lake winds. Gales were classified into such categories as <em>fresh</em> or <em>strong</em> based on an estimation or of the wind's speed.</td>
</tr>
<tr>
<td>Galley</td>
<td>A kitchen-room on the ship, usually aft, where food is stored, prepared and eaten.</td>
</tr>
<tr>
<td>Gunwale</td>
<td>The upper rail or reinforcement that runs along the top outer edge of a ship's bulwark or side.</td>
</tr>
<tr>
<td>Helm</td>
<td>The apparatus which steers the ship, consisting of the rudder, tiller and steering wheel.</td>
</tr>
<tr>
<td>In ordinary</td>
<td>A merchant vessel was said to be “in ordinary” when it was inactive or not ready for use.</td>
</tr>
<tr>
<td>Jib</td>
<td>A triangular sail set from the bowsprit (the spar protruding from the bow).</td>
</tr>
<tr>
<td>Keel</td>
<td>The principal lengthwise timber in any vessel; the backbone of the ship running from stem to stern on the bottom. Frames and the keelson are attached to the keel.</td>
</tr>
<tr>
<td>Keelson</td>
<td>The length of timber attached to the top of the keel to provide additional strength and reinforcement.</td>
</tr>
<tr>
<td>Laid up</td>
<td>A reference to the period or process where a ship is unrigged or put out of commission at the end of the shipping season.</td>
</tr>
<tr>
<td>Lading</td>
<td>A term applied in the world of maritime shipping to cargo or freight.</td>
</tr>
<tr>
<td>Lath</td>
<td>Wood that has been pre-cut or shaped in a mill.</td>
</tr>
</tbody>
</table>
Length The length of a ship generally referred to a linear measurement taken on deck from the forward side of the stempost to the after side of the sternpost.

Light Reference used when a merchant vessel travels “light” or without cargo.

Loft To lay out a full-scale working drawing of the lines and curves of a vessel’s hull.

Mainmast Second mast in a two or three masted sailing vessel.

Martingale A lower stay of rope for the jib-boom (a spar that forms an extension of the bowsprit) used to sustain the strain of the forestay (the rope that prevents the forward mast from falling backwards).

Stays

Master The officer commanding a merchant vessel. Master was sometimes used to refer to a vessel owner, even if he was not the acting captain.

Mast-step Socket on the keelson where the heel (lower end) of a mast is fitted or “stepped.”

Mate The officer next in command to the captain who generally assisted with navigation and operation of the ship and oversaw the crew. Great Lakes sail vessels sometimes had more than one mate, listed as 1st mate and 2nd mate.

Merchantman A ship that carries cargo.

Mizzenmast The third mast on a three masted sailing ship.

Packet A type of small freighter used principally for the local movement of packaged goods.

Pilot An experienced guide hired to conduct a vessel through an especially hazardous channel or coastal zone.

Planking Timbers used to provide an inner and outer sheathing or “skin” for the vessel.

Port Left-hand side of a ship, looking forward.
Raffy  A small triangular or four-cornered sail carried at the very top of a mast, used to augment other sails when the wind is moving a vessel on a direct course. This sail had a special tradition of use on the Lakes.

Ribs  A term generally applied to the framing members of small watercraft.

Rigging  The system of cordage and wire rope used to support the masts and yards. “Standing rigging” is permanently installed and consists of shrouds, stays, and all ropes that hold spars in their places. “Running rigging” is mobile and includes halyards, sheets, clew-lines and equipment used to raise and lower the sails.

Roller Chock  A heavy metal casting, positioned on the bow or stern of a ship, with two short horn shaped arms curving inward between which ropes or hawsers may pass for mooring or towing.

Salting  Process where the spaces between inner and outer hull planking are filled with salt. The salt mixes with moisture to produce a wood preserving brine.

Schooner  A sailing ship with two or more masts, with all lower sails rigged fore-and-aft.

Scow  A vessel type generally defined as carrying a flat bottom and square bilges or sides. They are called scow sloop or scow schooner according to the rig they carry.

Seaworthy  To be considered fit and safe for a sailing voyage, and adequately designed and equipped for the safe and dry carriage and storage of cargoes.

Sheer  The curve of the hull from the forward to the aft end of the ship.

Sister Keelsons  Longitudinal timbers which run alongside the keelson to stiffen and strengthen the vessel’s framework.

Sloop  A single masted, fore and aft rigged, sailing craft.

Spar  A rounded length of timber usually associated with the masts such as a yard, gaff or boom.

Square Sail  A four cornered sail set at right angles on a yard. A “square-rigged” ship is rigged principally with square sails.
Starboard  
Right-hand side of a ship, looking forward.

Staunch  
In maritime circles, a reference used to describe a ship that is strongly built and watertight.

Stays  
Each one of the strong ropes used to support a ship’s masts.

Stempost  
The strong foremost timber of a vessel. It rises from the keel and is made up of several pieces of wood, which when beveled together, are called the stem.

Stemson  
A vertical framing timber attached to the inside of the stempost.

Stern  
The extreme aft or rear end of a vessel.

Sternpost  
The central post at the stern of a ship. Mounted on the aft end of the keel, it usually holds the rudder.

Strake  
The individual planks which run the length of the ship’s hull.

Stranding  
Situation when a vessel has been driven aground.

Stringer  
A lengthwise structural member which is designed to reinforce the strength of the hull.

Stripped  
Stripping the ship involved removing the sails, spars, block and tackle, usually in the winter, when the ship became inactive.

Surfman  
A member of the U.S. Life Saving Service, which provides rescue services to wrecked and stranded mariners.

Tierce  
A well-constructed cask with a capacity listed at 300 to 330 pounds, or 50 gallons, often used to carry liquids or salted meat.

Timber  
Often a reference to a frame or rib, this term may be used to describe any piece of wood used in shipbuilding.

Tonnage  
The capacity of the ship’s inside volume. Gross tonnage gives the total capacity of the ship including crew’s quarters, supply rooms, etc.; while net tonnage gives only the volume of the area set aside for cargo.

Transom  
A general reference to the stern of a square-ended boat; also, the beams which are fastened across the stern post, strengthening the stern and giving it shape.
**Trim**  The way in which a vessel floats or balances on the water in relation to its fore and aft lines.

**Wharves**  A structure built along or at an angle from the shore of navigable waters so that ships may lie alongside to receive and discharge cargo or passengers.

**Windbound**  Generally, a reference to a ship’s inability to set sail because of unusually strong or dangerous winds or related weather conditions.

**Windlass**  A mechanical device (drum like in appearance) used for hoisting anchors and to “warp slip” or move a ship into harbor.

**Windlass Levers**  Large iron bars, fitted with a handle and a shaped end, used to ratchet or turn the windlass and raise the anchor.

**Wire Rope**  Wire or steel strands wrapped around a hemp core. Wire rope offered great strength and durability as standing rigging.
Appendix C

Great Lakes Scow Schooner Database
Listing for American Vessels
<table>
<thead>
<tr>
<th>Vessel Name</th>
<th>Year Built</th>
<th>Gross Ton</th>
<th>Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>S H LATHROP</td>
<td>1856</td>
<td>279</td>
<td>GL</td>
</tr>
<tr>
<td>STORM</td>
<td>1856</td>
<td>74</td>
<td>GL</td>
</tr>
<tr>
<td>WHITTLESEA</td>
<td>1856</td>
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<td>GL</td>
</tr>
<tr>
<td>ADDA</td>
<td>1857</td>
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</tr>
<tr>
<td>COMET</td>
<td>1857</td>
<td>52</td>
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<td>CONDOR</td>
<td>1857</td>
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<td>F.V.SPECHT</td>
<td>1857</td>
<td>36</td>
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<tr>
<td>FOREST</td>
<td>1857</td>
<td>116</td>
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<tr>
<td>FREE MASON</td>
<td>1857</td>
<td>38</td>
<td>GL</td>
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<tr>
<td>FREEDOM</td>
<td>1857</td>
<td>52</td>
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<tr>
<td>GRACE A GREEN</td>
<td>1857</td>
<td>68</td>
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</tr>
<tr>
<td>HUMBOLDT</td>
<td>1857</td>
<td>96</td>
<td>GL</td>
</tr>
<tr>
<td>LILLY DALE</td>
<td>1857</td>
<td>47</td>
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</tr>
<tr>
<td>MARY BOOTH</td>
<td>1857</td>
<td>141</td>
<td>GL</td>
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<td>MYRTLE</td>
<td>1857</td>
<td>161</td>
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<td>SEA BIRD</td>
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<td>1857</td>
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<td>W R HANNA</td>
<td>1857</td>
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<td>WILLIAM BARCLAY</td>
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<td>1858</td>
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<td>1858</td>
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<td>J B CHAPIN</td>
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<td>SENECA CHIEF</td>
<td>1858</td>
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<td>WM MATHEWS</td>
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<td>1859</td>
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<td>1859</td>
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<td>SUNBURY</td>
<td>1859</td>
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<td>WETZEL</td>
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<td>WILLIAM KELLEY</td>
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<td>ABRAHAM LINCOLN</td>
<td>1860</td>
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<tr>
<td>Vessel Name</td>
<td>Year Built</td>
<td>Gross Ton</td>
<td>Region</td>
</tr>
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<td>1860</td>
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<td>1860</td>
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<td>MORNING LARK</td>
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<td>1860</td>
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Appendix D

Plates and Drawings
Nineteenth century view of the lumber shipping district at Oswego, New York. Records indicate the Rockaway was built for the lumber trade with a capacity for carrying 180,000 board feet of the commodity. Note the sharp bow and shear of the schooner to the left and the “dock whollopers” in the foreground. *Photo courtesy of the Oswego County Historical Society.*
View of the shipyard site at Oswego where the *Rockaway* was built. In 1866, Oswego was a prominent and influential shipbuilding center on the Great Lakes. *Photo courtesy of the Oswego County Historical Society.*
Winfield Scott Gerrish purchased the *Rockaway* in 1880 to serve as a carrier in the lucrative Muskegon to Chicago lumber trade. At the time, Gerrish was characterized as one of the most prolific lumber manufacturers in the world. *Drawing courtesy of the Muskegon County Historical Museum.*
Muskegon lumber barons William Brinen and Thomas Munroe owned three-quarter interest in the Rockaway at the time of the ship’s loss in 1891. This photo shows Brinen seated in the foreground, and Munroe atop a lumber cargo on the steam barge, George Markham, in 1912. Photo courtesy of the Muskegon County Historical Museum.
Ole Thompson, the *Rockaway*’s last captain-owner, is shown (seated in the center) with family members aboard the schooner Lyman Davis in 1897. Thompson would continue to captain vessels from Muskegon for a number of years after the loss of the *Rockaway*. 
*Photo courtesy of the Muskegon County Historical Museum.*
A conceptual drawing prepared in 1985 (not to scale) shows methods of excavation administered on the Rockaway site. The collapsed starboard side of the ship is not represented. Note the forward mast-step in the keelson at center, the stemson to the right, and the forward end of the centerboard trunk in the left of the drawing. *Drawing courtesy of the Michigan Historical Center.*
A segment of the Rockaway site plan shows a view of the forward inner hull. Access to the skeleton of the ship allowed for the documentation of diagnostically important features including the dimensions and pattern of framing timbers; the keelson, bilge stringers, stem, and centerboard trunk; and the deadrise of the hull. Significant concentrations of ship and rigging maintenance equipment were found in the boatswain's locker (area surrounding the chain pile at lower center). *Drawing courtesy of the Michigan Historical Center and Great Lakes Visual Research.*
A view of the internal stern area of the Rockaway. A section of the collapsed starboard side (broken at the chine) projects into the image. Artifacts found in this area of the ship included galley wares navigational equipment, and personal possessions of the crew. Drawing courtesy of the Michigan Historical Center and Great Lakes Visual Research.
A tight photomosaic view shows ceiling planking and framing in the starboard bow quarter of the Rockaway's hull. Photomosaic documentation played an important role in the planning and implementation of excavation procedures. Photos courtesy of the Michigan Historical Center and Great Lakes Visual Research.
Profile, end, and top views of the Rockaway's centerboard trunk. The centerboard provided stability between the hull and rig when the vessel was under sail, and could be pulled into its “trunk” or casing when the ship entered shallow waters. Drawing courtesy of the Michigan Historical Center.
Starboard and top views of the stemson. Still attached to the keelson, the stemson was the forward most intact member of the bow structure. Heavy framing and planking was used to strengthen the Rockaway’s associated “spoon bow” design. Drawing courtesy of the Michigan Historical Center.
Starboard and top views of the stemson. Still attached to the keelson, the stemson was the forward most intact member of the bow structure. Heavy framing and planking was used to strengthen the Rockaway's associated "spoon bow" design. *Drawing courtesy of the Michigan Historical Center.*
The economy of shipboard life was emphasized in the study of the Rockaway’s artifact assemblage. Drawing of “rigger’s screw,” a tool used in the skillful preparation of wire rigging. Approximately 55% of the total artifact assemblage was associated with work routines performed aboard ship. Representative tasks ranged from hull and rigging maintenance to the loading and unloading of cargoes. Drawing courtesy of the Michigan Historical Center.
Drawings of a scow schooner and a scow sloop taken from an 1885 edition of the *U.S. List of Merchant Vessels*. Accompanying text included the following characterization: “The scow is a vessel used in the shoal waters of nearly all the States, but principally on the lakes. Scows are built with flat bottoms and square bilges, but some of them have the ordinary schooner bow. The distinctive line between the scow and regular built schooner is, in the case of some large vessels, quite obscure, but would seem to be determined by the shape of the bilge, the scow having in all cases the angular bilge instead of the curve (futtock) bilge of the ordinary vessel.”
Drawings of a scow schooner and a scow sloop taken from an 1885 edition of the *U.S. List of Merchant Vessels*. Accompanying text included the following characterization: "The scow is a vessel used in the shoal waters of nearly all the States, but principally on the lakes. Scows are built with flat bottoms and square bilges, but some of them have the ordinary schooner bow. The distinctive line between the scow and regular built schooner is, in the case of some large vessels, quite obscure, but would seem to be determined by the shape of the bilge, the scow having in all cases the angular bilge instead of the curve (futtock) bilge of the ordinary vessel."
The Great Lakes schooner *Moonlight* in dry-dock at Cleveland, around 1894, showing a conventional bow configuration. The preparation and building of a sharply curved hull required more time and expense than flat bottomed, slab-sided ship construction. Lofting expertise and the skilled shaping and fitting of curved timbers were significant factors in the economics of shipbuilding. *Photo courtesy of Great Lakes Historical Society.*
An unidentified Great Lakes scow showing a standard bow design. *Photo courtesy of C. Patrick Labadie*
Late 19th century view of the Great Lakes scow schooner *Lillie*, showing fore and aft rig and bluff bow design. *Photo courtesy of the Historical Collections of the Great Lakes, Jerome Library, Bowling Green State University.*
A small sample of the voluminous research notes prepared by maritime historian Loudon Wilson on the Great Lakes sailing trades and the scow schooner. Note Wilson’s comparative illustrations of “V Bow”, “Spoon Bow” and “Barrel Bow” designs. Photo courtesy of the Historical Collections of the Great Lakes, Jerome Library, Bowling Green State University.
Scow schooner *Ulster* (renamed *Helen*) entering the port of Manitowoc, Wisconsin around 1880. Although classified as a scow, the ship’s bow design is comparable to that of a conventional schooner and more in keeping with the *Rockaway*’s design than a traditional scow form. Study of the *Rockaway* site and historical record suggests that experimentation, innovation, and variation in the design and construction of scow schooners was not uncommon in the Great Lakes region. *Photo courtesy of Henry N. Barkhausen.*
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