SHIP BALCLUTHA
(Ship Star of Alaska)
(Ship Pacific Queen)
San Francisco Maritime
National Historical Park
2905 Hyde Street Pier
San Francisco
San Francisco County
California

HAER No. CA-54

PHOTOGRAPHS

REDUCED COPIES OF MEASURED DRAWINGS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
National Park Service
Department of the Interior
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HISTORIC AMERICAN ENGINEERING RECORD

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All photographs by Jet Lowe, April 1988 unless indicated otherwise.

NOTE: Most of the photographs were taken while the vessel was berthed at Pier 43, its location since 1955. On April 28, 1988, BALCLUTHA was moved to Hyde Street Pier.

CA-54-1: Port side profile.

CA-54-2 View toward the port bow.

CA-54-3: View of bow.

CA-54-4: 3/4 view of starboard profile looking aft.

CA-54-5: View of stern.

CA-54-6: Starboard profile of bowsprit.

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CA-54-17: Bowsprit.

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CA-54-20: Ship's bell, located on the forecastle deck breast rail. Photograph taken by Russell Booth, June 1989.

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CA-54-42: View from forward end of poop deck, port side, looking aft toward poop capstan, booby hatch, and mizzenmast. Photograph by Russell Booth, June 1989.

CA-54-43: Poop deck capstan. Photograph by Russell Booth, June 1989.

CA-54-44: BALCLUTHA maintenance crew members (left to right), rigger foreman Steven Hyman, riggers Tamerlane Halaj and Timothy Przygocki, with main shrouds beyond. Photograph by Russell Booth, June 1989.

CA-54-45: Oblique view of booby hatch showing aft and port faces. Photograph by Russell Booth, June 1989.

CA-54-46: Mizzen fife rail, port side. Photograph by Russell Booth, June 1989.

CA-54-47: Oblique view of chart house showing aft and port faces. Photograph by Russell Booth, June 1989.

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CA-54-50: Oblique view aft of saloon skylight with steering gear beyond, mizzen gaff boom above. Photograph by Russell Booth, June 1989.

CA-54-51: Forward face of saloon skylight. Photograph by Russell Booth, June 1989.

CA-54-52: Patent steering gear, hatch and steering compass binnacle, view from starboard looking aft. Photograph by Jet Lowe, April 1988.

CA-54-53: Patent steering gear, saloon skylight, and chart house beyond, view from port looking forward. Jet Lowe photographer, April 1988.

CA-54-54: Starboard profile of steering gear, wood housing has been removed showing mechanism. Photograph by Russell Booth, June 1989.

CA-54-55: Oblique view aft of steering gear, showing mechanism. Photograph by Russell Booth, June 1989.

CA-54-56: Steering gear mechanism, view forward. Photograph by Russell Booth, June 1989.

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CA-54-57: View looking aft, bunks are a museum reconstruction ca. 1955.

CA-54-58: View of windlass, looking forward (cage is a museum addition).

CA-54-59: Windlass, port side.

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CA-54-63: Starboard profile of mizzenmast, original poop bulkhead to left.

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CA-54-64: Pantry.

CA-54-65: Saloon looking aft toward built-in sofa.

CA-54-66: View across saloon toward open door of spare cabin, displayed as children's room, hanging bottle rack in foreground, beneath skylight.

CA-54-67: View of saloon looking forward toward built-in sideboard with mirror.

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CA-54-70: Saloon, view up into skylight.

CA-54-71: Saloon, view of port side panelling and doors leading to mates' quarters.

CA-54-72: Master's cabin, view looking forward toward bed and chest of drawers.

CA-54-73: Master's cabin, view looking forward toward chest of drawers, and built-in sofa.

CA-54-74: Master's cabin, view aft.

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CA-54-79: "China Town", starboard side looking aft past bunk bed frames.

CA-54-80: Port side cargo port at frame number 40.

CA-54-81: Stern area, linoleum has been removed showing possible original decking. Russell Booth photographer, December 1990.

CA-54-82: Lumber ports at stern. Jet Lowe photographer, April 1988.

CA-54-83: Open lumber hatch in deck, portside. Russell Booth photographer, December 1990.

CA-54-84: View up through lumber hatch from lower hold. Russell Booth photographer, December 1990.

CA-54-85: Closer view through lumber hatch from lower hold. Russell Booth photographer, December 1990.

FORE PEAK

CA-54-86: View aft toward collision bulkhead.

CA-54-87: View forward at 'tween deck level.

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CA-54-89: View forward from base of fore peak.

CA-54-90: View of base of collision bulkhead, port side.

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CA-54-91: View down at chain locker bulkhead showing keelson and end of chain at floor, frame number 110.

CA-54-92: View aft of storage and maintenance area from near frame number 96, port side.

CA-54-93: Detail of structure at frame 76, starboard side looking aft, deck hand Mike Wall in lower right.

CA-54-94: Starboard side looking aft from frame 64, toward museum display.

CA-54-95: "Rigger's Loft" (not original) looking aft, port side, from approximately frame number 50.

CA-54-96: View aft, port side, from just forward of the mizzenmast. Cans in foreground store Fluid Film, used to protect structural steel below waterline from oxidation. Sails stored on shelving in background have since been moved to Museum Storage.

CA-54-97: View down at mizzenmast step.

CA-54-98: View aft toward stern, port side, from approximately frame 18.

BALCLUTHA MOVE, APRIL 28, 1988

CA-54-99 to CA-54-111: BALCLUTHA is moved from Pier 41 to Hyde Street Pier.

FIGURE HEAD

Photographs taken by Russell Booth, July 1988 and December 1990.

NOTE: Original figurehead is stored at San Francisco Maritime National Historic Park Museum Storage Building at Lower Fort Mason.

CA-54-112: Starboard profile, 1988.

CA-54-113: Port profile, some layers of paint have been removed, 1990.

CA-54-114: Close-up view of face, 1988.

STANDARD COMPASS AND COMPENSATING BINNACLE

Photographs taken by Russell Booth, December 1990.

NOTE: Since 1987, BALCLUTHA's standard compass and compensating binnacle have been stored at San Francisco Maritime National Historic Park Museum Storage Building at Lower Fort Mason.

CA-54-115: After side.

CA-54-116: Port side.

CA-54-117: Fore side showing receptacle for flinders bar, used to counteract deviation caused by surrounding metals.

CA-54-118: Detail of the compass face.

CA-54-119: The door in the after side of the binnacle has been removed to show the iron the storage area of the iron pieces used for compass adjustment.

HISTORICAL PHOTOS AND DOCUMENTS

The following photocopies were made with permission from the San Francisco Maritime National Historical Park. Please credit the Park, the collection, and the photographer (where known).

CA-54-120: BALCLUTHA in San Francisco Bay, pre-1911. Photo by Wilton.

CA-54-121: BALCLUTHA pre-1911. I. F. Dunn Collection. (A6.20,664n)

AS STAR OF ALASKA

CA-54-122: Pre-1911. "Ship, Star of Alaska, Entering Chignik Bay, Alaska", noted on photograph. Fred Heick Collection.

CA-54-123: Pre-1911. View forward from near mizzen hatch, starboard side showing crew standing on a load of lumber. Note main fife rail, small hatch with cover (possibly original "lime juice hatch") just aft. Fred Heick Collection.

CA-54-124: Pre-1911. View forward from mizzen shrouds, starboard side; Chinese cannery workers boarding ship from barge, S/V BENJAMIN F. PACKARD in background. Note main fife rail with fresh water pump. Fred Heick Collection. (G12.799)

CA-54-125: Pre-1911. Crew on main deck, starboard side at main hatch, looking aft. Note dark object in center of photo that may be original main deck capstan. Fred Heick collection. (K9.9571)

Ca-54-126: Extension of poop deck in 1911 at United Engineering Works, Alameda, California. (B4.35,579n)

CA-54-127: Post-1911. Photo labeled "Thwaites, 138b (or 6). Cannery Ship Star Of Alaska, Chignik, Alaska." (G6.40,438n)

CA-54-128: Post-1911 under sail. Gabriel Moulin photographer. (P80-8 8084.3n)

CA-54-129: Post-1911 at berth, probably at Alaska Packer's Association yard in Alameda. (A1.35,581n)

CA-54-130: Post-1911. Photograph labeled, "SEASON 1913. CAPTAIN, 1st MATE, SUPT AND STOREKEEPER, A.P. ASS'N CANNERY, SHIP STAR OF ALASKA." View forward from mizzenmast, post side.

CA-54-131: Date unknown. View of port bow of ship berthed at Alaska Packers' yard, Alameda. Wm. Muir collection. (B2.28240)

From the Gordon Grant Collection, 1925

CA-54-132: View forward from port side of poop deck, just aft of chart house while ship is under sail. (J9.4,439n)

CA-54-133: View forward from port side of poop deck at mizzenmast while ship is under sail. (J9.28,443n)

CA-54-134: View forward from poop deck, standard compass and binnacle in foreground. (J9.40,580n)

CA-54-135: Main deck, starboard side below boat beams (skids), looking toward forecastle deck from next to deck house. (J9.28518)

CA-54-136: Forecastle Deck, view aft, port side. (J9.28535)

CA-54-137: Forecastle deck, view aft showing capstan, bitts, foremast. (J9.28529)

CA-54-138: Forecastle deck, view aft showing capstan, bell, foremast. (J9.28521)

CA-54-139: As STAR OF ALASKA, 1925. Crew members at the forecastle deck capstan. (J9.28,516n)

CA-54-140: Photograph of a copy of the original shop drawing for the lumber ports added in 1899. Original located at San Francisco Maritime National Historical Park.

CA-54-141: Photograph of the drawing titled "STAR OF ALASKA Traced from an original rigging plan by Captain C.A. Halvorson 1909 F.W. Shaw August 1944." Original located at San Francisco Maritime National Historical Park.

CA-54-142: Photograph of painting by Charles S. Morrell, showing BALCLUTHA while under British registry. J7.20663.

HISTORIC AMERICAN ENGINEERING RECORD

SHIP BALCLUTHA
(Ship Star of Alaska)
(Ship Pacific Queen)

HAER No. CA-54

Rig/Type of Craft:	Ship		
Trade:	Cargo		
Official Number:	3882		
Principal Dimensions:	Length: 256.3'	Gross tonnage:	1862
	Beam: 38.5'	Net tonnage:	1590
	Depth: 17.5		
Location:	Hyde Street Pier San Francisco, California		
Date of Construction:	1886		
Designer:	Unknown		
Builder:	Charles Connell & Co. Scotstoun, Scotland		
Present Owner:	National Park Service San Francisco, California		
Present Use:	Historic ship exhibit		
Significance:	One of the last surviving steel-hulled full-rigged ships. Vessel involved in the 19th century Pacific Coast grain trade and the 20th century Pacific Coast salmon packing trade.		
Researcher:	Norman J. Brouwer South Street Seaport Museum, New York, 1990		

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Background: The Sailing Ship and the Industrial Revolution

The industrial age got underway in the British Isles in the early 1700s, with the development of the first successful steam engines, and major advances in methods of producing iron. Britain continued to lead the world in industrialization through the remainder of that century and much of the next. One result of the industrial revolution was an equally dramatic transport revolution also having its beginnings in the British Isles, as means were sought to keep growing industries supplied with raw materials and to carry the finished products to consumers. These two revolutions were to have profound effects on the development of the sailing vessel. Through the 1600s the world's merchant ships were small in size and numbers, and engaged primarily in the movement of luxury items. Britain's sailing merchant fleet began to expand in the 1700s with the development of a major export trade in textiles to the continent of Europe. As the industrial revolution grew this expansion of the fleet accelerated.

The ultimate effect of the industrial revolution on the sailing vessel was its virtual extinction as a means of transporting people and goods. However, this process was not completed until the midpoint of the 20th century. First, the sailing vessel went through the most dramatic period of technological evolution in its long history. Most of this evolution was to take place within the span of the nineteenth century. At the beginning of that century the typical sailing vessel was little over 100 feet in length, and had a wooden hull, wooden spars, and hemp rigging. At the end of the century the typical deepwater sailing vessel was around 300 feet in length, and had a steel hull, steel spars, and much of its rigging made of steel wire. The sailing vessel that had evolved by the late 1800s was a technological anachronism. In its fabric it was almost totally a product of the industrial era. In its mode of operation, utilizing only wind and human muscle, it remained a survival from the pre-industrial age.

Much of the early history of the industrial revolution is the story of the search for substitutes for wood. It was a

declining supply of wood for fuel that led Britain to develop a major coal mining industry. This in turn led to the development of the steam engine, initially as a means of pumping water out of the increasingly deeper workings. By the late 1700s Britain was also experiencing a growing shortage of good shipbuilding timber. The naval wars with Napoleon, which lasted until 1815, worsened the problem, while demonstrating the uncertainty of alternate overseas sources. The first metal substituted for wood in the construction of ships was wrought iron. Henry Cort revolutionized the production of malleable iron with his invention of the rolling mill, patented in 1784. Three years later John "Iron Mad" Wilkinson built the first iron-hulled boat.[1] Over the next few decades a number of iron canal boats and river craft were built in Britain, but apparently no vessels intended for use on the open sea.

The first iron vessel to appear in Lloyd's Register of Shipping was the ketch GOLIATH built at Liverpool, England in 1836. The first deepwater sailing ship built of iron was the IRONSIDES, a full-rigged ship launched at Liverpool in 1838.[2] During the 1840s British production of iron sailing ships averaged around a half dozen a year. In the 1850s this increased to over two dozen a year. Construction boomed in the 1860s. In 1864 alone, 154 iron sailing vessels were launched in the British Isles.[3] The construction of wooden sailing ships for deepwater trade virtually ceased in Britain during the 1870s. Iron hulls, in addition to reducing consumption of scarce ship timber, had some definite advantages. More paying cargo could be carried, since metal plating and frames took up less space, and a hull built of iron weighed less than the same hull built of wood. Iron hulls required less maintenance than wooden ones and were less likely to leak and damage cargo. This led to lower insurance rates. Iron hulls also had value as scrap when they were finally retired from seagoing use.

There were also some disadvantages that had to be remedied. Cargo could be damaged by condensation if it came in contact with side plating. To prevent this wooden "cargo battens" were placed across the inner edges of the frames, with spaces between for ventilation. Decks continued to be built of thick, caulked wood planking, usually without plating underneath, to reduce the chance of condensation forming and dripping on the cargo. Navigation was dependent on the magnetic compass, which was strongly affected by an iron hull. The error produced on each heading could be determined by "swinging ship" before port to take comparative bearings of known landmarks. Elaborate systems of magnets and masses of soft iron placed in the binnacles that held the compasses were then used to largely

eliminate this error. Iron hulls were susceptible to the growth of marine life such as seaweeds and barnacles, whose drag could take knots off the speed of a ship. Coppersheathing on wooden hulls repelled these organisms, but iron hulls could not be copper sheathed due to the rapid breakdown of the iron through electrolysis. This problem was eventually partially solved by the development of copper-based bottom paints.

Steel was not produced on a large scale until the invention of the Bessemer converter in England in the 1850s. The first steel-hulled steamer was the MA ROBERT, pre-fabricated by Laird Brothers at Birkenhead, England in 1858 for use by Dr. Livingstone on the Zambesi River in Africa.[4] The shipbuilding firm of Jones, Quiggin & Company in Liverpool, England built the steel schooners DONIETTA and DOMITILLA in 1861 and 1863, and in the latter year launched the first deepwater sailing vessel built of steel, the 209 foot full-rigged ship FORMBY.[5] The main advantage of steel was its strength. If thinner and lighter steel plating could be used in place of thicker and heavier iron plating, the weight of paying cargo the ship could carry would be increased. Unfortunately, the rapid Bessemer process did not produce steel of sufficiently uniform quality and purity, and shipowners were also unhappy with the rapid rate of deterioration of steel plating, which corroded more rapidly than iron. As a result, steel shipbuilding failed to catch on in the 1860s. No other builders adopted the material and Jones, Quiggin, after launching two more steel sailing ships and a few steel blockade runners for our Civil War, also went back to iron.

Efforts to produce suitable steel for shipbuilding continued through the 1870s. The solution was the Siemens-Martin open hearth process, largely perfected by 1877. In an open hearth furnace the molten metal was subjected to gas flames for around eight hours, resulting in a steel of uniform composition. Successful tests were performed which led Lloyd's Register to issue its first rules for the classification of steel vessels. The rules specified scantlings for steel hulls 20 per cent lighter than those for iron. In 1878 seven steel steamers were classed by Lloyd's. In 1882 10 per cent of the ships classed by Lloyd's were built of steel. By 1885, the year before BALCLUTHA was built, this figure had risen to 30 per cent.[6]

The continued viability of the sailing ship in world trade in the second half of the nineteenth century was largely the result of the retarded development of the marine steam engine. The first successful steam-powered vessels developed in the early years of the century were only suitable for inland and coastal use. Their inefficient engines used up prodigious quantities of

fuel, initially wood and later coal, which could not be replenished on a long ocean crossing. Condensers were not advanced enough to provide an adequate supply of fresh water for the boilers. When salt water was used, as in the transatlantic crossing of the steamer ROYAL WILLIAM in 1833, the boilers had to be shut down for as much as twenty-four hours every four days to be cleared of salt deposits.[7] When regular trans-oceanic steamer service was instituted later in that decade, so much fuel had to be carried that space only remained for passengers and a small cargo of goods on which a high freight could be charged.

These first oceangoing steamers were wooden vessels propelled by sidewheels. Paddlewheels were particularly unsuitable for cargo vessels. They were most efficient immersed to a given depth. The draft, or depth of immersion, of a cargo vessel could vary greatly from one voyage to the next. Propellers were more efficient, but the alignment of their shafts could be affected by the flexibility of a wooden hull. The British engineer Isambard Kingdom Brunel finally brought the iron hull and the propeller together in a large oceangoing vessel with the construction of the GREAT BRITAIN of 1843. However, shipbuilders did not rush to follow his example. The Cunard Line, leaders in the transatlantic trade, built their last wooden steamer in 1853, and their last sidewheel steamer in 1862.[8]

Steamships were beginning to take some of the shorter trade routes away from the sailing ship, but they were still unable to compete on the long voyage trades to the Far East and Australia. The high cost of fuel and difficulties in obtaining it remained the problem. The first breakthrough was the introduction of the compound engine in 1854 by Scottish engineer John Elder. Instead of steam being used once and exhausted to a condenser, it was used twice, first at a higher pressure in a smaller cylinder and then at a lower pressure in a larger cylinder. This more efficient use of the steam cut fuel consumption as much as 30 per cent. In 1866 Alfred Holt of Liverpool placed the compound-engined cargo steamer AGAMEMNON in service between Great Britain and the Far East by way of the Cape of Good Hope.[9] Three years later the Suez Canal was opened, making the Far East even more accessible to steam-powered vessels.

Rapid industrialization of Europe created a growing demand for bulk commodities such as iron ore, coal, jute, wool, nitrate, rice and grain. In these trades the sailing ship was able to remain competitive with steamers. Coal was particularly useful as an outward bound cargo from the British Isles to steamer coaling stations around the world. Nitrate and guano could be economically transported in sailing vessels from the West Coast

of South America around Cape Horn to fertilize the worn out fields of Europe. Following the American Civil War a tremendous grain trade developed between the West Coast of the United States and Europe. In 1882 there were 550 sailing vessels engaged in this trade, most of them flying the British flag.[10]

At the same time, further advances were being made in the development of the steam engine that would finally spell the doom of the sailing ship. The Siemens-Martin open hearth process that made possible steel-hulled ships, also made possible steel boilers capable of containing ever higher steam pressures. In 1877 Samson Fox patented the cylindrical corrugated furnace capable of resisting high pressures within a boiler.[11] In the 1830s boiler steam pressure still averaged around 5 lbs. In the 1860s it had risen to 60 lbs. By 1884 boilers were being built for steam pressures of 150 lbs. per square inch, making possible the effective use of the triple expansion engine with a further reduction in fuel costs of 30 per cent or more.[12]

1891 and 1892 were the last big years for sailing ship construction in the British Isles. After that the number launched each year decreased steadily, reaching zero in 1899. There was a slight revival from 1900 to 1904, after which only one a year was launched in 1905, 1906, and 1907. The steel bark RENDOVA, completed in the latter year, marked the final end of the era. Between 1838 and 1907 Britain had built at least 3083 deepwater sailing vessels of iron or steel.[13] Only a handful survive today, and of these only eight are being actively preserved by museums. Six have iron hulls; STAR OF INDIA (1863) at San Diego, California; JAMES CRAIG (1874) in the process of restoration at Sydney, Australia; ELISSA (1877) at Galveston, Texas; FALLS OF CLYDE (1878) at Honolulu, Hawaii; POLLY WOODSIDE (1885) at Melbourne, Australia; and WAVERTREE (1885) undergoing restoration at New York. Only two have steel hulls; BALCLUTHA, and POMMERN (1903) preserved at Mariehamn, Finland. As of January 1990 a third, the former GLENLEE built in Glasgow, Scotland in 1896, was being acquired for use as a floating museum in that city, having spent the last thirty years as a hulk moored at a Spanish naval base.[14]

Robert McMillan, Owner of the BALCLUTHA

Construction of the BALCLUTHA was commissioned by Robert McMillan of Dumbarton, Scotland, who retained ownership throughout her thirteen years under the British flag. Robert McMillan was never involved in shipowning on a large scale. His primary concern was the management of the family's shipbuilding firm, one of the most active on the Clyde River. McMillan's grandfather had founded the company as Archibald McMillan & Son in 1834, in partnership with Robert's father John McMillan. In 1854 Archibald McMillan died, and the shipyard passed to John McMillan. The name of the shipyard remained unchanged throughout its active existence.[15]

As soon as he was old enough, Robert McMillan entered the shipyard as an apprentice carpenter, the first step in his preparation for eventual management of the business. His further training involved periods in the yard's drawing office and counting house. In 1868, when he was 24 years old, Robert was made a full partner in the firm, along with his younger brother John. When John died in 1888 at the age of 40 Robert McMillan became head of the company.[16] His father, John McMillan, Sr. was still living, but had retired from active involvement with shipbuilding.

Archibald McMillan had established the first shipyard on the west bank of the Leven, a small river that flows into the Clyde at Dumbarton. In 1846 he moved to a site on the east bank of the Leven just downstream from the center of Dumbarton and less than a half mile from the Clyde.[17] Robert McMillan greatly expanded the yard during the years it was under his management. In 1890 he converted the business to a limited liability company, but most of the shares continued to be held by family members and a few close friends. Robert remained the head of the firm until his death in November 1912.[18] Archibald McMillan & Son was a versatile shipbuilding firm, producing vessels both sail and steam, large and small. They began in the 1830s as builders of wooden hulls, built their first iron hull in 1866, and their first steel hull in 1881.[19]

Robert McMillan married Mary McLeod, the daughter of a Dumbarton lumber dealer, in 1868. In 1876 they had a son, who they named William McLeod McMillan. In 1880 Robert McMillan built himself a home on the west side of the Leven, not far from where his grandfather had established the first shipyard. He named the house Methlan Park, for a legendary warrior of Clan Buchanan who was stated by one historian to have been the

ancestor of the McMillans.[20]
Methlan Park survives today in what is still a very pleasant suburb of fine homes, some of which have been converted to institutional use. The author was able to visit the house, now a home for the elderly operated by the Salvation Army, in March 1988, and tour its grounds and interior. Methlan Park stands about fifty yards from the street behind a gatehouse and a small grove of trees, a gray stone structure in the Italianate style made popular by Queen Victoria's summer place, Osborne House, on the Isle of Wight. Externally the house is virtually unaltered. There is a tall tower above the front entrance that must have provided a good view of progress in the shipyard across the Leven. At the back is the low wing that served as kitchen, laundry and servants' quarters.

Inside, there have been few structural changes. The moveable furnishings have been largely replaced, aside from a few large Victorian sideboards which could be original. The lighting fixtures have been modernized, but there is an ornate panelled and stencilled ceiling in the parlor which is probably original. Each room and each hallway still has its original Victorian fireplace, most with decorative shelves and mirrors above. Around the hearths are fine patterned tiles, in one room representing the novels of Sir Walter Scott. The second floor is reached by a grand stairway with dark mahogany railings. Half way up the landing is illuminated by a tall, three-part stained glass window showing events in the life of the ancient warrior Methlan.

Across the street from the estate, a well-maintained park of grassy expanses and scattered trees sweeps down to the shore of the Leven. From 1868 to 1870 a portion of this shoreline was the site of the shipyard of Hercules Linton and William Scott, who built nine hulls there, including in 1869 the famous clipper ship CUTTY SARK.[21] On the other side of the Leven where it meets the Clyde, clearly visible from the gates and tower of Methlan Park, is Dumbarton Rock, the Gibralter-like "rock on the Clyde" for which, in Gaelic translation, the ship BALCLUTHA was named.

Between Dumbarton Rock and the McMillan Shipyard was the yard of the other major shipbuilder of Dumbarton, James Denny. In July 1904 Robert McMillan's son William married James Denny's daughter Catherine in a ceremony at the Denny home, Dunstane. In celebration, public buildings in Dumbarton and buildings in the shipyards were decorated with flags and buntings, and non-essential employees of both yards were given a half day's holiday. Mr. and Mrs. Denny entertained 200 guests at dinner in the model hall of the Denny yard.[22] Today, the Denny model

testing tank and its associated model building shops are preserved in situ by the Scottish Maritime Museum as a major historic site. Dating from 1881, and still fully operational, the Denny tank is believed to be the oldest in the world.

Robert McMillan died in early November 1912 at the age of 66. He had been at the shipyard the day before, in seemingly good health. When the funeral procession passed through Dumbarton four days later on its way to the cemetery, the workers from the yard formed lines on either side of the road reverently raising their caps as it went by.[23]

Management of the family company passed to the fourth generation, William McLeod McMillan. He was to head the firm less than three years. Though seemingly exempt from military service because of his important position in the shipbuilding industry, William McMillan chose instead to serve his country as an officer in the Argyll and Sutherland Highlanders and was killed in France in September 1915. His uncle, Robert McMillan's second brother James McMillan, managed the yard until 1920, when it became a subsidiary of the giant Harland & Wolff Shipyard in Belfast, Northern Ireland. The yard was finally closed down in 1932.[24]

In the 1920s, James McMillan, the family's last shipbuilder, made an attempt to acquire the CUTTY SARK and bring her back to the Leven where she had been launched.[25] Instead, she was bought by Captain W. H. Dowman when she put into Falmouth, England in 1922 as the Portuguese barkentine FERREIRA. James McMillan did not live to see his brother's ship BALCLUTHA saved. He would have been 100 years old the month the San Francisco Museum Association acquired the ship. Nor did he live to see the 1950's restoration of CUTTY SARK as Great Britain's tribute to the age of the merchant sailing ship, inspired in part by the example of the BALCLUTHA restoration.

Robert McMillan was not the first in the family to branch out into shipowning. Between 1878 and 1883, while John McMillan was still head of the firm, four iron sailing ships, the MACBETH, MACLEOD, MACMILLAN, and MACDIARMID were built by the Dumbarton yard and operated under the name Archibald McMillan & Sons. When J. F. Constable was summoned to Scotstoun to supervise the completion of the new BALCLUTHA and serve as her first master, he was being transferred from command of the MACDIARMID to Robert McMillan's new ship. During this period, shipbuilders often built sailing ships on speculation when orders were slow, to keep their skilled workmen employed, and then operated the vessels on their own account until buyers could be found. Charles Connell

may have been doing this when he laid the keel of the future SIRENIA in 1885. There is an unexplained absence of letters to a patron in the Connell letterbooks, until the first letter to Robert McMillan appears well into the ship's construction. McMillan may well have decided to purchase a ship Connell already had on the ways.

Robert McMillan's decision to go to Charles Connell, rather than having vessels built in his own yard is also unexplained at this point. It is possible that the Dumbarton yard was already operating to capacity. In 1886, the year Robert McMillan ordered his second sailing ship BALCLUTHA, the McMillan shipyard launched four steel sailing vessels. Robert McMillan also owned the steamships KENTIGERN, built in 1888; VORTIGERN, built in 1892; DUMBARTON, built in 1903; and GARSCUBE, built in 1906. KENTIGERN was built by Alexander Stephen & Sons in Glasgow. The other three were produced by the McMillan yard in Dumbarton.

Robert McMillan's ships were managed by his nephew by marriage Edward Primrose Babtie, who had offices at 111 Union Street in Glasgow until 1910, and subsequently at 86 St. Vincent Place.[26] The building at 111 Union Street from which the BALCLUTHA was managed still stands, next door to the City's fine Victorian Central Railway Station. When BALCLUTHA was being restored in the mid-1950's, one of the people who offered useful advice, based on his own experiences in deepwater sailing ships was Gavin Craig. In 1921, at the age of sixteen, Craig was hired to sail in the four-masted full-rigged ship LANCING in what could well have been Babtie's former quarters. He describes it as,

> A typical small shipping office of the last century...a dismal little office situated close to the Central Station and reached either by an ancient elevator or a climb up a winding stone staircase. The floor space in the outer office was enclosed by a square-cornered U-shaped counter. On entry, to the right was the typist's desk facing the solitary window which gave a view of other windows in the dirty, white-tiled well. Then came the fire-place and carpet and at the back a high, sloping-topped, double desk, wooden filing cabinets, two chairs and a stool. On the left behind the other wing of the counter was the entrance to Mr. Blanner's office.
>
> His private office was more richly furnished and a lot cleaner. He had two builder's half-models of sailing ships on the wall, under a long bookcase shelf with glass sliding doors, facing his large desk. His fire-place was behind him with a big, thick rug in front of it and brightly polished

brass poker, tongs and shovel. Even though the outer office required redecorating and cleaning, to me it was redolent of romance and stormy adventure.[27]

SIRENIA, the Brief Career of the Only Near-sistership of the BALCLUTHA

Sisterships are variously defined by marine dictionaries as ships built from the same plans, the same design, and the same lines. Sistership status is of less interest to historians than it is to restorers of historic ships who, in the absence of information on the former appearance of a vessel, may want to consult information on a sistership as the next best source. For these purposes, a true sistership would need to have the same basic dimensions, the same builders, and the same original owner. The last two stipulations are important because different builders and different owners could have different tastes in the treatment of details that would not have any effect on the dimensions.

Though built in the same yard, and completed for the same owner, SIRENIA and BALCLUTHA were not true sisterships. In terms of measurement, the SIRENIA was the longer vessel by eight feet, yet the BALCLUTHA was the greater in volume by twenty gross tons. Five of these tons are the result of a larger deckhouse and greater space under the foc'sle head. Some of the remainder is attributable to BALCLUTHA's half foot of additional beam. The rest has to be a difference in the lines of the two vessels. That their lines differed is further indicated by a reference to a model for BALCLUTHA, the second ship, submitted for the owner's approval, and Charles Connell's statement that BALCLUTHA had "better proportions."[28]

SIRENIA preceded BALCLUTHA down the launching ways by almost exactly a year. Details of her first voyage are lacking. D. P. Campbell of Glasgow, who had been in the ship from January 1886 until her loss, was still living in 1954. His correspondence with the San Francisco Maritime Museum was apparently a description of the layout of the crew's quarters and deckhouse as he remembered them, for use in restoring BALCLUTHA.[29] SIRENIA, on leaving the Clyde, would have proceeded to some loading port, probably in the British Isles. The builder Charles Connell noted in a letter to Robert McMillan on May 25, 1886 that she had "arrived out" at her foreign destination, quite possibly San Francisco.[30] By January 1887 she had completed her maiden voyage and was back in London loading cargo. The Connell-McMillan correspondence indicates that Captain McIntyre was not entirely happy with the apparent stability of the vessel. As a result a second heeling test was carried out in London.

McIntyre also reported excessive sweating (condensation in the cargo hold) and that a topsail brace runner had proven defective. Connell offered to provide compensation for the latter in the form of a coil of 2 1/4 inch flexible steel rope, but McMillan instead insisted on a payment of 11 pounds, 11 shillings and 1 pence.[31]

SIRENIA commenced her second voyage on March 12, 1887, sailing from London for San Francisco, where she arrived on July 31st. She left San Francisco on the return passage on September 26th. Her initial destination was Queenstown (now Cobh) on the south coast of Ireland, where she would receive instructions as to her actual port of discharge. She arrived off Queenstown on February 29, 1888, where Captain McIntyre was told to proceed up the English Channel to deliver his cargo of wheat to the French port of Dunkirk.[32]

A little over half way along the south coast of England the Isle of Wight forms a detached headland jutting into the Channel. The Island's east coast is a popular resort area, but the sparsely populated west coast probably looked little different when the author visited there in March 1988 than it had exactly 100 years before. Open fields extend from the sea to low hills a mile or so inland. At the shore they end at steep red clay bluffs rising fifty feet or more above the narrow beach. A short distance off shore there are patches of low black rocks visible at most stages of the tide. In his book on Isle of Wight shipwrecks, Major General Seely, later Lord Mottistone, describes the type of conditions that existed on March 9, 1888.

> It often happens on our coast, that when a fog comes on without a breath of wind, great rollers come tumbling in; first with a boom like distant thunder as occasional waves break on the outer ledges; then with a loud continuous roar, as the waves from the Atlantic increase in size so that each one breaks on the outer ledge, and then, pressed forward by its follower, gathers impetus to hurl itself on the shore. Meanwhile there is still the uncanny absence of wind to account for this great disturbance of the sea.[33]

That afternoon Harry Cotton was walking along the beach. Hearing a noise to seaward, he peered into the fog, and saw what seemed to be, "a great white cloud billowing above the ledge." In a moment he realized it was a ship that had run onto Atherfeld Ledge under full sail.[34]

Helpless without wind, and blind in the fog, SIRENIA had drifted onto the reef. There were 32 people on board; twenty-

seven seamen and officers, Captain McIntyre, his wife and their three children, and a second woman described as a nurse. Because their voyages lasted at least a year and often longer, sailing ship captains who were married often took their wives and younger children along. This was the major use of the spare staterooms opening off the saloon with which these ships were provided. Many of these captains, concerned about their wives' lack of female companionship during the long months at sea, encouraged them to find another woman, possibly a relative or the wife of a trusted crew member, willing to go along to help look after the children.

SIRENIA went on the reef at two in the afternoon. Shortly afterward she was visited by a sailing pilot boat from Deal which offered to take people off. Captain McIntyre declined, apparently believing the ship was not seriously damaged and could get free on a higher tide with a favorable wind. Instead conditions grew worse. Harry Cotton had spread word of the wreck to members of the Brighstone lifeboat crew. By the time the full crew of thirteen men had been assembled and the boat run down to the shore on its horse-drawn wagon, giant breakers were crashing on the beach. It took some fine seamanship on the part of coxswain Moses Munt and his crew to launch the boat through the surf and row it out to the ship over mountainous grey seas. The first attempt to moor the boat under the SIRENIA's bow failed when the line parted and they were swept half way back to shore. The second try was successful.

The first person off the ship was the captain's youngest child, a baby lowered in a wicker laundry basket accompanied by one of the ship's apprentices. The other children and the two women followed. The seas sweeping around the ship were constantly pouring into the boat. Coxswain Munt feared that the children might be washed overboard. Since the ship did not seem to be in danger of breaking up, Captain McIntyre asked them to take the women and children ashore and return when conditions improved. The lifeboat was cast off from the ship and successfully navigated back to the beach, where the lifeboatmen set off in search of dry clothing. They had been fighting the seas for two and a half hours.[35]

A short time later it began to blow from the southwest, making the ship's position more dangerous. It was decided to make another effort to rescue the twenty-six people still on board. The boat was successfully launched and brought alongside the bow of the SIRENIA, where it was moored by a grappling hook in the fore rigging. Thirteen seamen were taken on board by sliding down lines or jumping into the boat as waves momentarily

lifted it almost even with the ship's rail. This was a large enough load for one trip.

The tightly jammed rope was cut with a knife, since the hatchet with which the boat was provided had been lost. At this moment an extra large wave loomed up. When it struck the boat was stood almost on end, dumping the crew and passengers into one end. Out of control, it fell broadside to the waves and was capsized by the next one, throwing everyone into the sea. Most people clung to thwarts or lifelines and could pull themselves back on board as the lifeboat came upright again. But four people were missing, two seamen from the ship and two lifeboatmen, one of them coxswain Munt. The Brighstone boat made its way back to the beach.[36]

During this time a second lifeboat had been on its way to the SIRENIA from the Brook station to the north. After travelling six miles it arrived near the ship, where it was also struck by an extra large wave. Three men were washed overboard. Two brothers clinging to lines were hauled back on board, but Reuben Cooper was swept away and vanished in the turbulent seas. It was now growing too dark to safely approach the ship or to try to land on the beach. The boat was forced to anchor in the seas for the remainder of the night. At dawn an attempt was made to reach the ship, but conditions had not improved and the men were exhausted. The Brook boat finally gave up and also headed for the shore. Around noon the Brighstone boat was launched with a fresh crew. After two more hours of battling the seas, they succeeded in rescuing the remaining thirteen men on the SIRENIA.[37]

At least two photographs of the ship exist, taken soon after the rescue. In these photographs she still sits upright on the reef, fully rigged. Boats can be seen in one, probably salvaging equipment from the ship after the seas subsided. The photograph shows a ship like BALCLUTHA, with royals and single topgallants above double topsails on all three masts. The lower and topmasts appear to be in one piece. She has a standing gaff and a boom for the spanker, and a charthouse on the poop. The color scheme is painted ports, apparently with black above and below.

The hull plating was broken in by the rocks, and the hold was flooded. According to one report, the wheat cargo had expanded, bursting the deck planking upward.[38] There was apparently no serious attempt to salvage the ship. A local sport diver contacted by phone in March 1988 said he had visited the wreck and had at least one porthole from it. He reported that the ship was completely broken up, with the remains lying well

submerged beyond the outer edge of the reef.

Five people had been lost in the wreck of the SIRENIA. Three bodies were later found and buried in the Brighstone churchyard, beneath stones provided by the lifeboat service; one seaman from the ship and two Isle of Wight lifeboatmen. When the writer visited the churchyard in March 1988, the month of the centennial of the wreck, the graves were decorated with bouquets of yellow daffodils and a yellow daffodil wreath with the label, "A Brighstone Boy 100 years ago." The stone boathouse that housed the Brighstone lifeboat is now only a foundation. It was blown up right after World War II, apparently by accident, while being used to store mines removed from the beach. The Brook lifeboat house survives, lacking its roof, a stone's throw from a row of old brick and stone cottages, sheltered from the west by a low rise, in which some of the lifeboat crew undoubtedly lived.

When SIRENIA drifted onto Atherfeld Ledge, the BALCLUTHA was not that far away. She had sailed from Swansea, Wales, outward bound to San Francisco on her second voyage just six days before.

Charles Connell & Co., Builders of the BALCLUTHA

Although owned in Dumbarton, the BALCLUTHA was built in a shipyard at Scotstoun on the north shore of the Clyde River ten miles to the east, five miles from the center of Glasgow. Charles Connell, who founded the company and was still its head in 1886, served his apprenticeship with Robert Steele & Co. of Greenock, Scotland. He was then employed as shipwright, foreman, and finally manager at the yard of Alexander Stephen & Sons in Glasgow.[39] A quarter century younger than Archibald McMillan & Co., Charles Connell & Co. had never built purely in wood. The first vessels they launched were iron steamships. During the 1860s they also built composite hulls, wood planked over iron frames and diagonals. Their composite sailing vessels included the fast tea clippers TAITSING, SPINDRIFT, and WILD DEER. SPINDRIFT was the winner of the annual race home from China with the first tea of the season in 1868.[40]

Charles Connell & Co. first used steel in the masts of the composite ship EME of 1869. Their first ship with a steel hull was the 2829 gross ton steamer ALBERTA of 1883. The ALBERTA was built with two complete transverse bulkheads amidships. She was steamed across the Atlantic to Montreal, and there separated into two sections for passage through the canals around the rapids of the St. Lawrence River and Niagara Falls. Rejoined to form a single hull at Buffalo, she operated as a passenger boat for the Canadian Pacific Railroad on the Lakes until 1916, and as a freight boat for another thirty years.[41] The first steel sailing vessels built in the Charles Connell yard were Robert McMillan's SIRENIA and BALCLUTHA.

Between 1862 and 1894 the Connell yard built 102 deepwater sailing ships of iron or steel, ranging in size from the 499 ton COUNTY OF AYR, launched in 1863, to the 2396 ton MARION FRAZER, launched in 1892. BALCLUTHA is the only Connell-built sailing ship still in existence. The four-masted bark HAWAIIAN ISLES of 1892, later the American STAR OF GREENLAND, the Swedish ABRAHAM RYDBERG, and the Portuguese FOZ DO DOURO, was scrapped in 1957. The bark MARGARET A. B. CARSWELL of 1892, later the ANNASONA, was lying on Middleton Reef off the east coast of Australia in the late 1950's, badly broken up. The ship FLOTOW of 1892, later the German ALSTERKAMP and ARNOLDUS VINNEN, and the American GAMECOCK and CHILLICOTHE, was an abandoned hulk near Noumea, New Caledonia in the late 1960s. Recent reports indicate there are no significant remains of either vessel.[42]

In the twentieth century, the yard built a steady stream of cargo steamers and motorships, except for the Depression years of 1931 through 1937 when no ships were produced. The Connell family gave up ownership of the shipyard in 1968, when it became a branch of Upper Clyde Shipbuilders Ltd. along with the John Brown yard in Clydebank, the Fairfield yard in Glasgow, and the Alexander Stephen yard in Glasgow, which the first Charles Connell had left to go into business on his own 107 years before.[43] The last ship built in the yard was the 16,782 gross ton motorship VANCOUVER ISLAND of 1972, hull 519 in the numbering system begun in 1861. The works, idle since 1980, still dominate the riverfront of Scotstoun with their large fabricating sheds and tall hammerhead crane. Charles Connell & Co., headed by the present Charles Connell, great-grandson of the founder, is a small shipping company based in Glasgow.

The survival of shipbuilding company records in Great Britain, as in the United States, is extremely haphazard. In the case of Charles Connell & Co. we are very fortunate. When the family sold the shipyard in 1968 extensive records were given to the regional archives, then housed in the Glasgow City Chambers. They are now in the Strathclyde Regional Archives, located in the Mitchell Library in west Glasgow and a nearby annex. The earliest Connell plans date from 1924, the earliest photos from 1943, and the earliest specifications from 1956. But the period of the 1880s, during which BALCLUTHA and her near-sistership SIRENIA were built, is well covered by original account books and letter books.

There are three types of account books: ships accounts ledgers and abstract of costs ledgers, both of which summarize the costs of building vessels, and detailed accounts ledgers, which itemize every expense. The detailed accounts ledger covering the construction of the BALCLUTHA devotes 117 pages to the ship. There are three types of letter books in the Connell collection: private letter books, accepted offer letter books, and general letter books. The private letter books are apparently missing for the years BALCLUTHA and SIRENIA were built. The letter books are leather-bound volumes each containing 1000 tissue leaves. The hand-written letters were pressed against the tissue while wet, in most cases transferring a clear copy of the writing which, because the tissue is transparent, can be easily read in a correct rather than mirror image. The accepted offer letter books contain only letters from Charles Connell & Co. to sub-contractors or suppliers of materials and equipment accepting those firms' quotes to perform certain services. The general letter books contain letters from Charles Connell & Co. to the same firms or competitors soliciting

quotes for services, and detailing or altering specifications. They also include forty-six letters from Charles Connell to Robert McMillan dealing with the construction and fitting out of BALCLUTHA, thirty-nine letters to Robert McMillan dealing with the SIRENIA, and several letters to the surveyors employed by the classification society, Lloyd's Register of Shipping.

Unless otherwise indicated, the following chapter is based upon the information in these original letter books and ledgers.

Building the BALCLUTHA

SIRENIA, Charles Connell & Co.'s first ship completed for Robert McMillan, was launched in early December 1885, and turned over to the owner around the middle of January 1886. The final payment for her construction, delayed by a controversy over harbor dues, was acknowledged on April 7, 1886. Two weeks later Charles Connell wrote to McMillan, "We duly received your forms of y'day for which we are obliged. We are going carefully into the matter and will submit our tender early next week." This is clearly Connell's response to notification by Robert McMillan that the latter was interested in having a running mate for the SIRENIA built and wanted to receive a bid from the Scotstoun shipyard. Four days later, on April 26th, Charles Connell & Co. wrote to Robert McMillan, of Methlan Park, Dumbarton, "Mr. Connell expects to have the pleasure of calling on you tomorrow afternoon with our price for a duplicate of the SIRENIA. If you do not expect to be at home would oblige by sending us a wire in the forenoon."

On May 3rd Robert McMillan was in London, where Charles Connell wrote, care of the Grand Hotel, to clear up a misunderstanding regarding the length of the new ship "...was under the impression that the LISMORE's length was talked of, but we are now making the new vessel 247 ft. b.p. (between perpendiculars) as wished. We are preparing contract and specifications and will have them ready for your formal acceptance by the time you return." Connell also noted, "Your understanding with reference to dues is quite correct." McMillan was not going to risk another prolonged disagreement regarding responsibility for harbor fees. Charles Connell on May 11th forwarded the contract and specifications for McMillan's approval and informed the shipowner that the model would be ready for his inspection that Thursday. Unfortunately, neither contract, specifications nor model appear to have survived.

The model was probably an unrigged, carved wooden half model, primarily intended to present a hull form for the patron's approval. The common scale of 1/4" = 1 ft. would have given a model over five feet in length. The model would have been built of horizontal planks of equal thickness, pinned together rather than glued. When the patron's approval of the hull form had been received, the model would be taken apart, and a set of curves transferred to a sheet of drawing paper by tracing around each plank or layer. These curves would then form the basis for a lines plan of the proposed ship and, expanded mathematically to full size on the floor of a mold loft, for the shape of its

various structural members. When such models had served their function in determining the design of the ship, they were usually re-assembled, fitted out with the correct miniature deck layout, painted in the hull colors of the shipping company, and mounted on a backboard inside a glass display case with fine framing and turned corner posts of varnished mahogany. They were then presented to the shipowner as a bonus from the builder, for display in his office or home. The fate of BALCLUTHA's model is unknown.

The new ship had been assigned hull number 147, as it would be the 147th ship produced by the Yard in its 25 year history. On May 19th the builders forwarded a midship section drawing for No. 147, in the scale 1/2" = 1 ft., to the surveyors for Lloyd's Register of Shipping. Not to be confused with the insurance company, Lloyd's of London, Lloyd's Register of Shipping was, and still is, the leading British firm classifying ships for insurance purposes. The builders of No. 147 were seeking the highest rating granted by Lloyd's, "100 A 1." The higher rating, indicating a high level of seaworthiness, would result in lower insurance premiums for any coverage on the ship or her cargoes. Once approved by Lloyd's, the midship section would be one of two plans of the ship permanently on file at the Society's headquarters in London, the other being a plan of the ship's spar arrangement and dimensions. This original midship section drawing was eventually donated by Lloyd's to the National Maritime Museum in Greenwich, England, in whose archives it now resides. It bears a number of dates including, beneath a blurred hand stamp of Charles Connell & Co., a handwritten "19/5/86," the same date as the covering letter to Lloyd's whose copy survives in the Connell letter book in Glasgow.

The drawing comprises a sectional view through one half of the hull showing a single midship frame or rib, deck beams, and centerline stanchions (pillars). The longitudinal members, including keel and keelson (inner keel), hull plates, stringers, and deck planking, appear end on. The hull plating is attached to the frames in the "in-and-out" system. "Inside" strakes of plating, directly attached to the frames, alternate with "outside" strakes which overlap them six inches at top and bottom. The outside plates are spaced away from the frames by filler plates spanning the width of the flanges of the frames and the vertical gap between the edges of the inside plates. Early iron hulls had "lapstrake" plating with each strake overlapping the strake below like siding on a wooden house, necessitating tapered fillers. The English shipbuilder and engineer John Scott Russell is credited with inventing the in-and-out system, which he used in the construction of the giant steamship GREAT EASTERN,

built in the late 1850s.[44] The older system can still be seen in the hull of the steamship GREAT BRITAIN of 1843 preserved at Bristol, England, and the remains of the iron bark SUNBEAM, built in Scotland in 1857, examined by the author in April 1981 where she lies abandoned near Port Adelaide, Australia.

Hull No. 147 was built on the transverse framing system retained by builders of iron and steel sailing vessels until the construction of such ships ceased early in this century. Transverse framing was a carry over from wooden shipbuilding. One of the greatest advantages of metal construction was the opportunity to use longitudinal framing systems to steadily increase the length of hulls. The 692-foot long GREAT EASTERN had been built with inner and outer hull plating joined by longitudinal frames to form a cellular structure similar to the longitudinal cells that give strength to the limb of a tree. Nonetheless, builders of metal sailing ships, few of which exceeded 300 feet in length, stayed with the transverse system which they reinforced longitudinally, as in BALCLUTHA, with an I-beam keelson and bilge stringers mounted on the inboard face of the frames. John Scott Russell, who spent his life advocating longitudinal framing, even in small vessels, noted rather sadly in 1880, two years before his death:

> On the Clyde the men were so skillful in the building of iron ships with transverse frames...according to the lines...an old friend of mine, who built iron ships there, told me that he never did anything but this; He put the lines of the ship--the cross lines--on a big board out in the building yard, and then all the men rushed to take their measures off those drawings; and A said, You will take the three first frames; and B said, You will take the next three; and You the next three, and so on...and all took their measures, and built their frames, and they were all paid by the number of frames they built. Now, I will put it to you, where you have a large yard of men, all drilled so as to thoroughly understand their work, is it not awfully difficult to attempt to introduce a totally new system. I need not tell you that re-educating a generation of experienced men is a very difficult undertaking.[45]

The midship section drawing for BALCLUTHA shows a structural system which is quite typical for ships of her type and era, with one noteworthy exception. 3" x 3" angles appear, end on in the drawing, fastened to the inner surface of the plates, two per strake. This may be a feature which was unique to the vessel. A Charles Connell letter of May 27, 1886, addressed to Charles Fowling of Lloyd's, provides the explanation:

> Referring to your Committee's remarks on breadth of steel plates proposed by us for our No. 147, We beg to draw your attention to what your committee has possibly overlooked, that to meet the clause in the new rules regarding broad plates We propose as compensation to fit angles at both top and bottom of Butt straps. We may say that this plan was suggested by your Mr. Mumford and from the tests We saw will we have no doubt give satisfactory results. This vessel is practically a duplicate of the SIRENIA completed by us in Jan. of this year and which had the broad shell plates but without the compensation referred to above. We trust your committee will reconsider this matter and see their way to pass shell plates as shewn in section submitted by us.

The midship section also shows that in their construction of BALCLUTHA Charles Connell & Co. had not fully made the transition from iron to steel. All the ship's hull structure above the main deck was to be wrought iron, including the bulwark plating, poop and foc'sle head side plating, and poop and foc'sle head beams.

On May 25th Charles Connell wrote to Robert McMillan that he, "...would like to get started to cut the decking as soon as possible." No. 147, like the great majority of her contemporaries, would have a wooden deck laid directly on the steel beams with no plating underneath. The ship would not be in frame, and capable of having deck planking installed, until the beginning of August. Connell wanted to cut his deck planking in late May so that it could season. Moisture in green wood could lead to early rot, and provide a poor surface in the seams for the caulking materials, oakum and pitch, to adhere to. McMillan specified 4" x 4" planks, rather than the 4" deep by 5" wide planks commonly used in these ships. Connell noted that the narrower planks (which would require more saw cuts, and would have more seams to caulk) would, "...add at least L 20 to the cost," and asked to be allowed to, "...go on with the Decks as in the SIRENIA." McMillan was adamant. On July 2nd Charles Connell wrote, "We note that you decided to have main deck 4 x 4 and have given instructions accordingly. Of course you understand that this is simply between the Poop & forecastle bulkheads." Why McMillan wanted 4" x 4" main deck planking is unknown. The main deck area now sheltered by the Alaska Packer's extension of the poop still has planking this size.

It was customary for the captain who had been assigned to a new vessel to serve as owner's representative supervising her completion. J. F. Constable was to be the first captain of the BALCLUTHA. He was transferred from Archibald McMillan & Sons'

ship MACDIARMID, which completed a voyage at Antwerp, Belgium on May 2nd, and should have been available soon after that date. However, there is no mention of Captain Constable in the Charles Connell & Co. letters until December 15th, six days after the ship was launched, christened by Mrs. Constable.

In the absence of the original specifications for BALCLUTHA, which apparently no longer exist, the Connell letters to potential subcontractors or suppliers for No. 147 allow us to reconstruct some of this missing information. Some clearly go into far greater detail than the specifications would have. These letters begin with one sent to the Port Glasgow & Newark Sail Cloth Co. on May 27, 1886 requesting a quote for sail cloth for, "...a duplicate of our No. 144," (SIRENIA). On June 24th Connell informed Clarke Chapman & Co., who would build the ship's anchor windlass, that the maker of the chain cable was to be N. Hingley. On July 10th specifications for 215 blocks for the ship were sent out to two suppliers for quotes. Verbatim transcriptions of this, and all other letters containing pertinent information, may be found in Appendix 2.

The letters provide an interesting picture of the way in which builders of large sailing ships and their patrons transacted business in 1886. On July 28th Connell wrote to McMillan, "We have forwarded today per Bank post, Spar plan, Main deck plan, and Plan of top of Poop showing Chart House. We would be glad if you approve of Spar plan so that we can get the plates for our masts ordered." The latter two plans apparently no longer exist. We have no way of knowing whether they were finished drawings, or simply sketches with dimensions written in. The spar plan was re-submitted to McMillan on August 5th with "corrections," and again on August 10th with "amendments." When finally approved, it was forwarded to Lloyd's. The original, bearing the date August 13, 1886, survives today in the collection of the National Maritime Museum in Greenwich, England.

On August 25th Charles Connell & Co. wrote to R. C. Wallace & Co. to request a quote for providing bilge pumps for No. 147, "...with two spare sets of brass upper & lower boxes and one spare spear with working bucket leathered complete." Wallace & Co. declined the work, and the job went instead to Robert Mills of Greenock, Scotland, who was sent the specifications on September 7th with the additional note that, "...flywheels are to be inside rails," (fiferails). Also on August 25th, Charles Connell & Co. requested quotes for "sidelights" (portholes); ten each of 7 inches and 10 inches diameter, and twenty-one of 9 inches diameter.

The detailed accounts ledger in the Glasgow archives gives further indication of the progress of the ship's construction. The first payment of wages which appeared on May 20th were minor amounts going to carpenters, joiners, smiths, and blockmakers. On June 3rd all of these increased, and the first payments were made to riggers, finishers, laborers, and hole borers. At the beginning of July the first payments appeared for fitters, caulkers and rivetters. The column for painters showed its first entry on August 5th. From then on there were almost continuous entries in each column until December 30th when the wages account terminated.

The majority of the ledger deals with the materials that went into the ship. The 109 entries in the "Ship's Iron" account cover all the structural metal that went into her fabrication; plate, bulb, or angle; iron or steel. The "Smithy Iron" account, over three times as long, itemizes all the fittings for the ship or her rigging that needed to be cast or forged; from keel, sternpost and rudder, to cathead hoops, ventilator keys, and the "bell hanger," the frame, or "harp," for the ship's bell at the aft end of the foc'sle head.

The "Timber Account," which covers 22 pages averaging 30 entries per page, contains a wealth of information. Not surprisingly, the first entries dated May were for yellow pine to construct the hull model, in 1/2 inch, 3/4 inch, and 3 inch thicknesses. The remaining May items were for 1/2 inch and 3/4 inch yellow pine for "Plan Boards." This may refer to some type of scrive board. Shipbuilders often set up a wooden platform adjacent to the iron bending slab where the frames were shaped, on which the body plan of the ship was cut in with a scrive knife. The board had to be replaced with each new vessel. The first entry for June was yellow pine 3/4 inch and 1 inch thick for molds for stem and stern post. These were the battens, cut to shape full size on the mold loft floor, with which the form of these large forgings was transferred to the iron foundry that would fabricate them.

In August the carpentry began in earnest. A whole series of skylights was being constructed of teak. We also learn that the foc'sle table was being made of yellow pine and American elm, and that the "Pig House" was being made of teak and pitch pine. We think of teak as a luxury wood today. In 1886 it was a fairly plentiful imported hardwood which was very resistant to rot, even when placed next to iron or steel.

On September 2nd Charles Connell wrote to McMillan that, "...vessel is nearly half plated & partly rivetted. We expect to

be completely plated by about the 16th. The main deck (planking) is half laid." On the 3rd Connell informed the supplier of the windlass that it will be needed the end of the following week. On the 9th he asked John Niven for the list of rigging, based on a copy of the rigging plan Niven had been sent at the end of August. On September 14th Connell wrote to John Black & Co. to order galvanized wire rope for No. 147 with a, "...hemp core in ea. strand and in center of rope and to have tally number attached to each coil." Black apparently was not stocking hemp core wire rope. On the 16th Connell reluctantly agreed to accept, "...rope in your usual style, although we do not think the wire core in the strand adds to the strength."

On September 15th Connell wrote to McMillan enclosing a deckplan and asking for ventilator locations. He also noted that, "We would like to get name to arrange about figure & etc." Sailing ship figureheads of this period might have been portraits of either men or women, real or mythical, with some relation to the vessel's name. However, more frequently they were simply an anonymous female figure. McMillan opted for the latter. Though the name of the ship still hadn't been decided on, Connell wrote to the carvers A. & D. G. Reid on September 22nd that, "Figure for our No. 147 is to be a Stylish Modern Demi-woman. We enclose Carving plan and will be glad if you fill it in and return it with your notes." Six days later he accepted the Reids' offer, dated the 24th, "...to carve No. 147's figurehead to the entire satisfaction for the sum of five pounds ten shillings stg. (sterling)." Connell enclosed the approved drawing of the figurehead, and notified the carvers that the "Blocks" were being forwarded to them. The timber account shows that the blocks were yellow pine in 23 inch and 4 inch thicknesses, costing a total of four pounds eleven shillings. The 23 inch block would have been for the body of the figure. The 4 inch thicknesses were apparently for the arms, where they lay against the body on either side.

During September, the timber account also showed work underway on the interior furnishings. British sailing ships of BALCLUTHA's size built in the late 1800s followed a fairly standard layout of living quarters. In the long-standing tradition of the sea, the seamen lived forward, "before the mast," and the officers lived aft. The living quarters for seamen, called the foc'sle of forecastle after the defensive structure at the bow of medieval ships, might be located under the foc'sle head, or in a deckhouse between the foremast and mainmast. These quarters had been altered in BALCLUTHA by the time she was acquired by the San Francisco Maritime Museum in the 1950s. Research by the Museum indicated that they had been

located under the foc'sle head, and they were re-created there during the 1955 restoration. Four petty officers were usually carried; the cook, bos'n, carpenter and sailmaker. Their quarters would have been in part of the deckhouse, and probably consisted of two two-man rooms. Four to six apprentices might also be carried. These were young boys whose parents had paid fees to place them on board to learn a trade as ships' officers. They were usually quartered in a separate deckhouse, or an extension of the poop. References in the Connell papers to a "Boys' House," indicate that provision was made for berthing apprentices in BALCLUTHA. The term used also suggests a separate deckhouse. However, pictures of the ship do not support this. Norman Pearce, who sailed in the ship on her maiden voyage, remembered that the apprentices were berthed, "...on the port side of the deckhouse abaft the galley."

The ship's officers lived under the raised deck aft known as the poop. There was usually the captain, mate, and second mate, each with a separate stateroom. There might also have been a third mate, in which case the second and third mates shared a room. The steward usually had a room under the poop near the officers' pantry. He served the officers their meals with food brought aft from the galley in the forward deckhouse and dished out in the pantry. The seamen ate in the same room they slept in, but the mates had a small dining room, often in the center of the area under the poop near its forward end.

The captain was provided with a suite of rooms which were the closest living quarters to the stern. The largest and finest fitted out, known as the after cabin in American ships and the saloon in British ships, served as his parlor or sitting room. Grouped around it was his stateroom, bath, toilet or "head," usually two spare staterooms, and some storerooms. The storerooms might contain ship's supplies, and a heating stove for the saloon that could be brought out and set up in cold weather. One storeroom would have been the "slop chest," a ship's store operated by the captain with a stock of necessities such as rain gear and blankets, and some luxuries such as tobacco. Small storerooms would have contained medical supplies and an arsenal of hand guns and ammunition. For some reason, tradition dictated that the captain's sleeping quarters should be on the starboard side, and the mates' sleeping quarters on the port side. Though the poop of the BALCLUTHA was more than doubled in length early in this century, it still has the original officers' quarters under its after end, apparently little altered.

The living quarters of the mates were quite spartan, with minimal furnishings beyond built-in wooden berths, wooden lockers

for hanging clothing, a wooden bench and a small writing desk. The bulkheads would have been planked with tongue and groove, painted white or cream, or upper portion white or cream and lower portion green or brown. The mates' messroom had little more than a table and wooden benches. In the staterooms and in the messroom, the space under the benches was enclosed and used for storage.

The saloon, reserved for the use of the captain and his guests, was the only room in the ship that sought to re-create some of the elegance of a fine home of the period ashore. The saloon not only provided pleasant surroundings for the captain. As the room in which visiting officials and dignitaries were entertained in the ports visited, it also served as a reflection on the shipowner and his pride in his vessels. Such fine rooms were already a tradition by the mid-19th century, and remained the rule for as long as deepwater sailing ships were built. In 1855 Nathaniel Hawthorne, then serving as United States Consul at Liverpool, noted, "There is no such finery on land, as in the cabin of one of these ships in the Liverpool trade, finished off with a panelling of rosewood, mahogany and bird's eye maple, polished and varnished, and gilded along the cornices and the edges of the panels. It is all a piece of elaborate cabinet work; and one does not altogether see why it should be given to the gales, and the salt-sea atmosphere, to be tossed upon the waves and occupied by a rude shipmaster, in his dreadnought clothes, when the finest lady in the land has no such boudoir."[46]

BALCLUTHA's saloon survives intact, framed out in yellow pine and finished in teak, oak, mahogany, and bird's eye maple, with decorative gilded pilaster capitals and moldings carved or cut from yellow pine. This work was apparently done by the shipyard's joiners with the exception of the decoration which was contracted out to the carvers of the figurehead. On October 2, 1886, Charles Connell wrote to A. & D. G. Reid, "We beg to accept your offer to execute the internal carved & gilt work for above (No. 147) contract as under. Capitals 4 shillings ea.; moulding 10 pence per foot; mirror 60 inches x 30 inches, carved and gilt frame with clock case, 78 shillings." BALCLUTHA's saloon is still furnished with a built-in settee and built-in sideboard, apparently original. The upholstery work was performed by J. G. Rowan & Co. A Charles Connell letter of October 27th specified that, "...quality, colour & patterns," are to be the same as for SIRENIA. Further letters to Rowan & Co. in November and December 1885 during the fitting out of SIRENIA, indicated McMillan's tastes in floor coverings, etc. SIRENIA was to have in the chart house carpets, Windsor curtains, and a chair similar to the one in the captain's stateroom. Wooden decks were

to be covered with cocoa matting in the passageway and officers' staterooms, and with linoleum in the captain's bath. All velvet cushions were to be fitted with "Holland" (lace?) covers.

The Connell letters include a set of tiling specifications for an unnamed ship, dated August 9, 1886. All the baths and heads in that vessel were to be tiled, and the dimensions are given for each. There is also a sketched plan for the tiled deck of the galley. Since galleys usually extended from side to side of the deckhouse and this one is shown to be 18 feet long, five feet too long for the BALCLUTHA, it seems probable that these specifications are for the four-masted bark EARL OF ABERDEEN, hull No. 145, also built in 1886. They do show what seems to have been a fairly standard galley layout for these ships. There is a 30 in. by 5 ft. 10 in. range located near the center of one long bulkhead, with only three feet of clearance to a 9 ft. 2 in. long "dresser" along the other bulkhead. The remainder of that bulkhead is taken up by coal bins in the corners, each 4 ft. 5 in. in width. Food storage bins, not shown, apparently rested on the tile on either side of the range. Photographs of ships of the period show that a checkerboard pattern of 6 in. x 6 in. tiles was fairly standard.

The BALCLUTHA also still has her original chart house on the poop, forward of the ship's wheel and the skylight for the saloon. Until the poop was extended to its present length in late 1911, it ended between the forward side of the chart house and the mizzenmast. The aftermost cargo hatch was then located in the main deck immediately forward of this mast. Forward of this hatch the main deck was spanned by a pair of beams known as "boat skids" or, as in the Connell letters, "boat beams." In the center of the boat beams was a platform on which was located the binnacle for the standard magnetic compass. On either side of this the beams supported cradles or chocks for the ship's two lifeboats. The standard compass served as a check on the magnetic compass forward of the ship's wheel by which the vessel was steered. It was placed on this raised platform so that it would be less affected by the magnetic field created by the iron and steel in the ship's structure. Comparison checks were made between the two compasses at regular intervals during each watch.

For ease in getting from the poop to the boat beams, to check the standard compass, or for access to the boats, a footbridge was provided in the form of a gangway with railings. This could have been raised out of the way, probably by being hinged at its after end, when cargo was being loaded or discharged through the hatch. On September 24, 1886 Charles Connell wrote to Robert McMillan, "With reference to Gangway

from poop to Boat Beams in your new ship as it is only 24 feet long we think it would be better and handier to have it hinged all in one piece. It is convenient to mizzen mast for hauling up and it would clear the hatch much better." The gangway would have been hauled up with a tackle leading down from the mast to its forward end. Since the mast was in the way on the centerline, the gangway had to be placed to one side. It appears on the port side in a plan drawn by Capt. C. A. Halvorson in 1909. The boat beams themselves were T section, like those that extend to the ship's rail on either side of the deckhouse for stowing the other two boats. McMillan wanted 6 in. x 4 in. beams, but ended up having to settle for 5 in. by 4 in. Connell was unable to find the larger size, and the amount needed was, "...too small to have specially rolled."

In his letter of October 19th, in which he informed McMillan of his difficulty in finding 6 in. x 4 in. T beams, Connell again asked for a decision as to the ship's name so he could order the flags, bells and chinaware. Four days later Connell is wrote to the chandler, A. Brownlie & Co., "Name is BALCLUTHA, please get bells engraved." These were the large ship's bell mounted at the aft end of the foc'sle head, rung by the lookout each half hour at sea and also used to alert the mate on watch when anything was sighted. This bell was also used as a fog signal when at anchor. The second bell was a small "watch bell" adjacent to the wheel, either mounted on the steering gear box or the aft end of the saloon skylight, which was used to keep the ship's time as read from a clock mounted in a sheltered location nearby. The helmsman made the bells every half hour and they were then repeated by the lookout forward.

On October 25th Connell sent R. Cochran & Co. of Glasgow a list of the chinaware, silverware and glassware required for the ship, describing the china as, "...best ironstone ware, enamelled green band and line & house flag, same as for No. 144." On November 4th he informed Cochran & Co. that McMillan had decided to change the house flag from the white field with a red "Mc" flown on the SIRENIA, to a white field with a red "M." On November 16th he wrote again, this time to tell them that the ship's name should appear on the china.

On October 23rd Connell informed McMillan that the ship's spars were behind schedule, but the rigging should be completed and ready to be fitted the following week. On November 8th he wrote to the suppliers of the rigging, John Black & Co. that it was now urgently needed. McMillan inspected the rigging on or before December 1st, and was unhappy to find that the hearts in

the rigging screws (around which the standing rigging would be spliced or turned back and seized) had not been galvanized. Connell regretted this, but argued against trying to correct it because the bolts holding the hearts in place were all clinched and some or all of them would have to be replaced. The reference to fitting rigging suggests that at least the lower masts were in place when the ship was launched. Later mention in the letters of moving the ship to a berth with a crane suggests that most of the spars went up after the launching.

The report of BALCLUTHA's launching in the British journal "Marine Engineer," states that she was, "...fitted with all the modern appliances for the speedy loading and discharge of cargo."[47] The usual system of handling cargo on these ships was with single or double purchase hand-operated winches permanently installed at the main and forward hatches. Some ships were fitted with a vertical steam "donkey" boiler and a steam winch, usually located in a room at the aft end of the deckhouse. D. P. Campbell, who was a seaman in the SIRENIA, states that she had no donkey boiler or "engine." Norman Pearce, who sailed in BALCLUTHA on her maiden voyage, provided a sketch of the deckhouse as he remembered it which also shows none. The early photographs of the ship seem to support this. However, there are references in the Connell letters which seem to indicate that installing a donkey boiler was at least considered. On October 9, 1886 Connell wrote to McMillan, "Would you think of doing anything in steam winches to utilize your boiler for cargo purposes." On December 1st Connell wrote. "I have just received letter from Rowan's people which I beg to enclose, they apparently cannot give as much information about common engines." When the BALCLUTHA was acquired by the San Francisco Maritime Museum she had a donkey boiler and winch in the aft end of the deckhouse which was clearly a later addition. It was a Murray Brothers engine, a popular engine on the Pacific Coast, manufactured in San Francisco. During the 1950s restoration it was dismantled. Its components are listed among the artifacts from the ship preserved in the Museum's collection.

The BALCLUTHA'S launching was set for 11 A.M. on Thursday, December 9, 1886. Mrs. Constable, wife of the man selected to be the first captain, performed the christening. According to Fred M. Walker, Author of Song of the Clyde, a History of Clyde Shipbuilding:

> In Scotland traditional (launching) arrangements are relatively simple: the ship has a brief naming ceremony, usually performed by a lady sponsor invited by the ultimate owners, a bottle of wine or other beverage is broken on the

bows and the signal given to release the ship from her ways. The sponsor often receives a gift of jewelry and, as in many commercial transactions, the value of the gift may be commensurate with either the first cost of the ship involved, or reflects the importance the shipbuilders attach to the friends of the lady concerned.[48]

After the launching the ship would have been towed to the crane to have the remaining spars sent aloft, and from there to Queen's Dock, Glasgow to receive her sails and other supplies. Letters sent out to suppliers during December listed the spare line, spare canvas, and paints and oils with which the ship was stocked for her first voyage.

On December 20th Charles Connell supplied Robert McMillan with the final measurements for the new ship; length 256.5 ft., breadth 38.65 ft., depth of hold 22.75 ft., gross tonnage (internal volume in tons of 100 cu. ft.) 1689.30. The latter was broken down into: 1533.97 under main deck, 80.07 for the area under the poop, 51.35 for the area under the foc'sle head, and 23.91 for the deckhouse. By subtracting 75.68 for the non-income-producing spaces devoted to crew quarters and storage, a net tonnage of 1613.62 was arrived at. Arrangements were made with a Professor Jenkins to heel the ship on December 22nd, in order to draw up stability data for various conditions. Heeling was done by shifting weights across the deck and noting their effect. On the 23rd Connell supplied Jenkins with further information on the ship with which to complete his calculations, including sketches of the ballast and tanks, and a tracing of the sail plan with estimated weights. These drawings apparently no longer survive.

On December 27th Charles Connell accompanied Captain Constable to Glasgow to complete the required Government papers clearing the ship to proceed to sea. This included registering the ship in the name of Robert McMillan of Dumbarton, holder of all 64 shares. The BALCLUTHA was then towed to the Tail of the Bank, an open roadstead in the Firth of Clyde off Greenock, Scotland, to have her magnetic compasses adjusted on various headings using bearings of fixed marks on shore. The "Greenock Telegraph" reports her sailing from there on December 29th in ballast for Cardiff, South Wales.

Charles Connell continued to supply McMillan with stability data on the ship through January. By the 20th of that month word had been received that Captain McIntyre of the SIRENIA felt that ship was too tender. This meant that she rolled too easily and returned to an even keel too slowly, indicating less stability

than was desirable. However, McMillan expressed pleasure with the BALCLUTHA, and Connell was ready to undertake a third ship. "If you think of building, things are rising steadily, in fact steel is dearer at present than when you contracted for SIRENIA, so I think you should look into the matter as soon as you can." The SIRENIA was apparently being heeled again, and Connell asked McMillan for the information obtained in order to do more calculations. On February 24, 1887 Connell sent McMillan stability curves for both ships, pointing out that they showed the BALCLUTHA better at one degree to twelve degrees of heel, but the SIRENIA better at greater angles. He attributed this to the SIRENIA having less weight in her rig, and the BALCLUTHA's "better proportions."

Robert McMillan did not add any further sailing ships to his fleet. The correspondence between Charles Connell and McMillan stops in March 1887, after which there is only a letter in September of that year in which Connell agrees to a meeting at the Royal Exchange in Glasgow the following day. We have no record as to what transpired at that meeting, if it took place.

BALCLUTHA's Career Under the British Merchant Ensign

On December 29, 1886, the BALCLUTHA set sail for the first time, outward bound in ballast from Greenock, Scotland at the mouth of the Clyde River. She would have been visible, though distant, from the tower of Robert McMillan's home Methlan Park in Dumbarton on the opposite shore. Her destination was Cardiff, South Wales, or more precisely, Penarth, a shipment point for Welsh coal just three miles south of the center of Cardiff.

The first captain of the BALCLUTHA was Joe Frederick Constable, 41 years of age when he signed the ship's articles. Constable was born in London on August 17, 1845. He served his apprenticeship in the sailing vessel WAGOOLA of that port from March 1861 to March 1865, and was then promoted to third mate, remaining with the ship until May 1866. He then served as third mate in the AKBAR, leaving her to take the test for second mate's papers, which he passed on July 8, 1867. After six months as third mate of the MIRELLA, he received the position of second mate of the SUMMER CLOUD of Leith, Scotland, which he left to take the exam for first mate at the end of October 1870. He subsequently served as first mate in the OCEAN GEM and the CORDELIA, and obtained his master's papers on May 28, 1873, at the age of 27.[49] Constable then went into steam, serving as first mate of the Cunard Line passenger steamer BOTHNIA. In 1881 he obtained his first command, a new steamer named the LYDIAN MONARCH. He returned to sail in 1884 to command Archibald McMillan & Sons' full-rigged ship MACDIARMID, which he left to take over the BALCLUTHA. After the BALCLUTHA he went back into steam, serving as captain of the CYNTHIANA of Glasgow until she was sold in 1892.[50] We have no information on his subsequent career.

The BALCLUTHA loaded 2650 tons of coal in South Wales, consigned to J. D. Spreckels & Co. of San Francisco. When she sailed from Penarth on January 15, 1887 there were thirty people on the ship's articles. Fourteen were able seamen earning two pounds and ten shillings a month. Four were ordinary seamen making one pound and five shillings. Four were apprentices receiving no pay. The 34-year-old first mate made eight pounds per month, and the 26 year old second mate five pounds and five shillings. Instead of a bos'n and sailmaker, on this voyage the BALCLUTHA carried third and fourth mates, both 21 years old, making three pounds five shillings, and three pounds respectively.[51] The carpenter Francis Kane of Drogheda, Ireland, was one of the older crew members at 41, and one of the better

paid, receiving six pounds per month. He had joined the firm of Archibald McMillan & Sons in 1866, signing an indenture for five years as an apprentice carpenter in the Dumbarton shipyard.[52] Why he was going to sea in 1886 is unknown.

One of the able seamen was Norman Pearce, a native of Falmouth, England, who has left us the only first person account of the BALCLUTHA's maiden voyage. Pearce had spent several years in small vessels trading around the British coast, and now felt he was ready to move on to "...big square-rigged ships and foreign travel."

> A friend of my father was a ship broker at Cardiff, so being there at the time, I asked him what chance I had of getting such a trip. His answer was, 'We are brokers for a new ship loading coal at Penarth for San Francisco, and she will sail this week. She is a new ship called the BALCLUTHA and we can get you a berth as A.B. (able seaman) on her.' It was soon fixed up and two days later I had signed articles to join her the following day. The ships in Penarth Dock were full-rigged, barques, steamers, ocean-going and coastwise, and several small sailing coasters. All these ships were loading coal for different parts of the world. ...[W]e were towed away from the dock soon after we joined her. The screw tug left us west of Lundy Island and we headed down the Bristol Channel under full sail.
>
> We were a mixed crew including several half-castes from the West Indies, good sailors, one Brazilian, some Scandinavians, also good handymen. The rest were British. There were four apprentices, all Scotch and first voyagers. The captain was from London, a gentleman; the first mate from Jersey (not a bad fellow but very irritating at times, and holding a captain's certificate); the second mate from Plymouth with a first mate's certificate, a nice chap; the third mate was fussy and wanted to fight me; the fourth mate was easy going. Both the latter held 2nd mate's certificates and had evidently served their time as apprentices in some other ship. I was in the first mate's watch.
>
> The first incident I remember well was my bed, bedclothes and some of my kit being washed out on deck through the door. As it was a new ship there were no plugs for the hawse pipes and with the first dive she made in the Irish Sea, she shipped most of it (or so it seemed to me) through the pipes (hawsepipes) and as my bunk was well forward, it was quickly washed out with the flood. We tried

> stuffing with empty bags and some of our clothes, but we made a poor job of it for they were washed in again. We just had to make the best of it until the carpenter made plugs to fit and then we had to wait for the cable chain to be unshackled from the anchor and drawn inboard through the pipes, which was always done at the beginning of a long sea voyage. That was the wettest time we had in the forecastle for it turned out to be fairly dry and comfortable all through the worst weather rounding Cape Horn.[53]

The passage down the Atlantic was fairly uneventful. Off Cape Horn the usual gales were encountered coming out of the west. There was a near collision with a waterspout, a type of tornado occurring over water, off Staten Island east of Tierra del Fuego. Later one of the South American seamen fell off the foreyard, striking the bulwarks and landing on deck. He was extremely fortunate to only suffer a dislocated shoulder, which healed during the passage. Men who fell overboard in those latitudes were very seldom recovered, due to the temperature of the water and the time required to stop a sailing ship and launch one of its boats.

After beating to westward for three weeks into a succession of heavy gales, the BALCLUTHA finally caught a favorable slant of wind that carried her north into the Pacific safely clear of the land. Fine weather was encountered from there to well north of the Equator. After being held up north of the Line by another series of gales she finally arrived at the Golden Gate for the first time on June 9, 1887, 140 days out.

According to Pearce the coal cargo was intended for White Star Line steamers trading with the Orient, and was discharged near their wharves. The ship was then towed to Sausalito across the Bay to the north, where she lay at anchor for three months awaiting a rise in freight rates for grain. There were around thirty or forty other British sailing ships temporarily laid up in San Francisco Bay at this time for the same reason.

Grain was the leading sailing ship cargo loaded in California in the 1880s, and its transport from there to Europe and the East Coast of North America was one of the mainstays of the world's deepwater sailing ship fleet. The growing of grain in the fertile Central Valley of California had originated with the need to feed the large influx of people attracted by the discovery of gold in 1848. The first grain shipped eastward around Cape Horn was apparently carried by the bark GREENFIELD in 1855. California grain was found to be hard and dry enough to survive the long voyage to Europe without spoiling. By the mid-

1870s Great Britain had become the major customer for American grain exports, taking from 60 to 80 per cent. In the years 1879-1881 crop failures in Great Britain and on the continent of Europe further stimulated the trade. By 1880 there were 36,000 farms in California cultivating 10.6 million acres.[54]

By the time the BALCLUTHA entered the grain trade it had begun to decline, having peaked in the year 1882, when 559 sailing vessels were loaded in San Francisco for Cape Horn voyages. By 1886 the number had dropped to 197. Some of the trade was being lost to steamships, which could now take advantage of the fuel-efficient triple-expansion engine. Shipments of wheat and flour from the eastern Great Plains states through Atlantic Coast ports were expanding, and Russia, which had declined as a grain producer after freeing the serfs in the 1860s was now making a comeback. Between 1888 and 1890 wheat exports from Russia to Great Britain actually exceeded those from the United States to Great Britain.[55] California farmers therefore began to diversify into fruit and other crops.

After almost three months of inactivity the BALCLUTHA finally shifted to a loading berth, and took on 59,179 centals of wheat valued at $95,953.[56] (One cental equalled 100 lbs.) She sailed from San Francisco on August 26, 1887 bound for Queenstown, Ireland "for orders." Grain cargoes might be sold and resold several times while the ship was enroute. Since she had little or no contact with the outside world during the months at sea Queenstown was a convenient place to make a first call to find out the final destination of the cargo. The BALCLUTHA arrived there January 7, 1888. Captain Constable was instructed to proceed to Fleetwood on the west coast of England north of Liverpool, where he arrived on January 21st. Norman Pearce left the ship here, having completed the twelve months sea time he needed to take the exam for his mate's certificate.

The BALCLUTHA discharged her cargo and proceeded to Swansea, South Wales to load 2660 tons of coal consigned to Macondray & Co. of San Francisco. She left Swansea on March 3rd, and arrived out on July 26th after a passage of 145 days. On the previous visit four seamen had deserted in San Francisco. This time the number was eight seamen and two apprentices. Desertion was encouraged by "runners" representing saloon and boardinghouse keepers who acted as employment agencies supplying shorthanded vessels with men, a major industry on the notorious San Francisco waterfront. The BALCLUTHA loaded 60,389 centals of grain and sailed from San Francisco on September 2nd. She arrived at Queenstown on December 28th, where orders were received to proceed to Plymouth on the south coast of England to discharge.

At Plymouth Captain Constable left the ship and was replaced by John Binnie, a Scot born in 1842 at Grangemouth on the Firth of Forth. Captain Binnie first went to sea at the age of sixteen in the CITY OF HAMILTON of London. He received his second mate's certificate in May of 1866, and his master's certificate in December of 1869. Before taking over command of the BALCLUTHA he had spent almost twenty years employed by Montgomery & Workman of London, latterly commanding their iron full-rigged ships CITY OF QUEBEC and DUKE OF ABERCORN.[57] In 1954 the San Francisco Maritime Museum corresponded with a son of Captain Binnie, James Binnie of Grangemouth, from whom it received an abstract log of this San Francisco voyage prepared by the Captain, and his concertina.

From Plymouth the BALCLUTHA proceeded to Antwerp, Belgium. She sailed from there on April 5, 1889 for San Francisco with a general cargo that included cement, window glass, soap, alum, sulphur, steel wire, olive oil, wine, and liquor. She took 132 days on this passage, arriving August 17th. The San Francisco Alta of the following day published an account by Captain Binnie of the weather conditions encountered on each leg, which it called a model for "captains of incoming vessels, many of whom leave their reports to be written by the steward or other incompetent person." Captain Binnie reported encountering a heavy northwest gale below 32 degrees south latitude in the Atlantic, which developed into a hurricane, "...with terrific seas breaking completely over the vessel and the decks fairly submerged." Conditions off Cape Horn included hail, snow and bitter cold.[58]

Again ten men deserted in San Francisco. The BALCLUTHA loaded 59,514 centals of wheat and sailed on October 23rd. On March 20, 1890 she arrived at Falmouth, England where she received orders to proceed to Sunderland on the northeast coast to discharge. She left Falmouth on March 26th and arrived at Sunderland on April 1st. After three years in the California grain trade, making one voyage per year, the ship now went into general trading, taking paying cargoes wherever she could find them. In June she was at Cardiff, from where she sailed on the 21st of the month bound for Cape Town, South Africa.

She arrived at Cape Town on September 1st, and sailed from there on the 20th of that month for Napier, New Zealand, where she arrived on November 11, 1890. At Napier, a small port on Hawke Bay, on the east coast of North Island, she loaded wool and tallow for London. On December 5th she was lying at anchor in the roadstead about two miles off the entrance to Napier's inner

harbor. The following day the Hawkes Bay Herald reported:

> Another accident to the RANGITIKI: During last night, and early this morning, a heavy gale from the westward was blowing, but the sea was smooth...the vessel parted her cable all the same...The chain broke first about 1 A.M. yesterday, and the vessel immediately began to drift before the wind. She went stern on towards the BALCLUTHA, which was lying further out, striking her somewhat heavily, and carrying away part of the BALCLUTHA's bulwarks and a couple of her davits, besides starting her after rigging. The RANGITIKI damaged her own stern and rudder by the collision, and consequently could not be steered. (After anchoring and parting her cable again)...A line was got on board, and the MATATUA towed the RANGITIKI back to the anchorage. We have been informed that the cable which parted is as old as the ship, and as she was built 26 years ago the cable is no juvenile. At all events it has parted four times during her stay here of about three weeks.[59]

The decision of the Court of Inquiry states that the damage to the BALCLUTHA's bulwarks was on the starboard side. A chronology of the ship's voyages compiled by the late John Lyman contains the information that the repairs were expected to take two weeks and cost 300 pounds. A. G. Feslier, New Zealand's Deputy Travel Commissioner in San Francisco, who supplied Karl Kortum, Director of the San Francisco Maritime Museum with some of the information on the Napier collision in 1955 noted, "In 1931, a severe earthquake occurred at Napier and most of the bed of the inner Harbor where the BALCLUTHA was moored at the time (of the collision) was raised above sea level and a new residential suburb has been built on the naturally reclaimed land."[60] The BALCLUTHA sailed from Napier on January 2, 1891. She arrived in London 100 days later, on the 12th of April.

Captain John Binnie left the ship in London. Ill health may have had something to do with his decision, as he died just two years later at the age of 50. His replacement was J. W. Morrell, a native of Yarmouth, Nova Scotia only 27 years of age. Canadian sailing ship historian Frederick W. Wallace noted, "When the wooden square-riggers of Canada passed away from Canadian ownership, a large number of masters and mates were forced to continue their vocations elsewhere...hundreds went into British and American 'steam.' Many Bluenose shipmasters, however, gained command of British sailing ships."[61] The BALCLUTHA had three captains during her British period who were natives of Nova Scotia.

Captain Morrell had obtained his Canadian master's certificate in 1888, and had commanded only one previous vessel, the wooden full-rigged ship JOHN BUNYAN of 1170 tons built at Meteghan, Nova Scotia in 1875. When Captain Morrell took command of the BALCLUTHA the JOHN BUNYAN had recently been sold to Spanish owners. John Simpson of Caithness, Scotland, who joined the BALCLUTHA in London as chief mate had also come from that ship. The BALCLUTHA sailed from London on May 31, 1891 for New York, where she arrived just one month later on July 1st. The day before the ship's arrival Captain Morrell's wife had given birth to their first child in Yarmouth, a son christened Charles S. Morrell. Four weeks later Mrs. Morrell arrived in New York to join her husband on the next voyage of the BALCLUTHA. They sailed from New York on August 13th for Rangoon, Burma.[62]

J. W. Morrell remained in command of the BALCLUTHA until December 1894. During the period he had command the ship visited the following ports:

Rangoon - arrived 12/1/91, sailed 2/20/92
Amsterdam - arrived 6/30/92, sailed 11/15/92
Barry (South Wales) - arrived 11/19/92, sailed 12/7/92
Callao - arrived 3/1/93, sailed 4/26/93
Lobos de Tierra - arrived 4/29/93, sailed 6/14/93
Antwerp - arrived 10/4/93, sailed 11/14/93
Barry - arrived 11/28/93, sailed 12/26/93
Callao - arrived 3/26/94
Iquique - arrived 6/4/94, sailed 7/31/94
Rotterdam - arrived 11/3/94, sailed 11/28/94
Barry - arrived 12/1/94

Information on the cargoes loaded in these ports is lacking, but the most likely would be: New York - case oil, Rangoon - rice, Amsterdam - ballast, Barry - coal, Callao - ballast, Lobos de Tierra - guano, Antwerp - ballast, Barry - coal, Callao - ballast, Iquique - nitrate, Rotterdam - ballast, Barry - coal. Case oil was kerosene in crated five gallon cans. Guano is solidified bird droppings which were mined on the offshore islands of Peru, where they had accumulated to great depth, for use in Europe as fertilizer. Nitrate is a mineral which was dug from the surface of the Atacama Desert in northern Chile for use in Europe and the eastern United States as fertilizer or in the manufacture of chemicals. Mrs. Morrell accompanied the captain on most of these voyages, but was ashore in July 1893 when their second child, a daughter, was born. She rejoined the BALCLUTHA in Antwerp that October.

Captain Morrell left the BALCLUTHA in December 1894 to take

command of the 1946-ton steel full-rigged ship VERAJEAN, built at Dumbarton by Archibald McMillan & Sons in 1891. Lloyd's Register of Shipping lists her owner as "J. McMillan," presumably Robert's brother James who would have been forty that year. Their brother John had died in 1888, and their father had died in 1891. Morrell left the VERAJEAN in 1898 to take command of the steamship BARON ARDROSSAN. He died on that ship of "East India fever" on February 25, 1899 enroute from Calcutta to Constantinople, and was buried at sea. Mrs. Morrell, who was living in Scotland at the time, moved the family back to Nova Scotia.[63]

In 1956 Karl Kortum corresponded with both of Captain Morrell's children. The only contemporary painting of the BALCLUTHA known to exist, painted for Captain Morrell while he was in command, is now in the collection of the Yarmouth Historical Society. It is a typical ship portrait of the period and an accurate depiction of the vessel. She is shown with a light grey band below the painted ports, the color scheme she now has. Early photographs show that she had black below the painted ports early in her career, but later grey. The painting is signed "H. Mohrmann 1893." John Henry Mohrmann (1857-1913) was born in San Francisco. He went to sea at the age of thirteen, where he spent eighteen years before coming ashore to practice ship-portraiture. He was active in several ports around the world, but finally settled in Antwerp, where he painted this portrait of the BALCLUTHA.[64]

Morrell was replaced as captain of the BALCLUTHA by another Nova Scotian, Alfred H. Durkee, a native of Carleton, thirteen miles northeast of Yarmouth. Durkee had received his captain's certificate at that port on March 2, 1887,[65] and had since then commanded the 1487-ton full-rigged ship ABBIE S. HART, and the 1220-ton bark THOMAS PERRY, both wooden vessels built in the Province. On May 10, 1888, Captain Durkee married Alice M. McCormack of Tusket, Nova Scotia, a town near Yarmouth where the ABBIE S. HART had been built in 1880. Mrs. Durkee had already sailed with her husband about five years when he took command of the BALCLUTHA.[66]

In 1954 Karl Kortum corresponded with their daughter Inda Frances Dunn, then living in Plaistow, New Hampshire. As a result of this correspondence, the San Francisco Maritime Museum eventually received a number of items relating to captain Durkee's service in the vessel, including a thirty-one page manuscript written by the captain on his experiences in Cape Horn sailing ships, and two additional pages written by Mrs. Durkee. Captain Durkee's recollections were written down years after he

left the sea, when he was giving talks to service clubs in New England. They create a vivid picture of the world of the deepwater sailing ship in the late 1800's, touching on many aspects of the life, both at sea and in port, including daily routine, relations between officers and seamen, weather conditions and marine life encountered, food, sea chanties, and sailors' superstitions. Captain Durkee began his reminiscences with an account of the difficulties he encountered in trying to sail from Barry in the gale-ridden winter of 1894.

> After spending about six years as master of wooden sailing ships, I determined on a change. I, therefore, resigned my command in Philadelphia and sailed for Scotland. Very soon after arriving there, I was appointed to command a large sailing ship, the BALCLUTHA, whose owner was a Scotchman, a very fine man, and of whom I asked particularly about orders when to leave port in case of bad weather, as it was then winter. He said to use my own judgement, as I had previously done; if the weather did not look good to me, stop in port until I thought it prudent to go out. The ship was loaded with coal and lying in Barry, a port near Cardiff, Wales, and up the Bristol Channel, one of the worst places to get out of in winter.
>
> I waited a day or two for the weather to clear, and then one fine morning we started, my wife being with me. We had a large tugboat ahead towing us out, but before we got outside the channel the wind began blowing up, and very soon we had a heavy gale and high sea, so the tug could scarcely make any headway. However, they kept towing until after a time the hawser broke, and we were adrift. The wind and sea were too high to get another line out, so there was nothing to do but get some sail on the ship and turn back, the tug showing us the way to the anchorage, as I was not familiar with the harbor. We reached the anchorage in safety, and anchored with a heavy sea rolling in, making it extremely dangerous to bring the ship up. The tides in the Bristol Channel turn swiftly, and rise to a height of some twenty feet. We lay there several days, seeing ships start out and come back again, and anchor all around us.
>
> One morning it looked so fine we weighed anchor, but I was sorry before we got far, as it again commenced to blow up. However, the tug got us out and cast off the hawser and although it was blowing hard we got sail on the ship as fast as possible. But the wind kept hauling more and more westerly, and the gale increased so that it soon became apparent that we were in for more bad weather. We stood

over to the northern shore on a port tack, thinking if we could get well to the northward the wind might favor us and allow the ship to make a good leg out to sea. When we got far enough it became a question of getting the ship around on the starboard tack. We had men aloft making fast some of the sails, as it was now blowing a heavy gale. The ship was rolling badly and shipping great quantities of water, washing overboard everything moveable around us, including our chickens and two pigs. While the men were still aloft the sea suddenly gathered and a huge roller struck the ship, and with a great roll she went over on her side, shifting the coal, and there she lay with her lee deck full of water.

The men aloft had great difficulty in holding on and getting the sails fast, but eventually we got them down and began trying to get the ship around. As we were lying over so far the men could not stand on deck without holding on to something, so ropes were stretched across the ship and made fast. They were called life lines, and that they certainly are, for they have saved many a man from being washed overboard. In our case, we nearly lost two of the men, which rather took the heart out of all of us. However, after much difficulty and danger we got the ship around and began running back for anchorage.

The steward we had that time was a peculiar sort of fellow. He would go into the cabin and tell my wife what was going on up on deck -- how the men were working in the water up to their waists trying to get the yards around -- the seas completely covering them at times -- the boatswain washed overboard and with the same wave washed back again -- all the chickens and pigeons washed away -- 'and those two fine big fat pigs gone clean away squealing, God bless them.' We reached harbor and anchored ...then had a job ahead of us to get the sails repaired, the cargo shifted over, and the ship straightened up.

One fine morning, after the BALCLUTHA was repaired, many of the ships went out, but I did not go out as it did not look very good to me. Sure enough, before they got outside the wind came in again and began blowing up and we soon had a sea, and some of the ships coming back. One of them, a wooden ship (the POLYNESIAN), came near and anchored, and although we felt sure she was too near us we could do nothing with the gale that was blowing. We saw several ships dragging their anchors and one or two of them broke away and were towed into a place of safety. When the tide turned, the wooden ship next to us broke her shear and

one of her anchor chains and came over alongside of us, and there we were, a steel ship and a wooden one, side by side, lying in the trough of the seas, both ships rolling heavily, their yards catching into each other's, breaking away some of the sails which began banging in the wind, having carried with them some of the yards and masts. At times, one ship would be on top of a wave and the other in the hollow, and then they would come together with a crash, and a tearing, rasping, crushing noise, which with the ropes and yards breaking, sails torn and banging, officers and men shouting, and above it all the howling of the wind through the two ships' rigging. It was a scene and a sound one could never forget as long as he lived.

When daylight came we found our plates along the waterline had been badly indented, so it was considered necessary to go into dry dock and have them removed. We were there two weeks getting repaired. After all the repairs were made we started again, and finally got out to sea, although we had to work out against head gales.

We met more head gales long before we reached the Horn this voyage, and when we had Staten Island abeam, trouble began in earnest. It is always a case of continually watching the weather. One often shortens sail, makes it again, and again takes it in during the course of a day. Sometimes making a good log to the southward the captain dislikes to tack and stand back, so he keeps on and runs so far south that there is danger, if the wind should come around from the southward, that he would get his ship frozen up. We had gale after gale until finally a large portion of the crew was laid up sick, either from fever, or salt water boils. No one who has not been there can imagine the strain on the captain in trying to get around Cape Horn with a succession of heavy gales against him. If he works too near the land and gets caught on a lee shore he knows there is nothing but a rocky coast for him, and if in winter, ice and snow. This passage in BALCLUTHA was about my hardest time in getting around. It is only a couple of hundred miles, but to do that is the rub. We were this time three weeks doing it. It was a mighty relief when the stern Cape was behind us and the bad weather over for a while. From the Horn up to Iquique we had fine weather and made very good time. But the whole trip was a great disappointment to me. It being my first voyage in a steel ship, I was anxious to make a good passage, whereas with the head gales I was about thirty days to long.[67]

Mrs. Durkee had planned to accompany her husband on this voyage, but she became ill before the ship finally got away from Barry on January 22, 1895. When she had finally recovered, she went to stay with friends in Hamburg, Germany, remaining there until the ship returned from Iquique after an absence of almost a year. The BALCLUTHA arrived in Iquique on June 5, 1895, and left there, presumably with a cargo of nitrate, September 19th. Captain Durkee says:

> Most sailing ships take coal to Iquique, and the only cargo to load is nitrate of soda. The nitrate from the mines is brought in on the railway, although from many of the smaller mines, it is brought on pack mules, in large bags ready for shipment, weighing about two hundred pounds each. The coast of Chile for several hundred miles is nothing but sand with so much nitrate mixed with it that nothing will grow, especially as it never rains. Whatever shrubs and flowers there are in the city park must be set in large tubs in soil brought in by some of the coasting steamers. It would take a couple of months to discharge a cargo of coal and load another of nitrate, and we used to be glad enough to sail away and leave such a desolate country.

The BALCLUTHA called at Falmouth, England for orders on the last day of the year, and proceeded from there to Antwerp, Belgium to discharge her cargo, arriving on January 11, 1896. While the ship was in Antwerp, Mrs. Durkee rejoined her husband. After the nitrate was discharged, they sailed back down the English Channel, and around Land's End to Swansea, South Wales, to load 2197 tons of coal and 397 tons of coke, consigned to Williams, Dimond & Co. of San Francisco. The BALCLUTHA left Swansea on April 1st, and arrived in San Francisco on August 15th. A headline in the San Francisco Examiner for the following day read, "HER DECKS SWEPT BY GREAT BILLOWS, Rough Experience of the Ship Balclutha While Rounding the Horn."

> The British ship Balclutha arrived today from Swansea after a passage of 135 days. Her appearance gave little indication of her experience rounding the Horn. It was on June 7th in latitude 55.55 degrees south and longitude 62.51 degrees west that the Balclutha encountered the nastiest weather on the voyage. A gale set in from the west which increased in velocity until it was almost blowing a hurricane. All sail had to be taken in at one time, and while the wind strained the rigging huge waves poured over the bow and sides, flooding the decks and sweeping everything moveable into the sea. The sails were torn out of the gaskets by the fierceness of the wind and shreds of

canvas went whirling through the air like so much scud. One immense wave set in against the vessel's side, knocking her over and sending the tips of her yards close to the leeward sea. Another great wall of water washed clear over the ship, almost burying her. She only partly righted after that, for her cargo had been started, leaving the vessel with a heavy list. For three days the crew was obliged to work in the hold without rest until the cargo was restowed and the ship once more on an even keel. The Balclutha had fairly good weather after she rounded the Horn and got into the Pacific.[68]

Four days before the BALCLUTHA's arrival the San Francisco Call had reported,

> The wharves are again beginning to present a busy appearance. During the past week quite a fleet of deep-water ships got in and nearly all of them were docked. Very few of the new arrivals are under charter and in consequence they will have to join the idle fleet at Sausalito or Oakland Creek. Among the late arrivals (is) the British bark Ravenscourt, 173 days from London. All yesterday afternoon the sailors on the Ravenscourt were engaged unbending sail. She presented a pretty appearance as she lay off Angel Island, with the men on the yards handling the sails.[69]

The mate of the RAVENSCOURT at the time, John C. Campbell, writing over fifty years later, paints quite a different picture.

> We arrived on a Saturday (and)...went to anchor off Mission Rock. On Sunday morning early, "Shanghai" Brown's runners were in the forecastle feeding liquor to the crew. I had the police flag flying. The crew in the forecastle were busy packing their bags to go off with Brown's runners. They were feeling very good through the liquor. But the steward mixed laudanum with our ship's rum. I asked both watches to have a parting drink. Soon the crew were asleep. While the steward and I were busy with the crew in the forecastle, the police boat was on its way out. Brown and his runners bundled the boatswain into one of their rowboats and pulled away just as I came out of the forecastle. I saw the boatswain in the stern waving a five dollar gold piece that Brown had given him to treat the girls on shore. But Brown had other ideas. He put the boatswain -- a real sailor -- onto a four-masted ship called the PRIMROSE HILL. Two hours later she towed to sea bound for London with canned goods and with our good-hearted boatswain who had

come on board in a pierhead jump from Strand House in Gravesend (a port on the Thames below London).

In 1886 I was serving a five-year apprenticeship to shipbuilding on the Clyde. The BALCLUTHA was fitting out at Finniston Quay. I asked her master for the position of ship's carpenter. I was told to be at the shipping office in one week to the day and sign on the ship's articles with the crew. But when asked for a clearance at the shipyard, I was told that I had one more year to serve, and also that I was an apprentice and by law, had to serve the full five years. The next time I saw the BALCLUTHA was ten years later in San Francisco. BALCLUTHA and RAVENSCOURT were moored within speaking distance of one another. The BALCLUTHA had a Bluenose (Nova Scotian) skipper and second mate. The crew were mostly West Indies Negroes. Negro steward and Negro cook. At five p.m., clean up the deck and then the crew goes below. The skipper locked the door to the forecastle so that his crew would not fall into the hands of the boarding house runners. There were three sailing vessels moored to the dock within speaking distance. The HELENSBURGH belonged to Thom & Cameron, Glasgow. The skipper was a six-footer, a Shetlander, with a long red beard. It was he that told the Bluenose skipper of the BALCLUTHA to lock up his crew, as he used that procedure.[70]

This time, the majority of the cargo loaded in California was not grain. The largest items were 44,433 cases of salmon, and 11,474 cases of canned fruit. She also loaded 11,202 centals of barley, 6,789 centals of beans, and 30 gallons of wine. The cargo was valued at $237,389, over twice the value of any of the grain cargoes. The BALCLUTHA sailed for London on October 13, 1896, and arrived at Gravesend on February 21, 1897. A note, probably taken from a shipping paper of the time, in the compilation of her voyages assembled by John Lyman, states that she "Was ashore that morning on the Chapman, owing to breaking the stock of the starboard anchor; towed off at noon by tug CONQUEROR, apparently uninjured. That afternoon was run into by collier S.S. ELLA from Shields; slight damage to stern of ship; steamer's rails damaged on starboard quarter." The British had an iron-hulled paddlewheel tug named the CONQUERER, an ancestor of San Francisco's EPPLETON HALL built in 1884 that survived into the 1930s, but it is not known if she was working at the mouth of the Thames in 1897.

In London the cargo from San Francisco was discharged, and a very general cargo loaded for that port, consigned to J. D. Spreckels & Brothers. The largest item was 12,000 casks of

cement. The other commodities, ranging from two or three cases to 500 consisted of beer, cocoa, chalk, coke, earthenware, empty bottles, furniture, household effects, jute yarn, liquor, mustard, sardines, shells, show cards, spirits, vermouth, whiskey, wine, and "oilmen's stores." The BALCLUTHA sailed from London on May 5, 1897, and arrived in San Francisco on September 24th, 143 days later. This was to be her last passage between Europe and that port. Her times had been notably consistent. On five outward passages westbound around Cape Horn, she had taken from 132 to 145 days. The record between Europe and San Francisco was probably set by the clipper ship YOUNG AMERICA in 1872-73, when she took only 96 days. It was almost equalled by a passage made by the British iron full-rigged ship MERIONETH. One of the slower passages was made by the steel bark LORD TEMPLETOWN, built in the same year as the BALCLUTHA, which took 201 days in 1895.

Twelve seamen deserted at San Francisco this time. The BALCLUTHA loaded 58,572 centals of grain, and sailed on November 18th. She called at Falmouth, England on April 2, 1898, where she received orders to proceed to Le Havre, France to discharge. She arrived at that port on April 9th. Once the cargo was out, she left Le Havre on May 22nd in tow for Greenock, Scotland, her first and only visit to the region of her birth. In 1955 William A. Henderson, Secretary of the Shiplovers' Society of New South Wales, Australia, interviewed a Walter Mason who had been on the ship for that tow. He reported on the interview in a letter to Karl Kortum.

> Le Havre in those days was a sink of iniquity; thugs, robbers, crimps and every other kind of the worst underworld people. Mason and five others had just paid off from the 4-masted bark GLAUCUS after serving 15 months in her. Finding Le Havre in such a state they wanted to get away as soon as possible. Hearing of BALCLUTHA they went and saw Captain Durkee, who met them at the ship's side. He pointed out that he only wanted them for the passage across the Channel, that food would be on the scantiest scale for the three days or so. However they jumped at the chance to get away and joined the ship. There was no signing on, just an arrangement to take the ship across. They received no pay for on account of the hazing they got from the only mate plus the rations, they were glad to leave the ship on arrival. 'Deserters' was evidently placed against their names as was usual in those days when crews were hazed and left the ship without pay. Mason having his GLAUCUS pay almost intact did not mind much. They did not desert, simply walked off the ship, on arrival at Greenock. (Mason)

found her a really hard ship. The only mate, a Nova Scotiaman a real driver of the first water. He had his wife aboard. The tug was COLUMBIA owned by Watkins of London. Mason was at the wheel. A sudden lift in the fog enabled the tug skipper to see for a moment the Holyhead mail boat heading right between the two vessels. He immediately blew three blasts and went astern thus leaving a little slack in the line. The mail boat picked up the line on her stem, but pulled up in time to keep her propeller clear. A close shave for all three vessels.[71]

The BALCLUTHA sailed from Greenock on June 23, 1898 for Montevideo, Uruguay, where she arrived on August 8th. She left there on October 4th, and arrived in Calcutta, India on December 6th. Mrs. Durkee recalled that the cargo loaded there was "gunny bags." A major cargo picked up by sailing ships in ports of the Bay of Bengal was jute, a vegetable fiber used in making rope or burlap bags. When the BALCLUTHA left Calcutta around February 4, 1899, she had on board an Indian midwife. On March 11th, Mrs. Durkee gave birth to a daughter who would be christened Inda Frances Durkee. The day after the ship's arrival in San Francisco one of the papers carried a brief item on the birth headlined, "BORN AT SEA ON THE BALCLUTHA, Captain Durkee's Daughter Rocked in the Cradle of the Deep."

May 27 - The British Ship Balclutha arrived in port to-day bringing a passenger not recorded on her sailing list from Calcutta. The passenger was a girl baby, born at sea to the wife of Captain Durkee. Miss Durkee made her appearance on board on March 11th, while the vessel was crossing the Indian Ocean. The baby will be christened India (sic) Frances Durkee; India because she was born on the Indian Ocean, and Frances for San Francisco, the ship's port of destination. On March 17th the Balclutha passed a ship's life buoy. On the following day she sailed through a lot of wreckage, among which were several spars with rigging attached. It was too rough to make an investigation. It was thought that the wreckage came from some vessel that was lost in the big storm off the Australian coast.[72]

On June 23, 1899, while she was in port at San Francisco, the BALCLUTHA was sold by Robert McMillan to Herbert Charles Oswald of 10 Fenchurch Avenue, London. John Lyman believed that Oswald was only acting on behalf of J. J. Moore & Company of San Francisco. An Act of Congress of 1852, passed to protect our shipbuilding industry, excluded all ships built in foreign shipyards, or built with materials produced in other countries, from American registry unless they had been wrecked and rebuilt

in United States yards at a cost equal to three-quarters of their original price. American shipowners, particularly those engaged in the California grain trade, had been encountering what they felt was unfair discrimination against their wooden-built sailing ships in the setting of insurance premiums and freight rates. Hawaii had been annexed by the United States in 1898, but the separate Hawaiian registry for ships had not been abolished. Some west coast shipowners hoped that by placing favored British sailing ships under Hawaiian registry they would eventually be automatically transferred to United States registry. On August 8, 1899, just a month and a half after the first sale, the BALCLUTHA was sold a second time to L. D. Spencer, a Hawaiian citizen. On the same date, she was granted a provisional Hawaiian registry by the Consul General of that nation in San Francisco.[73]

When this change of registry took place, the BALCLUTHA was at sea, enroute to Port Townsend on the west shore of Washington's Puget Sound. The Durkees were no longer on board. Captain Durkee had apparently been replaced by Captain George Alfred Hatfield. Captain Durkee subseguently commanded the British steamers BARON GLAMIS, BARON CAWDOR and VORTIGERN, the latter from 1904 to 1908 for Robert McMillan. He then retired to Haverhill, Massachusetts, where he went into manufacturing for the shoemaking industry. He finally retired in 1933, and died five years later at the age of 78.[74]

In the Pacific Lumber Trade

In 1955 John Lyman wrote,

> The West Coast lumbermen at this time were in the market for suitable tonnage to carry lumber to Australia, where the great Broken Hill mine at Port Pirie was consuming vast quantities of mining timbers. Within a few years, enough large wooden schooners and barkentines would have been built on the West Coast to handle this movement; but in 1899 the shippers had either to charter or buy. And so when BALCLUTHA came on the market at a reasonable figure, they snapped her up. The operators of the Port Blakely, Port Ludlow, and Port Gamble sawmills on Puget Sound were the chief backers of the new ownership of BALCLUTHA, working through the firm of J. J. Moore & Co., of San Francisco, who acted as brokers in selling the cargoes to Australia and also loaded the vessels with coal on the return trips through a contract with the Southern Pacific Railroad, which had not yet converted to oil burners.[75]

The BALCLUTHA arrived in Port Townsend, Washington on August 15, 1899, and proceeded from there to Port Blakely, where she loaded 1.5 million feet of Oregon pine (Douglas fir). She sailed from Port Townsend on September 30th for Port Pirie, Australia, and arrived at that port 108 days later on January 16, 1900. After discharging the lumber, she left Port Pirie in ballast on February 14th. On the first of March she arrived in Newcastle, New South Wales. She sailed from Newcastle just 26 days later, bound for San Francisco with a 2608 ton cargo of coal. Her captain on this passage was George A. Hatfield.

Captain Hatfield was also a native of the Yarmouth region of Nova Scotia. He was born on November 29, 1838, and received his master's certificate at Glasgow in 1862. His first command, received the same year, was the ship SAGUENAY. In 1888, and again in 1896, he had command of the iron four-masted full-rigged ship LANCING.[76] The LANCING was a conversion, having originally been the French transatlantic liner PEREIRE. She was considered one of the faster of the latter-day sailing ships, and was not broken up until 1925. Gavin Craig, who offered useful advice on the restoration of the BALCLUTHA in the 1950s, first went to sea in this vessel in 1921.[77]

When George Hatfield took command of the BALCLUTHA, he had with him as mate his son Herbert Huntington Hatfield. Herbert's

wife was along on the 1900 passage from Newcastle to San Francisco. While at sea on May 14th, she gave birth to a son, Charles H. Hatfield. In the 1950s Karl Kortum corresponded with Charles Hatfield, and with a daughter of Herbert Hatfield, both living in the New York area. Neither person was still living at those addresses by 1988.

On June 9, 1900 the BALCLUTHA arrived in San Francisco, 74 days out of Newcastle. She sailed from there on July 7th, and arrived at Port Blakely on the 28th, by way of Port Townsend. On August 2nd she was sold by L. D. Spencer to the Pacific Colonial Ship Co., a San Francisco corporation also acting for J. J. Moore & Co. On August 23rd she sailed from Port Blakely with 1,535,021 feet of lumber. She arrived at Port Pirie, Australia on November 19th, after a passage of 80 days. After discharging the lumber, she departed Port Pirie on January 12, 1901, and arrived at Newcastle, New South Wales the 29th of the same month, where she loaded 2621 tons of coal for the return passage across the Pacific.

The BALCLUTHA spent two and a half months in Newcastle. While she was there, her final transfer to the American flag was being debated in the United States Congress. The special Senate bill had been introduced on January 12, 1901 as S 5542, and the House of Representatives bill on January 14th as HR 13530. The Senate Committee on Commerce reported the bill out favorably on February 19th, noting that the BALCLUTHA was the only vessel to have come under Hawaiian ownership since annexation on August 12, 1898 that had not been granted United States registry. The House Merchant Marine & Fisheries Committee reported their bill out favorably on February 25th. The Senate abandoned their bill in favor of the House version, which was passed by both bodies on March 2nd, and signed by President McKinley the following day.[78] The BALCLUTHA sailed from Newcastle on April 15, 1901 for Honolulu, where she arrived 48 days later on June 2nd. On the 19th of that month she was enrolled as an American ship, with San Francisco as her home port. According to John Lyman, the BALCLUTHA was the last vessel to fly the Hawaiian flag at sea.

The same day the BALCLUTHA was enrolled as an American vessel, the Coast Seamens' Journal published in San Francisco by the Sailors' Union of the Pacific, ever vigilant for cases of mistreatment of seamen, carried the following; "The ship Balclutha recently arriving at Honolulu from Newcastle, N.S.W. is reported to have had a case of cruelty aboard. First Mate H. Hatfield and Second Mate Joseph Johnson are charged with assaulting Olof Endlen, the ship's carpenter."[79]

The new enrollment replaced the provisional Hawaiian registry the BALCLUTHA had been granted by the Hawaiian consul general at San Francisco on August 8, 1899. Enrollment only covered trading between United States ports. On July 1, 1901 the BALCLUTHA was inspected at Honolulu for United States registry, which would qualify her to operate in foreign trade. That registry was granted the following day. On July 3rd the BALCLUTHA, now flying the stars and stripes at sea for the first time, sailed from Honolulu for Puget Sound. She arrived at Port Blakely on July 23rd, and shifted to Port Gamble, another lumber mill port, on August 17th. She sailed from Port Gamble with 1.4 million feet of lumber on September 3rd, calling at Port Townsend three days later to clear at the Custom House.

On November 23rd the Argus of Melbourne, Australia reported:

> The American ship BALCLUTHA which signalled for medical assistance when entering the Heads on Friday evening, arrived in Hobson's Bay in tow of the tug RACER on Saturday morning. The services of a medical man were required for Captain Hatfield, who became ill during the voyage, but his indisposition is not serious enough to cause uneasiness. Captain Hatfield is accompanied by his wife, whilst his son is mate of the ship and brought her to port. The BALCLUTHA left Port Townsend on the 7th September, and met with ordinary weather until about 10 days ago, when she encountered a terrific E.N.E. gale, accompanied by furious squalls of rain and hale (sic). Lightning, said to be the most vivid ever seen by those on board, was also experienced. The storm veered round finally to the south-west, but its duration was brief, lasting only about an hour and a half.[80]

In spite of the optimistic report of the Argus, Captain Hatfield died from his ailment, which was apparently a stroke. A second J. J. Moore sailing vessel, the STAR OF ITALY, was in port at the time, commanded by Captain George Wester. Captain Wester took charge of the BALCLUTHA, while his mate, B. Bremer, took the STAR OF ITALY north to Newcastle. The BALCLUTHA had also been chartered to load coal at Newcastle, the terms of the charter requiring the vessel to be at that port by the end of the year. By the time most of the cargo had been discharged, Wester realized there was little chance of getting to Newcastle in time under sail, and hired the Australian seagoing tug ADVANCE to tow the ship there. Unfortunately, the ADVANCE did not get away from Sydney until December 21st, and then had to shelter from heavy weather in Twofold Bay. She did not arrive in Melbourne until December 26th. The ensuing tow probably set an Australian

record. The ADVANCE left Melbourne with the BALCLUTHA at 1 A.M. on December 28th, and arrived at Newcastle at 5:40 P.M. on December 31st, with less than seven hours to spare.

The BALCLUTHA had one passenger on this brief passage, a nine-year-old boy named Frank Paul who had talked his parents and Captain Wester into letting him make the trip on his Christmas vacation from school. Frank Paul dictated his recollections of the experience to Karl Kortum over fifty years later, while living in Salinas, California. His family, provisioners for ships in Sydney, had gotten to know Captain Wester as a frequent guest in their home. The captain courted and married one of Frank's aunts, who was also courted by his mate Bremer. Frank Paul joined the ship at the wharf where she had discharged her lumber cargo.

> I remember that she was black painted at that time and as I recall had a donkey engine. BALCLUTHA had discharged well up the Yarra River because when the time came to tow down to Williamstown I had the impression that I could reach out and touch either shore. We anchored off Williamstown and waited a couple of days for the arrival of the tug. There were eight men on board in all, the Captain, the cook, myself and five seamen. There were no officers and none of the original crew -- the Captain was pleased to be rid of them at their American rate of pay of $ 25.00 per month. The Melbourne men he signed on for the run joined at 2 pounds 10 shillings. We were four days at sea, and in spite of being very few on board, set the topsails as well as the fore and main course when the wind gave us a good slant. Captain Wester slept in the chart room; this may have partly been because Captain Hatfield's effects were still in the Captain's quarters.
>
> The weather held fair during the four days we were at sea, but as we approached Newcastle one of those characteristic storms of the Tasman Sea, a southerly 'buster' was seen coming up fast. Captain Wester was anxious, because of the few men aboard, to lose no time getting the pilot aboard and the ship into port. The BALCLUTHA towed to the ballast wharves which were well up the Hunter River. These were small temporary wharves purely for the purpose of accommodating the hundreds of sailing ships that arrived in Newcastle in ballast. The ballast was discharged by crane into railroad trucks, which proceeded a short distance away and dumped their loads to fill the marshlands. The usual practice was to discharge most of the ballast at these wharves, shift down the harbor to load a

certain amount of coal, and then return to the ballast dock to discharge the remainder of the ballast.[81] [This would have been done to provide the ship with some stiffening, before the last ballast was removed.]

When the BALCLUTHA had loaded her cargo, 2138 tons of "East Greta" coal, Captain Wester turned the ship over to Bremer, and resumed command of the STAR OF ITALY. Frank Paul remembered Bremer as, "...a pleasant man...a German, red-haired and ruddy complexion, a little gray at the temples." Bremer sailed from Newcastle on January 12, 1902, and arrived in San Francisco on March 19th, after a passage of 65 days. On the 31st of that month the BALCLUTHA was chartered by the Alaska Packers' Association of San Francisco.

In the Alaska Salmon Packing Trade

The Alaska Packers' Association was the best-known of several firms engaged in the operation of salmon canneries at remote locations in southwest Alaska. The canneries were operated seasonally, serving as bases for fleets of open sailing and rowing boats from which the fish were caught. Founded in 1893 by Henry Fortmann, who amalgamated twenty-five existing canneries, the Association at first chartered large sailing vessels to transport supplies, fishermen and cannery workers north each spring, and return each fall with the canned salmon. Wooden sailing ships built in New England had been employed initially, but by the turn of the century the Association was beginning to favor the more easily maintained British-built iron and steel sailing ships made available by the annexation of Hawaii. Ships employed solely in this trade spent very little time at sea. The BALCLUTHA's voyages for the remainder of 1902 are typical. Still commanded by Captain Bremer, she sailed from San Francisco on April 8th for Loring, Alaska, where she arrived just sixteen days later. She lay there for over six months, finally sailing for San Francisco on November 2nd. On the homeward passage she was at sea only twelve days.[82]

Once again we have a first person account of the voyage, sent to Karl Kortum in October 1956 by Moses Poyfaire, then living in Eureka, California. Poyfaire recalled,

> One day late in March 1902 I happened to meet a boyhood friend, J. R. Heckman, Superintendent of the cannery in Loring, Alaska, who prevailed upon me to go to Loring in his employ for the summer, the wages were to be $ 50.00 per month. Our transportation was to be the ship BALCLUTHA. As I remember, her hull was quite dark in color, a sort of drab, her housing a dull white probably dull from the severe beating she encountered on her many trips across the ocean. She was equipped with a steam donkey engine which was used in loading and unloading cargo.
>
> She sailed from a pier about six or seven blocks south of the Ferry Building at about 4 P.M. in tow of the tug Monarch. The officers in charge were Capt. Bremer, First Mate Fred Wilkie, Second Mate William Rusten. Beside the crew of sixty sailors and fishermen who worked the ship, there were several cannery workers and clerical men, also about 160 Chinese and Japanese. The crew occupied the regular quarters forward, the workers and clerical force had

bunks aft, and in the sail locker, the Chinamen and Japs were quartered in the hold amidships on top of about 2,000 tons of coal the ship had aboard, having brought it from Australia. On the way out in tow of the tug the crew was called aft to the Captain's quarters where they "spliced the main brace," (probably a shot of rum or whisky), then had dinner, after which they proceeded to prepare the ship for sailing, setting the sails etc. so that when the tug dropped us she would be on her own. When out beyond the Faralones the tug left us and proceeded back to S. F. probably to take another tow.

We had very nice weather on the way up, only one or two squalls, and spoke but one ship, a little single topmast schooner on her way to the Bering Sea after codfish. After 14 days we arrived off Dixon Entrance, S. E. Alaska, and was taken in tow by the little tender NOVELTY about noon and was towed up Clarence Straits, arriving at Loring the next morning. Loring cannery was situated on Naha Bay amidst a beautiful setting of evergreens such as spruce, ferns, salmon berry and blue or huckleberry bushes, all of which seemed to grow out of crevices in the rocks that were predominant in that country.

BALCLUTHA was tied up to the Dock where she remained all summer. After unloading the ship the men scattered around on different jobs, repairing nets and boats, and general repair work about the place. The Chinese and Japs making boxes, and preparing the cannery for the season's run, which was due a few months later. Capt. Bremer remained aboard the ship all summer, First Mate Wilkie acted as mate and pilot on one of the tug boats, Second Mate Rusten did carpenter work around the plant, my friend Fredricks worked as fireman on the tug boat KAYAK. During the summer, the sailmaker, Mr. Rasmussen, made a complete set of sails for her ladyship. While unloading the ship my duty was checking the cargo consisting of supplies for both whites and Chinese, also pigs of lead and tin for solder, lumber, and the coal the Packers had purchased when they chartered the ship.

In the early part of the season the ship carpenter and crew constructed several arks or house boats that were towed to the different fishing grounds to house the fishermen. Large seines were used at that time as I do not believe that traps had come into use. The Company had three or four tenders to pick up the catch for the cannery, and to tow the different outfits from one place to another. During the

height of the season these boats would come in to the cannery with all the way from two to three hundred tons of fish. During the summer the little ship INDIANA dropped in from further north and picked up a few thousand cases of our first pack and proceeded to San Francisco.

Finally after a busy season, much of which I enjoyed, we sailed for home. Upon leaving Loring we were towed to the Dixon Entrance by the tug KAYAK (which) left us and also proceeded to San Francisco. The trip back was without incident except for a burial at sea. The Chinese being a very superstitious people would not allow one of their race to be buried at sea, but would send them back to China, or bury them where they would be taken up later and sent home. Captain Bremer prevailed upon the Chinese boss to have the burial at sea under the pretense that we would be quarantined in port for some time. To sink the body a sack of coal was attached by a piece of small rope about ten feet long. When the pall bearers tossed the body overboard the ones holding the coal failed to cast it and the rope broke allowing Mr. Chinaman to go bouncing along over the waves for with all his wrappings he would probably float for several days, however they then threw the coal overboard after him, considering it a bad omen. After a very fast trip arrived in San Francisco, having been taken in tow by a Red Stack tug off the Farralones.[83]

The BALCLUTHA was apparently laid up in San Francisco Bay that winter, probably at the Association's yard in Alameda. On April 24, 1903, she was registered at San Francisco, the majority owner listed as Puget Sound Commercial Company of Port Gamble, Washington, with 2158 of 4300 shares. The P. S. C. Co. was a subsidiary of Pope & Talbot, a major firm in the West Coast lumbering industry. The BALCLUTHA sailed from San Francisco on April 25th for Ladysmith, British Columbia, where she loaded coal for the canneries. She arrived at Karluk, on Kodiak Island, Alaska on May 13th. In June she sailed south to Nanaimo, British Columbia, another coal port, and from there to Port Townsend, Washington. She returned to Karluk on August 30th. Her final homeward passage at the end of the salmon fishing season was completed at San Francisco on October 16th.

The BALCLUTHA sailed from San Francisco for what would have been her third season in Alaska on April 27, 1904. This passage came very close to being the end of her career. Francis J. Sommer, a seaman in the ship at the time, was interviewed at his home in Vallejo, California in November 1955. As reported by the interviewer, Roger Olmsted, he remembered vividly the ship's

arrival on the coast of Alaska on May 16th, fifty-one years before.

The ship was running before the wind. Wind and sea were moderate but visibility was poor because of a light haze. The watch below was called out to shorten sail just before midnight. Soundings showed that the ship was nearing shore, and Capt. Bremer was apparently unsure of his position. Sommer was on the upper topgallant yard when the lookout called out that he had land in sight. Almost immediately the ship struck a submerged reef. She struck very hard and started to take up a list to starboard. The watch came down the backstays in a hurry. For the first few minutes after the ship struck it seemed incredibly still, probably this was only for a few seconds, but it seemed much longer, then the Chinese started screaming.

BALCLUTHA carried a deck load of livestock, cows and bulls, sheep, pigs, and between the pens and the fishermen's boats there was little deck space left to work the ship. The watchmen, fearing that the Chinese would swarm on deck and make it impossible for the crew to get the boats out, barred the companionway. The Chinese, locked in the tween-decks and only aware that something had happened to the ship, set up a terrible howl. Very soon the list increased to about 45 degrees, and the crew feared that the ship would roll over, water was rising in the hold. From the first it seemed clear that it would be necessary to abandon ship. The reef was about a mile off shore. The first thing done was to knock down the pens and get the animals over. The cattle and sheep got ashore, but the pigs drowned. (Around 1945 a navy captain told Sommer that cattle were still living on Chirikof Island.) The fishermen were no help, for they proceeded to get drunk, but at least they did not hinder the operation too much, for they finally got ashore in their own boats.

The boats were put out very quickly - everything considered - and the main problem became the rescue of the Chinese. They could not be allowed out of the 'tween decks as a group, because they were completely panic-stricken, but had to be let out one by one. It was necessary to tap a few of them on the head to keep the rest from trying to burst out on to the deck. It took all night to get everyone ashore. The first boat, which tried to land on what appeared to be a partly-submerged reef between the ship and the shore, upset, it turned out to be a rock with deep water all around.

> They set up housekeeping on the beach, going back to the ship the next day to bring off more provisions and sails to make tents out of. There was plenty of fresh water nearby, and altogether they were fairly comfortable. The captain called for volunteers to take a boat to Karluk to get help. He did not go with the boat. When they got to Karluk they found the monthly steamer in port. The steamer went to rescue the rest, and it took several trips to bring them all to Karluk. Benkofski the superintendent at Karluk, wanted the BALCLUTHA's crew to work there for the summer, but they refused. Sommer went home by way of the steamer and various other vessels. It took quite a while to get back to San Francisco.[84]

An item in a San Francisco paper of May 27th, illustrated with a rather bad sketch of BALCLUTHA by F. A. Coulter, reported the wreck and stated that the ship was expected to be a total loss. It also said that the ship had intended to call at Ladysmith on the trip north, but because the weather was unfavorable had proceeded directly to Alaska. "Turning back is to some superstitious minds an invitation to the gods of ill luck. The BALCLUTHA had barely cleared the coast off this port when two women stowaways were discovered hidden away in the forecastle. Captain Bremer turned back and off the port transferred the women to a pilot boat, on which they were brought to Meiggs wharf."[85] One would like to know more about this incident. The foc'sle would not be an easy place to hide. Were the stowaways disguised as men, or had members of the crew smuggled them on board?

In his official report of the wreck dated May 25th, Captain Bremer assumed the ship could not be salvaged. However, in the meantime the superintendent of the cannery in Alitak forty miles away, Billy Munn, had visited the BALCLUTHA and felt something might still be done. Acting as representative of the Alaska Packers Association he offered Captain Bremer, as representative of the owners Pope & Talbot, $500 for the ship as she lay, and Bremer accepted. Captain Gus Green was sent from Karluk with a crew and lighters to salvage the supplies that had been bound for there, and to lighten the ship further for an attempt at refloating. The rig was removed down to the bare masts, temporary patches were placed over the holes in the plating, and the hold was filled with empty barrels to keep her afloat once she was off the reef if the pumps were inadequate.

"Spring tides" are tides of greater range that occur at full moon or new moon, when the pulls of sun and moon supplement each

other. BALCLUTHA was successfully refloated on a spring tide in late July, and towed to a sheltered cove off Alitak Bay. There were no shipyard facilities in Alaska capable of making permanent repairs to the vessel. In spite of the need for frequent pumping out of her hull, Captain Green decided to sail the ship to San Francisco. BALCLUTHA was rerigged during September, and on October 3rd weighed anchor and was towed to open water by one of the cannery tenders. While she was still under tow, the mate fell from the tweendeck into the lower hold and was badly injured. Green put to sea with no replacement for the mate, and only fourteen men in his crew. The pump was run continuously by a rope messenger to the donkey engine, but the leaking increased, and soon it began to lose ground to the inflow of water. The weather was also deteriorating. The crew refused to sail the ship any further, and Captain Green reluctantly turned back.

BALCLUTHA spent the winter anchored in an Alaskan cove with Green and another captain named Jackson living on board. Captain Nicholas Wagner came north in May on the bark LEVI G. BURGESS with a crew to resume work on the ship. On June 5th the steamer ALITAK was used to push the BALCLUTHA up on a gravel beach where her bottom plating would be accessible at low tide. After patching had been done on one side the ship was turned around and beached again starboard side to the shore. Anchorages called deadmen were buried in the beach to which were led heavy tackles from the upper masts. The tackles were used to heel the ship over further. By this means, and through a pit dug under the hull, all the damage was eventually made accessible from both sides and solidly patched using layers of pine planking, sheet lead, canvas, oakum, and white lead. The rivets were driven out and bolts substituted to draw the edges of the plates together over this caulking material. The ship was refloated, re-ballasted, and rerigged a second time. A crew was signed on, and on July 13, 1905, the ALITAK towed the BALCLUTHA out into the Shelikof Strait. During the twenty day passage to San Francisco the hull leaked very little.[86]

BALCLUTHA arrived in San Francisco on August 7th, and went into the United Engineering Works shipyard in Alameda for permanent repairs on September 14th. On February 10, 1906 the ship's name was changed by Act of Congress to STAR OF ALASKA. The Association had acquired four iron sailing ships, built in Belfast, Ireland and owned by J. P. Corry & Company of that town, whose names were STAR OF FRANCE, STAR OF ITALY, STAR OF RUSSIA and STAR OF BENGAL. They had decided to rename the other metal-hulled vessels in their fleet to conform to this system. The former BALCLUTHA sailed from San Francisco on her first voyage as STAR OF ALASKA on March 27, 1906 under the command of Captain

Wagner. On April 18th, one day before she arrived at Chignik, Alaska, San Francisco was devastated by the great earthquake and fire of that year. The STAR OF ALASKA left Chignik on the return passage September 7th, and arrived at San Francisco the 22nd of the same month.

The STAR OF ALASKA sailed to the Chignik salmon cannery every year from 1906 to 1929, leaving San Francisco in March or April, spending the summer months in Alaska, and returning to San Francisco in September or October. Winter months were spent laid up at the Alaska Packers' yard in Alameda, except for a five week voyage to Bellingham, Washington in February and March 1908 to load 234,000 feet of lumber and 180,000 salmon box shooks; and a two month voyage to Honolulu under charter to the United States Shipping Board from December 1917 to February 11, 1918 for a cargo of sugar. In 1925 she was towed from Chignik to Alitak to complete her cargo there before returning to San Francisco.

The only major change in the deck layout of the ship during her active career was made by the Alaska Packers Association during the winter of 1911-1912, when they extended the poop 68 ft. 8 inches to add further accommodations. A drawing of the interior layout of this space done by Captain Bertoncini, who commanded the ship in 1925, shows the original passageway leading to the officers' staterooms extended forward. As one enters the forward end of this passageway the first rooms on the right are occupied by the mate, and the second and third mates. The third room is a toilet, followed by rooms for carpenters, a steward and baker, and engineer and machine tender, a blacksmith, and finally another toilet. On the starboard side is a large room for 86 fishermen, and smaller ones for a cook and three messboys, two laborers and a watchman, and the ship's hospital. One of the original mates' staterooms is shown as a radio room.[87]

There are brief notes on work done on the ship every year from 1905 to 1930, recorded by the Alaska Packers Association. Drydockings are shown during the winters of 1920-21, 1925-26, 1928-1929, and 1929-30. Electric lighting was installed in 1923-24. Between October 23 and December 12, 1911, while the ship was at the United Engineering Works yard, four portholes were installed on each side of the tween deck to provide light for the Chinese cannery workers quarters. The notes also give the years the berths in these quarters were rebuilt, various spars were replaced, decks or ceiling planking were renewed, and machinery was overhauled.[88]

The logbooks of the STAR OF ALASKA from 1904 to 1930 were saved by the Alaska Packers Association and given to the Maritime

Museum in 1954 at the urging of maritime historian Harold Huycke, as part of a donation of 526 volumes covering most of their ships from 1876 to 1945. Recollections of several more people who sailed in the ship during this period were collected by Harold Huycke in the 1940s, and Karl Kortum in the 1950s. One of the people who sailed in the STAR OF ALASKA in 1925 was the well-known American marine artist Gordon Grant, who based many of the drawings in his book Sail Ho! published in 1931 on the ship. In 1955 Grant sent the Maritime Museum a collection of photographs he had taken on the voyage showing primarily details of the vessel's deck layout.

The Alaska Packers Association began disposing of their sailing ships in the 1920s. The first to go were the wooden vessels, several of which were taken to Southern California for use in movies, usually as expendable props. The smaller iron sailing ships went next. Some of these made trips across the Pacific to islands where they saw further use as storage hulks. One, the STAR OF INDIA ex-EUTERPE, was taken to San Diego to serve as a museum ship. After losing much of her rig and falling into general disrepair, she experienced a rebirth and complete restoration in the 1960s in part inspired by the success of the restoration of the BALCLUTHA. The Association sent its last ships north under sail in 1929. The following year the only sailing ship in the active fleet was the STAR OF ALASKA, but she was towed north by the steamer ARCTIC and returned in tow of the steamer KVICHAK. Her career as an active working sailing vessel had ended the previous October 23rd when on her return passage from Chignik she had been taken in tow by the steamer CHILKAT at 6:45 in the morning two days short of her arrival at San Francisco.

The Alaska Packers Association operated the last fleet of deepwater sailing ships under the American flag. They began to buy large steamers to replace the sailing vessels in the mid-1920s, and ran them through World War II. But, as of the end of 1930, their remaining sailing vessels were permanently laid up at the yard in Alameda available to anyone interested in purchasing them. A few of them did see further service carrying cargo. The most active of these was the other product of the Charles Connell & Co. shipyard on the Clyde River. The STAR OF GREENLAND ex-HAWAIIAN ISLES sailed through the 1930s, primarily in the Australian grain trade, as the Swedish cargo-carrying training ship ABRAHAM RYDBERG. The last to put to sea with a cargo under her original rig was the STAR OF FINLAND ex-KAIULANI brought back into service by the demand for neutral shipping prior to our entry into World War II. She was at sea bound from Gray's Harbor, Washington to Durban, South Africa, preparing to

round Cape Horn, when Pearl Harbor was bombed. Among her crew at the time were several young men from the San Francisco Bay area who would later be actively involved in the restoration of the BALCLUTHA, including the future founding director of the San Francisco Maritime Museum, Karl Kortum.

PACIFIC QUEEN, "Ark of Nautical Curiosities"

In 1930 there was little demand worldwide for deepwater sailing ships. In addition to the idle Alaska Packers Association ships at the foot of Paru Street in Alameda, there were several similar vessels moored in Oakland Creek. Seattle's Lake Union was thick with the masts of other idle fleets. The Australian grain trade was still active, carried on by Finnish, Swedish, and German vessels. Only two of the west coast sailing ships would end up in this service, the STAR OF GREENLAND already mentioned, and the four-masted bark MOSHULU from the idle Charles Nelson fleet in Seattle.

While there was little market for the ships as active sailing vessels, there was also apparently little interest in them as potential scrap metal on the Pacific Coast. When three of the ships were finally purchased for scrap it was by the Japanese, who sent crews over to sail back the four-masted barks STAR OF SHETLAND, STAR OF LAPLAND, and STAR OF ZEALAND between 1934 and 1936. The STAR OF ENGLAND was one of several sailing ships on both coasts purchased for projected "round-the-world cruises," none of which took place. She was resold for conversion to a log barge in British Columbia. The STAR OF FRANCE and STAR OF SCOTLAND were acquired to serve as floating platforms for people to fish from, anchored off the coast of southern California. In 1938 the latter vessel was renamed REX and anchored beyond the three mile limit fitted out as a gambling casino. This may be the most ignominious fate to befall one of these once proud ships, but it kept her alive long enough to be put back into service during World War II rigged as a six-masted schooner. The fate that befell the STAR OF ALASKA, ex-BALCLUTHA, was unique and not without its ignominy, but it also kept the ship alive for a crucial twenty-one years to be available for preservation by the San Francisco Maritime Museum in 1954.

After three years laid up in Alameda the STAR OF ALASKA was purchased on September 9, 1933 by Frank G. "Tex" Kissinger of Los Angeles. Kissinger was around 36 at the time, a former carnival performer (riding a motorcycle around the inside of a barrel) and lately the proprietor of a used car lot on Los Angeles' Figueroa Street. He had also been at one point the house detective and bootlegger at the Continental, a hotel frequented by theatrical people. During one late night discussion in the lobby of various schemes for making money, a former sailing ship captain staying in the hotel had declared that the best "show property" would be one of the last full-rigged ships. Kissinger was looking for a

"property," something large numbers of people would pay admission to see. One of his acquaintances, Charles Chrysler, had succeeded travelling around the country with an embalmed whale on a flatcar, until the smell became too bad. Kissinger decided to visit the Los Angeles Public Library and begin reading up on sailing ships.[89]

Shortly before he sold his used car business and bought the STAR OF ALASKA Frank Kissinger married Rose, a former school teacher from the midwest who had spent her savings seeking a new life in California. Frank seems to have been taciturn. Jack McGinty, who got to know the Kissingers in the used car business, and later made the first passage in the PACIFIC QUEEN, says Frank was, "totally dedicated to looking after his own interests...not a man you could get close to."[90] Rose was apparently warmer and more outgoing. She wrote articles on the ship which were published in a number of nautical journals, and learned navigation well enough to teach it during World War II and invent a training aid adopted by the Navy. After selling the PACIFIC QUEEN to the San Francisco Maritime Museum she wrote down her recollections of the Kissingers' involvement with the ship, without doubt the most authoritative account of that twenty years in the vessel's history.

At the outset of their fanciful scheme in 1933, the Kissingers contacted A. K. Tichenor, the president of the Alaska Packers Association, who told them all the sailing ships were for sale. They looked them over and decided the four-masted barks were too big and the STAR OF HOLLAND in too poor condition. They liked the STAR OF FINLAND, ex-KAIULANI, but her tweendeck did not have enough headroom. The ship that met their requirements was the STAR OF ALASKA.[91]

Once she had been purchased they began assembling a crew to get her ready to go back to sea. One of the first to arrive was Jack McGinty, a sea-struck lad just out of his teens. McGinty had dreamed of going to sea in a sailing ship but the nearest he had gotten was brief employment on the fishing barge STAR OF SCOTLAND. He was fascinated by the STAR OF ALASKA.

> I explored her from sail locker to lower hold, deck house to cabin, deck to truck. Her beautiful old wheel was covered with layer after layer of fish oil (sic) buff paint. In time to come this was to be removed by Frank Pickard and myself. The brass hub was taken to San Francisco by Rose Kissinger and buffed and polished. I had a brief look at the cabin - bird's eye maple set off with dark hardwood, golden capitals on the pilasters. The original deckhouse

still stood. I looked into the galley, there was a great range. An ancient hand-operated capstan stood on the forecastle head.

The ship's standing rigging was in fair shape. All the running rigging - clew lines, buntlines, braces, etc. - was stored in the tweendecks. Most of it was worn out. But the lamp lockers were filled with brass beauties that would bring a fantastic price today. A Delco lighting system was aboard. The donkey engine, soon to do noble service in distributing the fresh-water sand ballast, looked a bit sad. Messenger chains ran from it to the anchor windlass, so we did not have to use the capstan bars on the foc'sle head and break our backs to lift the hook. The radio room or shack was underneath the poop and looked distinctly World War I vintage.

Below decks, the steel beams overhead were painted with a mixture of fish oil and a reddish pigment. They never seemed to dry, that was a virtue. The old forecastle for the Chinese canning hands was very crude, with rough bunks. Under the foc'sle head were two galleys, one with huge iron pots set in brick for rice cooking. The regular galley was the same as today (following the 1950s restoration) in the deckhouse. For some unknown reason Kissinger had the galley range moved out of this galley and into the Chinese quarters a deck below, port side, and that's where it stayed as long as I was around the ship. The Charley Noble (galley stovepipe) never drew well down there and as I was chief stoker for the darned thing, every morning was a tearful, smoke-filled job until she was warmed up.[92]

The makeshift crew was allowed to work on the ship in the Alaska Packers' yard. Captain Chad Lee, who had originally recommended acquiring a square-rigged ship, was hired to supervise, but he didn't stay long. As Rose Kissinger recalled, "Our methods were decidedly not his methods."[93] A captain Johansen was hired, but he spent a week drunk and was let go. Finally the Kissingers hired Captain Charlie Watts, an experienced shipmaster who had commanded the wooden Cape Horners C.D.BRYANT, W. F. BABCOCK, PACTOLUS, and GREAT ADMIRAL. Captain Watts immediately insisted on additional sand ballast. The ship's color scheme went through another change. McGinty found himself painting the masts and yards oriole red, "The reddest red I've ever seen. The hull was painted silver with aluminum paint and there were dainty blue circles around the portholes. Lights were rigged at the foot of each mast and the red paint scheme aloft was thus illuminated."[94] Tichenor had made the Kissingers

agree not to operate the ship under the Alaska Packers' name. On February 1, 1934 she was enrolled as the PACIFIC QUEEN. When the ship's lifeboats proved to be in poor condition, Tichenor gave her a pair from the STAR OF ENGLAND.

The attraction for the public, in addition to seeing one of the last sailing ships, was to be an aquarium installed in the tweendeck. According to McGinty, Bill Chrysler, another ex-carnival man associated with the project, announced to the press that the ship was to be, "...an ark of nautical curiosities. One hundred tanks filled with strange, weird, and murderous things ranging from sword fish, sea elephants, giant turtles to sting rays, with a few alligators, vampire bats, and boa constrictors thrown in extra."[95]

A carpenter was hired to mount at eye level on sturdy wood bases forty-two 3 ft. by 3 ft. lighted metal tanks along either side of the tweendeck, and a row of eight 7 ft. by 17 ft. redwood tanks down the centerline, all served by an ingenious filtering system in the lower hold. To get the visitors below decks, a ladder was built in the square of the main hatch, and part of the hatch coaming was cut away. Frank Kissinger found a surplus steam calliope from a circus and had it installed on top of the deckhouse.

The Alaska Packers were now beginning to feel they had been hospitable long enough. McGinty recalled, "Kissinger was asked to leave long before he did - that was to be a pattern for years to come in many a berth up and down the coast." Seamen were advertised for, "sailing ship experience preferred," and a crew was selected. Sail was bent, and on February 4, 1934 the PACIFIC QUEEN was towed to sea through the Golden Gate by the tug RUSTLER. According to Rose Kissinger, "When the tug was dropped and the sails began to fill Frank stood looking in awe at the three magnificent spreads of canvas, and then he called to the steward, 'Bring me that gin bottle. This is too much for a country boy.'"[96]

A storm developed the first night out which lasted for three days. McGinty was now experiencing all the seagoing thrills he had dreamed of,

> It began to breeze up and some of the rotten old sails started to blow out. To see a sail flapping to pieces and parts of it sailing through the sky with a pale yellow moon for background - ah, that is the stuff of sea romance - if you are not there. But we were there. We were trying to secure those wildly flapping sails with clewlines that

> wouldn't budge through the frozen blocks scattered throughout the rigging, they went to hell when we hauled on them. We went aloft and out on footropes we didn't trust and tried to furl those sails - or what was left of them - with old, punk gaskets that parted in our hands if we pulled too hard. The ship had been laid up a long time and I don't imagine too much money was spent before that on new gear.[97]

After the storm, three more days were spent tacking through the Santa Barbara Channel. Then they were towed into San Pedro Harbor by the tug AJAX and berthed at Pier 228-A, Terminal Island, next to the Los Angeles fireboat station. Captain Watts returned to San Francisco and Jack McGinty, who had been getting $2.00 a week, left in search of other paying employment. That summer, Captain Watts returned to Southern California on unrelated business and was recruited by the Kissingers to sail the ship up the coast to Santa Monica. Rose recalled, "We spent a glorious summer on the ship (anchored) in Santa Monica Bay, and ran out of money. It was necessary to set about making a living, either with the ship, or without it."[98]

In September they were towed back to San Pedro. There was a seamen's strike in progress, but the officials of the Sailor's Union of the Pacific were sympathetic to the old sailing ship and supplied five men to assist. Moored once more at Pier 228-A, the Kissingers opened the ship to the public, charging a small admission fee at the gangway. Frank Kissinger and an associate, Bob Goodwin, cooked up a plan for a round-the-world cruise. A handsome brochure was printed and advertisements were placed in newspapers as far east as Kansas City. The cruise was promoted both as a way to profitably invest one's money, and an opportunity to sail in "The largest, finest, fastest and safest steel sailing ship flying the American flag - a clipper-built, square-rigged ship - luxurious, fast and safe. No coal, wood oil or gasoline for power. No smell, soot, dirt, dust or gas. No machinery, engines, noise, vibration, rattle or jar. No annoyance, delay, breakdowns or waiting. No danger of fire or explosion."[99]

Seven thousand dollars was raised and three people showed up in San Pedro and moved on board the ship. Frank Kissinger apparently got cold feet and returned the money.[100] The PACIFIC QUEEN's berth was now needed for other vessels. When the Kissingers failed to move the ship, the Port Captain sent a tug to tow her to Los Angeles Harbor's West Basin, home of a motley fleet of laid up craft. She was moored at the bow to a power line pole. According to Rose Kissinger's recollections, during a gale the ship caused a blackout in the City of San Pedro. After

pulling down the electric pole she threatened to go on a rampage through the nearby yacht harbor. "Miraculously the damage caused amounted to only four hundred dollars."[101]

Things were looking sufficiently grim. Then Metro-Goldwyn-Mayer sent a representative to hire the ship to serve as a prop in the filming of "Mutiny on the Bounty." The PACIFIC QUEEN was to impersonate an eighteenth century warship in the background of scenes that were supposed to be taking place in Portsmouth, England. She was towed to Catalina Island and rows of fake gunports were painted on the starboard side. Moorings were placed at the bow and stern so she would not turn her unpainted side to the cameras. Since double topsail yards had not been introduced until the 1850s, the upper topsail yards were hoisted to a more appropriate position midway between the yards above and below. The movie work paid well. It was the first real money the Kissingers had made with the ship since changing her name.

After the filming she was towed back to Los Angeles Harbor. Frank Kissinger now decided to sail to San Diego, to put the ship on exhibition there during the 1935 Exposition. Roy Moyes, who had been first mate under Watts on the passage from San Francisco, was now serving as captain. A sea scout leader from Riverside, California was first mate, and Jerry MacMullen, Marine Editor of a San Diego newspaper, and the man who had initiated the successful effort to save the STAR OF INDIA a decade before, was second mate. Six seamen from the Sailors' Union of the Pacific and nineteen sea scouts were the crew. The trip down the coast took fifty-two hours. There had been a plan to moor the liner CITY OF LOS ANGELES on the San Diego waterfront as a floating hotel for the Exposition, but pressure from local hotel owners led the City Council to refuse that ship a permit. The Kissingers had been counting on the floating hotel to bring people to the PACIFIC QUEEN moored nearby. As it turned out, few people came aboard and the ship's income was disappointing. The world in which Frank Kissinger circulated seemed to have an unending supply of individuals with "sure fire" schemes for making real money. The next one to arrive on the scene was Benny Tate. Tate proposed taking the ship to islands off the coast of Mexico to capture sea lions, which he said could be sold to zoos for as much as $2500 each. He obtained a permit from Mexico to hunt the animals and one from the United States for importing them. Frank Kissinger set about preparing for the expedition. Captain Moyes was hired. Sea scouts were again to be recruited for crew. Jerry MacMullen mentioned the trip in his paper and, according to Rose Kissinger, "A thousand or more boys invaded the ship begging to go."[102] Thirty-one were chosen, most of them between the ages of fifteen and seventeen. It was planned to be

away for from two weeks to a month. At the last moment U. S. Customs refused to grant the ship a clearance because she was overdue for drydocking and inspection. The cost of drydocking the ship, which would have to be done back in San Pedro, was undoubtedly well beyond the Kissingers' means at this point. However, there was a solution. The ship was re-documented as a "licensed enrolled yacht." As such she did not require the inspection.

On the fourth of July 1936 the PACIFIC QUEEN sailed from San Diego for San Geronimo Island, Mexico. After four days of light winds, three long tacks brought them to their destination where Captain Moyes, in what Rose Kissinger later recalled as, "a fine piece of ship handling," anchored between the treacherous Sacramento Reef and the Island. The attempt at sea lion hunting was very short-lived. The first bull they tried to snare in a chicken wire net charged right through it on his way to the shelter of the sea, almost trampling a young sea scout who happened to be in his path. This was enough for Frank. He had no intention of risking the boys any further, and immediately announced that the expedition was over.

No one on board was that eager for the voyage to end. Two weeks were spent on a leisurely sail around the Islands. Then, when they were ready to head north, the weather decided not to cooperate. First they were hit by the tail end of a hurricane, then by five days of dead calm. When the wind returned it was from the north, and stayed there. With food running low, Captain Moyes asked if anyone could operate the ship's radio. The acting third mate, a college student, knew enough about radios to get it operating and send out a message by Morse code. Moyes asked that any ships in the area come to their aid with provisions. They were not able to receive radio messages, but heard that their broadcast had been received by listening to the evening news. The next morning five ships were standing by. The Coast Guard also sent out the cutter PERSEUS with enough food for fifteen days. The PERSEUS took back the boys' letters home, some of which may have over-dramatized the situation. In no time, several worried mothers were petitioning the President of the United States to have the ship towed into port. The Coast Guard then sent out the cutter SHOSHONE. Since no laws were being broken, the ship could not be towed in without the captain's agreement. Having to be towed to port offended Captain Moyes' pride, but he finally gave in.[103] On September 10th, sixty-seven days after leaving San Diego, the PACIFIC QUEEN was brought into Long Beach Harbor.

The ship was used in another film, "Souls at Sea," again as

background in a harbor scene. The sailing ship starring this time in the dual roles of slaver and packet ship was another former fleetmate, the STAR OF FINLAND. The next three years were spent laid up. During this time Frank Kissinger turned down a seemingly endless succession of proposals for use of the ship and offers to purchase her. He was approached by Japanese interests, apparently looking for another sailing ship to scrap. Other people wanted to make her into a gambling ship, a floating nudist colony, a fishing barge, a missionary ship, a training ship, a canteen ship, or use her to transport a circus to Alaska.[104] In June 1939 she was used in Paramount Pictures' "Ruler of the Sea," again as an "extra."

Kissinger finally decided to exhibit the PACIFIC QUEEN during the World's Fair which was opening in San Francisco in 1939. He succeeded in borrowing $5000 from an investor to spruce up the ship, install new exhibits, and have her towed north. The new exhibits consisted of figures of famous pirates and scenes that were supposed to be typical of the era of piracy. Most were below decks, but there was one figure tied to the lower rigging and another hanging from a yardarm. The ship arrived in San Francisco in tow of the tug RETRIEVER on April 22, 1940. She moored at Pier 43 west of Fisherman's Wharf, the same berth she would later occupy for over thirty years as a legitimate museum ship. Opened to the public the day after her arrival, with a loudspeaker inviting the curious to visit the, "Pirate, slave, prison, and torture ship," the PACIFIC QUEEN took in $1400 on the first weekend.[105] After two months the investor was paid back his $5000.

By July 1941 activity on that stretch of San Francisco's waterfront was increasing as the Port prepared for our entry into World War II. The ship was moved to the other side of Fisherman's Wharf, to an abandoned ferry slip at the foot of Hyde Street, a short distance from where she lies today. In the new berth she experienced the surge from swells coming in the Golden Gate which finally led the Federal Government to build a breakwater in 1987. Passing ships could also cause problems. When one Navy destroyer passed at high speed during the War the wake pushed the PACIFIC QUEEN forward, parting one stern line. The strain on another stern line caused it to pull a mooring bitt right out of the margin of the poop, demolishing three feet of the taffrail. The Navy eventually paid for the damages. Four weeks after Pearl Harbor the ship was towed by the Navy to an out of the way berth in Islais Creek.

Frank Kissinger was offered $100,000 for the PACIFIC QUEEN from a New York shipping firm which apparently wanted to return

her to active service, as had been done with the STAR OF FINLAND the previous year under her original name of KAIULANI. He turned the offer down, but told the Government they could have the ship to help in the war effort provided he got her back largely unaltered.[106] For a time there was a plan to use her at San Mateo training merchant marine cadets. The Government finally dropped the idea rather than risk claims by the owner after the War. Various agencies considered confiscating the ship. The War Production Board saw the old hull as a good source of 1600 tons of scrap steel. Then the War Shipping Administration decided she should be converted to a coal barge, even setting the day that the Kissingers would have to leave their floating home. Frank Kissinger made an appeal to Harry Lundeberg of the Sailor's Union of the Pacific, who contacted Admiral Land in Washington. The coal barge project was dropped.[107] The ship was then towed to the mud flats of Sausalito by the Coast Guard, to spend the remainder of the war there.

After the war ended the Kissingers managed to have the ship moved to another location in Sausalito where she was accessible to public boarding. On August 10, 1946 she reopened as an exhibit there. When income was disappointing, Frank Kissinger arranged for a berth in Long Beach and a tow there by the tug SEA WOLF which had a job for the return trip. Over the next few years the ship occupied nine different berths in the Long Beach area, with the Kissingers opening her to the public to try to generate some income whenever possible. By June 1951 the Long Beach Harbor Department was attempting to evict the ship from its latest berth. At the same time, a local group was trying to stir up interest in acquiring the vessel for a permanent tourist attraction. That March the San Francisco News reported interest in that city in having the ship brought back to serve as an exhibit at the new Maritime Museum at Aquatic Park just west of the ship's former berth at the foot of Hyde Street.[108]

Thinking that he had an offer of a tow north for $1800 Frank Kissinger made a number of preparations, including reducing the rig, and reinforcing the bow with cement. In the end the tow cost $3200, but it was decided to go ahead with it anyway. The tug delivered the ship to her old moorings on the mud in Sausalito. According to Rose, "The Bay area was enthusiastic about having the PACIFIC QUEEN back. Reporters and photographers flocked aboard." Frank set about tarring the deck to prepare for the Bay's rainy season. One Saturday afternoon he complained of severe indigestion. Within hours he was dead of a heart attack.

Rose Kissinger was now the owner of the PACIFIC QUEEN, and listed on the ship's papers as master. It was her plan to

operate a restaurant on board. The fore and main lower rigging was replaced with new wire bought before Frank's death, held in place with Crosby clips, called by one generation of sailors "Shipping Board splices." Most of the space under the Alaska Packers' extension on the poop was cleared out to serve as the dining area. "The deck was power-sanded out from several coats of paint and varnished. The steel bulkheads were scraped and given three coats of sparkling white paint. The ship's iron range was removed and a modern oil burner installed. A bar was built of the old ship's timbers long stored in the hold. Ancient ballast tubs were hoisted from the hold and covered with plywood for picturesque tables."[109]

By April 1953 friends were advising Rose to have her own health checked. The diagnosis was high blood pressure, and the doctor's instructions, "Rest, no work and no worry."[110] Rose contacted the San Francisco Maritime Museum to begin negotiations for their purchase of the ship. She was undoubtedly sorry to have to give up the PACIFIC QUEEN. The old sailing ship had been her home and much of her life for almost twenty years, and she and Frank had both developed a real affection for her.

THE SAN FRANCISCO MARITIME MUSEUM

By the midpoint of the twentieth century the United States had a handful of maritime museums scattered along the Atlantic seaboard, the northernmost in Searsport, Maine, and the southernmost in Newport News, Virginia. Of these only Mystic Seaport, located in Mystic, Connecticut, was preserving ships. Under the leadership of historian Carl Cutler, Mystic had in late 1941 acquired this country's last surviving wooden whaling ship, the CHARLES W. MORGAN, retired in the 1920s and preserved through the 1930s aground on the shore of a private estate near New Bedford, Massachusetts. In 1947 Mystic also acquired from the Government the small iron full-rigged ship JOSEPH CONRAD, built as a Danish training ship in the 1880s and last used by our Maritime Service based at St. Petersburg, Florida.

On the Pacific Coast the Zoological Society of San Diego had since 1927 owned the bark STAR OF INDIA, originally built on the Isle of Man off the West Coast of England in 1863. She was intended in 1927 as a museum adjunct to the Zoo, but the museum part had never really materialized. During the Second World War her rig was severely reduced as an alleged hazard to student pilots at a nearby air base. By 1950 she was little more than a dilapidated hulk.

In 1950 the Navy had the oft-rebuilt wooden frigate U.S.S. CONSTITUTION ("Old Ironsides"), built in 1797, on exhibit at Boston. They also had several other historic ships in storage, including the corvette U.S.S. CONSTELLATION, Admiral Farragut's U.S.S. HARTFORD, and Admiral Dewey's U.S.S. OLYMPIA. Historic warships also made up most of the small number of vessels preserved elsewhere in the World.

A number of unsuccessful attempts had been made during the 1920s and 1930s to save ships from the "romantic" age of sail. In 1922 the clipper ship GLORY OF THE SEAS had been proposed to the City of Boston as a permanent memorial to her builder Donald McKay. The effort failed, and she was burned for her metal on a beach in Washington State the following year.

The purchase of the STAR OF INDIA by San Diego in 1927 had been largely inspired by news of a plan to turn the wooden full-rigged ship BENJAMIN F. PACKARD into a museum at New York. The project never materialized, and the ship instead became a decaying amusement park attraction at Rye, New York, until finally taken out into Long Island Sound and scuttled. In 1935 Walter MacArthur, editor of the Coast Seamen's Journal for the

Sailors Union of the Pacific and author of The Last Days of Sail on the West Coast, proposed the STAR OF FINLAND as a museum ship for San Francisco Bay,[111] but the Alaska Packers declined to sell her. Two years later Karl Kortum, then a 19-year-old sea scout, made an attempt to save the three-masted schooner, ex-South Seas barkentine, CITY OF PAPEETE by offering her owner in exchange a railroad barge then serving as the sea scout group's headquarters in Petaluma, California.[112]

Kortum had first become aware of the last sailing ships at the age of eleven, while visiting an aunt living in Oakland, California. From an upstairs window of her house he had his first look at the Alaska Packers' Yard, Fortmann Basin, just three blocks away. The year was 1928, and the fleet still presented a startling forest of masts.[113] By the age of fifteen, sailing ships had become his consuming interest.

In 1935 he applied for a place in the crew sailing the STAR OF ZEALAND to Japan for scrapping. The letter informing him he had been accepted came from the designated captain for the trip, Charles Watts,[114] the same Captain Watts who had commanded the PACIFIC QUEEN for the Kissingers. The local maritime unions objected to the non-union crew, and the Japanese sent over their own seamen to sail the ship.

A month after his unsuccessful attempt to acquire the CITY OF PAPEETE on behalf of the sea scouts, Karl Kortum wrote to the Director of the planned San Francisco World's Fair, proposing that the wooden full-rigged ship ST. PAUL, then lying in Seattle, be restored and brought down to San Francisco for the event. A polite letter came back promising to consider the proposal.[115] As already noted, BALCLUTHA as PACIFIC QUEEN was open to the public in San Francisco in 1939, but not as an official exhibit of the Fair.

In 1941 Kortum finally had the opportunity to make a voyage in a sailing ship. The early stages of World War II had created a market for virtually any vessel that could still put to sea. Among the handful of sailing vessels returned to service was the STAR OF FINLAND, given back her old name of KAIULANI. Kortum was one of several young Californians who signed on as seamen for a voyage from Gray's Harbor, Washington east around Cape Horn with a cargo of lumber for Durban, South Africa. This time the voyage took place. In Durban the ship loaded a further cargo for Sydney, Australia, but diverted to Hobart, Tasmania upon hearing of the United States' entry into the war. The KAIULANI was cut down to a barge by the U. S. Army, and Kortum spent the remainder of the War as second and chief mate on several Army transports

operating in the western Pacific.

Back in Petaluma after the War, he began to think again of the need for a maritime museum which would preserve at least one of the sailing ships that developed the West Coast. One of his shipmates in the KAIULANI had been Hall Newhall, whose brother Scott Newhall was one of the editors of the San Francisco Chronicle. In 1949 Kortum wrote to Scott Newhall with a plan for a maritime museum in San Francisco's Aquatic Park, a WPA-built bathing facility with a "casino" that had become something of a white elephant. "This plan involved a Maritime Museum (in the Casino), preservation of an array of historic ships in the lagoon out front, the Haslett Warehouse building to be made into a railroad museum, an empty field at the foot of Hyde Street to be turned into an old-fashioned plaza and the cable car line to be brought into this plaza and given an old-fashioned terminal there."[116] Scott Newhall liked the idea and got his paper to support it.

"Scott's next move was to lure the publishers of the four newspapers into a room in the Bohemian Club, where over a good lunch they agreed to support the project." Newhall and Kortum, and a reporter named Dave Nelson who Newhall had assigned to expedite the project, then paid a visit to the newly-elected mayor. Their message was, "You've got an empty park and an empty building in the middle of it for which we have a good civic use. A port city should have a maritime museum." Kortum later recalled, "What got us our way with the Mayor was the fact we had all four papers behind us."[117]

A board of trustees for a museum association was put together in early 1950. With the help of many volunteers and some modest donations of funds, the San Francisco Maritime Museum was opened in the Aquatic Park casino building at the foot of Polk Street in May 1951. It was immediately well-received by the public.

In 1952, when the PACIFIC QUEEN towed in the Golden Gate, a delegation from the Museum consisting of trustees Max Lembke, Walter Taylor, and Karl Kortum climbed over her rail to begin negotiating with Frank Kissinger. "The consensus was that the hard boiled carnival man was going to be tough, if not impossible, to deal with. But a month later he was dead."[118]

By 1953 Mrs. Kissinger was offering to sell the PACIFIC QUEEN to the Museum for $75,000. At this point the Museum had little money in the bank. Some of the board members did not feel they were ready to take on a full-sized ship, and some had their doubts about ship-saving in general. Once the PACIFIC QUEEN was

gone there would be nothing left in a comparable state of preservation, with the possible exception of the STAR OF INDIA, to represent the thousands of deepwater sailing ships that had played such a vital role in building San Francisco and the other ports on the West Coast.

In October 1953 Sydney Walton, President of the Museum, appointed a six man ship committee consisting of Captain William Mills, Karl Kortum, Max Lembke, Scott Newhall, Michael Ryan, and Captain T. C. Conwell, "to determine a method by which the ship PACIFIC QUEEN may be acquired by the Museum." Walton noted that the Museum needed a way of producing revenue to meet, "a monthly operating expense of nearly $340" and that the PACIFIC QUEEN had drawn nearly 18,000 paying visitors when she was on exhibit at Fisherman's Wharf in 1940.[119]

> The Ship Committee had their work cut out for them. Dickering with Mrs. Kissinger proved to be as difficult as had been anticipated with her late husband Frank. A year dragged by and in the course of this time she had worn out three negotiators.
>
> The patience of the Board of Trustees was getting thin and the forces against acquiring the ship seized on that fact to consolidate their position. They believed in ship models, not ships -- that's what a maritime museum should concern itself with. The PACIFIC QUEEN acquisition was labelled 'the old derelict project.'
>
> The closest shave the BALCLUTHA had since her wreck in Sitkinak Straits a half century before came in the oak-panelled library of Mrs. Adolph B. Spreckels' mansion on San Francisco's Pacific Heights. The Executive Committee of the Museum had been invited to dinner and to hold a meeting afterward. At the meeting, a chief advocate on the Board for acquiring the ship suddenly urged abandoning the project. There were several steamship company presidents present and they joined in the chorus. The day -- and the ship -- were only saved by a skillful parliamentary maneuver by Scott Newhall. He pointed out that the Executive Committee could not act because the Ship Committee had not as yet given them its report. By this slender thread the negotiations went on.
>
> However, the opponents had shown their hand and more trouble could be expected at the annual meeting of the Board less than two weeks later. (I) persuaded Harry Lundeberg, the militant head of the Sailor's Union of the Pacific, to

> come to stand off the anti-ship forces. Lundeberg, at Frank Kissinger's request, had saved the ship from dismantling during the war and he was not one to be dismayed by steamship company officials. In an eloquent and forceful speech beginning, 'You can't judge the value of a ship like this by her scrap value,' he asked for more time for the Ship Committee. Lundeberg had sailed for years in sailing ships and an affection for them was part of his nature. Nobody in the room was going against him and a breathing space was secured.[120]

The $75,000 price tag for the vessel was still well beyond the Museum's means. With everyone's patience wearing short, Kortum got in touch with Jerry MacMullen, the man who had gotten the STAR OF INDIA to San Diego in 1926. "I telephoned him one night and offered $15,000 for the STAR OF INDIA, explaining that it was partially real interest in a fascinating ship, and partly a device to bring Mrs. Kissinger to her senses. Jerry called the Board of Directors of the Zoological Society together to consider the offer but saw to it that they came to no conclusion."[121]

Kortum then made sure word of these supposed negotiations for the STAR OF INDIA got to Mrs. Kissinger. A mutual friend, Capt. Leighton Robinson, who had once commanded the bark MELANOPE, slipped the word to her.[122] Soon afterward she offered the Museum the PACIFIC QUEEN for $20,000 down and $5,000 on a mortgage. Hugh Gallagher, the Museum president, found twenty leaders in the shipping industry to underwrite the $20,000, and the ship was hauled off the mud of Sausalito Harbor and taken to a drydock at the former Union Iron Works in the Potrero District of San Francisco. There were some anxious moments for supporters of the project as the ship came out of the water. The Museum had retained the option of cancelling the purchase if the hull required over $5,000 in repairs. The hull plating turned out to be remarkably well-preserved.

Karl Kortum drew up specifications for restoring the ship (see Appendix). At this point he had a call from organized labor offering to help with "that ship you've bought." The result was, every Saturday for a year around thirty to forty volunteers, the leaders all skilled union men, showed up to restore the ship.[123] Captain T. C. Conwell set about soliciting donations of services from shipyards and other branches of the maritime industry to support this labor force. The success of the effort was phenomenal. Very little of the cost of the restoration ended up coming out of the scanty resources of the Museum. Shipyards donated space and the use of old compressors and welding machines. Suppliers donated lumber, steel, and paint.

Kortum wrote to Harry Dring, another veteran of the last voyage of the KAIULANI,

> The old BALCLUTHA is receiving not a makeshift overhaul, such as I anticipated we would have to live with, but a first class job. The reason: plenty of labor, plenty of supplies, plenty of time. All the yards have been sent down and a dozen of the yardarms renewed for from four to eight feet (Pacific Coast Engineering Co. rolled the ends and half a new bowsprit for us, free). The ship sports brand new main shrouds, served every inch of the way. There are six new backstays on the foremast on each side, finished off with brass caps - donation of Todd's Shipyard. New mainstay, new mizzen stay and mizzen topmast stay. It looks as if we will be able to replace every piece of wire running rigging in the ship with new material. Around the decks we have stripped off every Alaska Packer vestige except the lengthened poop - and it is remotely possible we might be able to get rid of that. The booby hatch is off the fore hatch, assorted tanks that clustered around the deckhouse have gone, the interior of the deckhouse has been stripped of all partitions ready to start over. The lockers and waterclosets under the foc'slehead have been stripped out, the whole triangular area is now one big room, thoroughly scaled and redleaded, ready for bunks to be built along either side. Yesterday the painters' union finished sandblasting the port side, figurehead to transom, waterline to topgallant rail.[124]

Kortum had persuaded his Board of Trustees to give the ship back her original name, and restore her to the British vessel she had been when launched by Charles Connell's yard in 1886, a time he called "her glory period."[125]

While the restoration was going on Kortum was actively searching for more information on the BALCLUTHA's history. Over the years that he had been interested in ships of this type he had established useful contacts with a number of historians, amateur historians, and sailing ship veterans in this country and overseas. The most prolific researcher for the BALCLUTHA project was the late John Lyman, then living in Washington, D. C. where he had access to the Library of Congress and the archives of the various Government agencies. Also involved in this country were Harold Huycke and Robert Weinstein on the West Coast, and Andrew Nesdall in Waban, Massachusetts. Contacts overseas included Captain H. Daniel in Uruguay, A. D. Edwardes in Australia, R. Solomon in South Africa, and Richard Cookson in England.

One method of research was placing letters in marine journals or newspapers where they might be seen by people with information on the ship or by those who had sailed in her. An item in the Glasgow Herald led to a letter from D. M. Taggart with information on Robert McMillan and his ship manager E. P. Babtie, and a letter from James Binnie, the son of Captain Binnie of the BALCLUTHA. In addition to providing information on his father, James Binnie donated Captain Binnie's concertina to the Museum to be displayed in the Captain's stateroom. Sea Breezes magazine published in Liverpool, England, had been a popular journal for sailing ship veterans since the 1920s. Kortum placed a letter in Sea Breezes that brought responses from D. P. Campbell, a veteran of the SIRENIA, and Norman Pearce, who had sailed in the BALCLUTHA on her maiden voyage.[126]

While compiling a chronology of the BALCLUTHA's voyages in Washington, D. C. in October 1954, John Lyman turned up a brief mention of the birth at sea in March 1899 of Captain Durkee's daughter Inda Frances. From a short obituary of Captain Durkee published in Sea Breezes in February 1939 he got the information that the Captain had later become a businessman in Haverhill, Massachusetts. Lyman wrote to Kortum noting that Inda Frances would now be fifty-five years old and suggesting writing a letter to a Boston paper asking for information about her.[127] The letter appeared in the Boston Herald on November 21, 1954.

On November 22nd Inda Frances Dunn of Plaistow, New Hampshire began a four page letter addressed to Karl Kortum, "My phone has been ringing steady ever since your article appeared in the Boston Herald on Sunday."[128] Mrs. Dunn later sent the Museum the written recollections of the BALCLUTHA and life at sea set down by both her mother and father which her father had used giving lectures after his retirement. She later had opportunity to visit the restored ship in San Francisco.

Karl Kortum was also seeking information that would aid in the BALCLUTHA's accurate restoration. He was particularly anxious to find clues to the British layout of the crew living quarters forward. Both D. P. Campbell and Norman Pearce were asked for their recollections and both sent sketches showing the way they remembered the deckhouse. Campbell's plan was the most detailed and the most logical based on surviving original plans of similar vessels. He showed the galley running through the deckhouse from side to side, iron "Dutch" doors at either side and a "settee" (bench) facing the stove. He showed the remainder of the deckhouse divided into four quarters: portside aft, carpenter shop; starboard side aft, carpenter's room; portside forward, foc'sle for bos'n, cook, and sailmaker; starboard side

forward, foc'sle for four apprentices. All doors to these rooms were in the sides of the deckhouse. Campbell also noted that the house was "originally grained (painted to simulate wood grain) outside."[129]

Pearce's recollections seem to have been more vague. He remembered the four corner rooms but showed none of them in the same places as Campbell. He recalled two of the rooms being used for storage, one for sails, and the other for cook's stores. He did not remember the galley running through the house.[130] Campbell also included a plan of the seamen's foc'sle under the foredeck which is virtually the way it was restored by the Museum. Pearce thought he remembered a small table next to the second berth on each side. These were not included in the 1955 restoration. The Charles Connell & Co. accounts found in Glasgow during the research for this report also mention tables in the foc'sle, and their reinstatement is now being considered (1990).

The Museum obtained copies of the only original plans surviving for the BALCLUTHA, the midship sections showing hull structure, and outboard profile with spar plan, which had been placed on file by Lloyd's Register of Shipping in London. These plans were of little help in the restoration as they primarily showed features of the ship that still existed.

No plans of similar vessels built by Charles Connell & Co. were located. Andrew Nesdall in Massachusetts provided copies of plans of other sailing vessels built on the Clyde in the 1880s, including one of an iron ship built by Alexander Stephen & Sons in 1884 in which the crew were berthed under the foredeck (with tables in the locations Pearce remembered). Nesdall also told Kortum of the existence of a re-drawn set of plans of the ORIENT built by Connell in 1889 which had appeared in a British model builders' magazine.

The person who drew the ORIENT plans, G. W. Munro, was eventually located, but not until 1957. Munro drew up a plan of the accommodations under the poop as he felt they would have originally been laid out. He showed five staterooms along the portside, two for mates, one for the steward, and two spares furthest aft opening into the saloon (captain's parlor), and a pantry in the center of this area, where it is now. He also showed the captain's stateroom further aft, more abeam of the saloon, with a sailroom forward of it where the captain's stateroom is today. This suggested to Kortum that the present location of the captain's stateroom only dated from the Alaska Packers' period.

The restoration done in 1954-55 established the form in which the ship survives today. The extension of the poop was retained, but it was not restored internally to what it would have been when the ship was the STAR OF ALASKA. Most of its area has been left as open space, used primarily for exhibits. This area had already been cleared out by the Kissinger's for their exhibits, and for Rose Kissinger's proposed restaurant.

The ship was given back the name BALCLUTHA, and the last British color scheme as indicated by the surviving photographs. The white band with painted gunports was reinstated, with black above and "French gray" below, rather than the black above and below that she apparently started her career with.

It was not possible, because of money constraints, to complete the restoration of all the interior spaces in the ship. Kortum had hoped to be able to remove the 68 ft. extension of the poop in order to achieve the vessel's "style when launched," but this had to be delayed because of the costly reconstruction of the bulwarks that would also have been necessary.[131]

For the entire year that the ship was being restored in local shipyards, Kortum had people working in the basement of the Museum creating displays. These consisted of wooden panels with text and photographs that told her history, and the story of sailing ships on the West Coast, and showed what San Francisco looked like when the BALCLUTHA was trading there as a British vessel. The panels were supplemented with actual artifacts: anchors, windlasses, pump flywheels, and portions of masts, whose role on the ships or significance in the evolution of the sailing vessel was illustrated using further historic photographs. A few weeks before the ship was brought across the Bay to her permanent berth, all these exhibits were trucked over to the shipyard in Oakland and installed.

Some interiors were restored for viewing by the public in 1955. The spaces chosen were the crew foc'sle under the foredeck, the galley in the deckhouse, the pantry and saloon under the poop, the chart house on the poop, and, where they were found, the captain's stateroom and bath under the poop. As much of each space as possible was fully fitted out with all the useful and decorative items one would have seen there when a crew was living on board. To protect these items from theft or damage those portions of the rooms were closed off with large mesh metal screens. The mesh was large enough to see through easily, but too small to reach a hand through. Spaces that were not restored and are currently closed to the public include the petty officers' and apprentices' foc'sles in the deckhouse, the carpenter's shop in the deckhouse, the mates' staterooms and

dining room under the poop, and the steward's stateroom and spare staterooms under the poop.

On July 19, 1955, the BALCLUTHA was towed from the shipyard across the Bay to her berth next to Fisherman's Wharf to be opened to the public. She proved to be as successful as her supporters had predicted. In the first twelve months she earned $93,000 in admissions, meeting the expenses both of her own operation and of the museum ashore. This soon rose to as much as $240,000 annually.

From April to June 1960 the BALCLUTHA was in the shipyard again, at the facilities of the Bethlehem Steel Company in San Francisco, primarily to have additional work done on the hull while the ship was in drydock. Over 800 tons of sand ballast was removed and replaced with the present cement slabs arranged in two long wooden bins in the lower hold with space underneath for access to the inside of the plating.. The inside of the hull plating was sandblasted and coated with preservative, a few floors and a short section of keelson (inner keel) were replaced, and strakes of new plating were welded in at the waterline; 154 feet on the portside and 109 feet on the starboard side. A rusted-out foretopmast was also replaced. The ship spent an additional six weeks in the Bethlehem Shipyard in March and April 1966.

Before the 1955 restoration had been completed, the campaign was underway to save additional vessels that would represent the maritime heritage of the West Coast. Eventually, the State of California, using part of the funds raised from offshore oil drilling leases, set up a San Francisco Maritime Historical State Park, which acquired and restored the coastal schooner C. A. THAYER, the Bay scow schooner ALMA, the steam schooner WAPAMA, the steam ferryboat EUREKA, and the steam tug HERCULES, along with a collection of maritime structures and artifacts exhibited on a pier at the foot of Hyde Street close to the Maritime Museum. In 1970 the Maritime Museum acquired the British sidewheel steam tug EPPLETON HALL.

In 1978 both the State Park and the Maritime Museum, with their vessels, were transferred to the National Park Service to form the National Maritime Museum at San Francisco, within the Golden Gate National Recreation Area. The BALCLUTHA officially became the property of the Federal Government on June 19 of that year.

During 1976 the BALCLUTHA had received new wooden topgallant masts, cut and turned by Niedemeyer-Martin in Portland, Oregon,

to replace the previous set which were badly damaged by dry rot. The National Park Service had the ship worked on in the Pacific Dry Dock shipyard in Alameda from September 18 to October 28, 1981. In 1983 a set of replica boats was built for the ship, by Ray Speck of Sausalito and Jeff Rutherford of Richmond, replacing the ones she had been supplied with in 1955 which were deteriorated beyond the point of further restoration. The following year the settees in the Captain's quarters were re-upholstered.

The BALCLUTHA was taken back to the shipyard in Alameda again on April 14, 1986, this time for an extended drydocking so that the bottom plating could repaired, cleaned, and painted. She did not return to her berth at Fisherman's Wharf until September 16th of that year. The original figurehead had now been in place on the ship for a century. Rather than risk its eventual deterioration in its exposed position, it was removed, and a copy carved by Englishman Greg Powlesland was mounted in its place in February 1987.

At the time that the National Park Service took over the San Francisco Maritime Museum and the San Francisco Maritime Historical State Park, only one vessel, the C.A. THAYER, was designated a National Historic Landmark. A key aspect of the Park Service's management plan was to elevate all of the historic vessels to Landmark status. The steam schooner WAPAMA received National Historic Landmark designation in 1984; the BALCLUTHA and the steam ferryboat EUREKA in 1985; the steam tug HERCULES in 1986; and the Bay scow schooner ALMA in 1988.

During the 1980s the Federal Government built a breakwater to shelter the National Maritime Museum ships at the Hyde Street pier from the surge caused by swells coming in through the Golden Gate, the same surge that had caused problems for the BALCLUTHA when she was moored there by the Kissingers in the 1940s. With the breakwater completed, the BALCLUTHA was shifted to the Hyde Street pier on April 28, 1988. This finally united the Museum's sailing ships on the east side of the lagoon in front of the Museum building, and removed the BALCLUTHA from a slip that was becoming heavily-travelled by commuter and excursion boats.

For some years there had been a campaign in Congress to give the Museum a separate identity within the National Park Service, independent of the Golden Gate National Recreation Area with its broader concerns with coastline and park land. This campaign finally led in June 1988 to the abolition of the National Maritime Museum and its replacement by the San Francisco Maritime National Historical Park, which currently administers the fleet

of historic ships, including the BALCLUTHA; the Museum building; and the Museum's research facilities located in nearby Fort Mason.

As of late 1989, the exhibits and interior restoration on the ship were still basically what had been created in the 1950's. The staff of the Historical Park is now engaged in re-designing and replacing many of these exhibits, and altering visitor access to some of the restored spaces.

This report has been drafted to accompany the first complete plans of the ship as she currently exists, drawn up by the Historic American Buildings Survey/Historic American Engineering Record of the National Park Service based on information assembled on the ship during the summers of 1988 and 1989.

During the thirty-five years the BALCLUTHA has been on exhibit to the public, the example of her success, along with much ardent missionary work on the part of Karl Kortum, has led to the saving and restoration of a whole fleet of Cape Horn sailing ships scattered around the world, including the WAVERTREE of 1885 in New York; the ELISSA of 1877 in Galveston, Texas; the POLLY WOODSIDE of 1885 in Melbourne, Australia; and the JAMES CRAIG of 1874 in Sydney, Australia. At the present time representatives of a new maritime museum located on the Clyde River, not far from the BALCLUTHA's birthplace, are consulting with Karl Kortum on the possible restoration of three vessels, the COUNTY OF PEEBLES of 1875, now a breakwater in southern Chile; the GLENLEE of 1896, now a hulk in Spain; and the CITY OF ADELAIDE of 1864, recently serving as a floating clubhouse in Glasgow.

THE DESIGN OF THE BALCLUTHA

There was a great deal of standard practice in the way iron and steel deepwater sailing ships were designed in the latter part of the nineteenth century. Some of it was the result of practical considerations and some the result of longstanding tradition. The hundreds of lines (ropes) used to manipulate the sails led to virtually the same locations on each ship. Seamen new to a vessel did not have to learn a new system, particularly when sail might have to be handled on a pitch dark, stormy night soon after putting to sea.

Invariably, officers lived aft and seamen lived forward. The officers' quarters were more convenient to where the ship was steered and the watch was stood. In an emergency the captain could be called to the helm in a few moments. On the other hand, there was no practical need for a figurehead, yet few ships in the 1880s did without one. Painting false gunports on the ship's side was no longer a ruse to frighten away pirates, but some shipowners liked it as a style of decoration for the hull.

Much of the standardization was international, including the location of lines and the general arrangement of living quarters. Seamen moved freely between the ships of various nationalities. Officers tended to be from the country to which the ship belonged, but the men in the foc'sle might represent a half dozen or more nationalities. This standardization also transcended the materials the ships were built of. The steel sailing ship BALCLUTHA had the same basic rig, deck layout, and interior layout as the last wooden sailing ships built in the British Isles.

The BALCLUTHA was in fact quite typical of her era. Of sixty-seven deepwater sailing ships launched in Great Britain during 1886, five were four-masted full-rigged ships, sixteen were four-masted barks, fifteen were barks, and thirty-one were full-rigged ships like the BALCLUTHA.

She was rigged with royals and single topgallants above double topsails on all three masts. As ships grew larger double topsails had been introduced in the 1850s to keep the deepest sails at a size that could still be managed by a relatively small crew. By the 1880s double topsails were in universal use aside from heavily-manned naval vessels and training ships. A few ships had also been fitted with double topgallant sails in the mid-1870s, but this rig did not become popular until the 1890s.

The standard square-rigged mast had evolved as three spars joined together with sections of overlap called doublings. The BALCLUTHA was rigged with a single spar substituting for the two lowermost in each mast, eliminating the lower of these doublings. Such one-piece lower and topmasts had also been introduced as early as the mid-1870s, but in 1886 more ships were still being rigged with the older system.

Wire standing rigging (the fixed lines supporting the masts) had replaced hemp standing rigging about the time of the introduction of metal-hulled sailing vessels. Early wire was "set up" (had the slack taken out of it) using lanyards rove through pairs of wooden deadeyes. Rigging screws or turnbuckles began to be substituted in the 1870s and were coming into general use at the time the BALCLUTHA was fitted with them. The lower ends of her shrouds and backstays are doubled back and fastened with five wire seizings. In some ships of this period, including the WAVERTREE of 1885 preserved at New York, eye splices were used.

The BALCLUTHA had a raised foredeck at the bow and a raised poop at the stern. The main deck extended continuously from bow to stern, with full headroom under these two partial decks. This was a common design for ships of her size or larger. In the BALCLUTHA the seamen lived in the space under the foredeck. This was not uncommon, though by this time more ships had accommodations for the seamen in the deckhouse. The space under the foredeck had its disadvantages. The motion of the ship was more noticeable there, and the hawsepipes through which the anchor chain passed were at the forward end making it difficult to keep out wind and sea until the anchors were stowed, the chain was brought inside, and the hawsepipes were securely plugged. This was usually not done until the ship was well offshore where there was no chance the anchors might be needed.

The interior of the deckhouse had been completely altered by the time the Museum acquired the ship. Veterans of her voyages under the British flag provided recollections of what had been there which did not always agree. A galley was re-created by the Museum near the middle of the deckhouse, with doors at either side. This is the logical location for a galley on the ship, based on numerous plans of similar vessels. The two doors, one on either side of the deckhouse, were also standard. This allowed access to the galley on the leeward side when solid waves were crashing on board over the windward rail.

The other spaces reported to have been in the deckhouse are a foc'sle for petty officers, a workshop for the ship's

carpenter, and a "half deck" for apprentices. In most of these ships the petty officers had separate accommodations in the deckhouse. Housing apprentices there was less common. They tended to have a smaller deckhouse of their own forward of the aftermost hatch, or a space at the forward end of the poop. In ships where the seamen lived in the deckhouse the carpenter usually had a workspace under the foc'sle head. Some ships were fitted with a steam donkey boiler and winch to assist in loading and discharging cargo, in which case the usual location was the aft end of the deckhouse. The BALCLUTHA had such machinery as the STAR OF ALASKA, but this was a later addition. It was housed in the usual location, taking over space that originally had another function.

The officers lived under the poop, which prior to its lengthening by the Alaska Packers in 1911-1912, was almost 69 feet shorter. There would have been accommodations for the captain, the mate, the second and third mates sharing a stateroom, and probably a steward to serve the officers their meals and keep the area clean. Much of this original layout appears to survive. It was a very common layout for British-built vessels and in fact is virtually duplicated in another surviving British-built steel sailing ship, the POMMERN, now a museum in Mariehamn, Finland, though she was built sixteen years later.

The captain's stateroom was on the starboard side well aft. This was the room in which he slept and also served as his office. The starboard side location was traditional. It is even found in the last steel sailing vessels built in the 1920s in Germany, though the officers' quarters were by then located near the middle of the ship. The captain's stateroom opens off a sitting room in the center of the poop under the fine barrel-topped skylight. This was the most elegantly finished room in the ship. It was also usually the captain's exclusive territory, and was called the saloon in British ships and the after cabin in American sailing ships. Its elegance reflected both the unique position of responsibility of the captain and the owners' pride in the ship. This was the room in which visiting officials and other guests would be entertained at the various ports visited. Some of these ships had saloons that extended all the way aft into the counter, with a curved settee beneath portholes in the stern plating that provided additional light and ventilation. Both the BALCLUTHA and the POMMERN apparently always had a bulkhead and storerooms aft of their saloons.

Also opening off the saloon would be the captain's bath and head, and usually one or two spare staterooms. Because of the

length of sailing ship voyages, married captains were often accompanied by their wives and any small children. In this case the spare staterooms would be occupied by the children. Sometimes another woman, a relative of the captain's wife, or the wife of a trusted crewmember, would also be making the voyage to help look after the children and to give the captain's wife female companionship. The built-in furnishings in BALCLUTHA's saloon - settee, sideboard and mirror - are original. The decorative capitals on the pilasters between the panels are the same ones commissioned in a letter reproduced in the Charles Connell letterbook, carved by the same A. and D. G. Reid who carved the original figurehead. The furnishings of the captain's stateroom, bath and head have been restored, but the space once occupied by the spare staterooms is now vacant.

Doors in the forward bulkhead of the saloon lead, on the starboard side to a stairway up to the deck above, and on the port side to a passageway that originally extended to the forward bulkhead of the poop. It was also traditional for the mates' staterooms to be located along the port side of the ship opening into this passageway, with the first mate's stateroom furthest forward. These staterooms have not been restored. There also may have been a small dining room for the mates opening off this passageway. A pantry from which the steward served the officers' meals has been restored opening off the starboard side of the passageway.

The most substantial alteration made to the ship during her active career was the 68 ft. 8 in. extension of the poop by the Alaska Packers in 1911-1912. No plans survive of the rooms under the poop before it was lengthened. Two plans do survive of the layout of rooms after the extension. One is a finished layout drawing, scale 1/8 in. to the foot, apparently prepared by the Alaska Packers. It is dated, "Feb. 1922, Revised Mar. 1924." The other is a sketch drawn in the ship's logbook by Captain Bertoncini in 1925. Each plan shows sixteen rooms under the extension. The passageway on the portside is extended forward, lined with ten small rooms located between its port side and the side of the ship. The two forwardmost have now become the first mate's stateroom and the stateroom for second and third mates. Others are labelled by Bertoncini, "carpenters, steward & baker, engineer & machine tender," and "bathroom man & blacksmith." The aftermost is labelled "wireless operator" on the Alaska Packers' drawing and is connected by a door with a stateroom. There is a head immediately aft of the mates' staterooms, and a head and washroom immediately forward of the wireless operator's stateroom. In these post-extension drawings the space on the portside where the mates' staterooms would have been originally

is shown as a dining room, probably for the officers and senior cannery officials.

The plans show five rooms in the larger area on the starboard side of the passageway. The largest room is shown as a dormitory for fishermen with fifty berths. The Alaska Packers' drawing, which shows actual locations for berths in each room, states that the berths along the centerline were triple rather than double. Aft of the fishermen's dormitory are three smaller rooms that Bertoncini designates as, "hospital, cook and three mess boys, and watchman and two laborers." The aftermost room on this side is shown as a storeroom on both plans. None of these rooms survives today. They were apparently removed by the Kissingers to create exhibit space or for the proposed restaurant. Two rows of iron deck stanchions supported the deck above in both the original officers' quarters and in the extension. Some of these have also been removed, apparently by the Kissingers. The original bulkhead separating the extension of the poop from the original officers' quarters is still in place. There were probably two small extensions prior to 1911, one on each side where the bulkhead met the rail. One would have been the original mates' head, and the other a storeroom, probably for lamps and illuminating oil. Both are now gone, but there is a suggestion of one on the starboard side in a small area of narrower deck planking.

Prior to the extension of the poop the BALCLUTHA's deck layout would have been fairly typical for ships of her period. The forward edge of the poop would have been located between the foreside of the chart house and the mizzenmast. This is clearly shown in a photograph of the ship anchored in San Francisco Bay when she was still flying the McMillan houseflag, and in the J. H. Mohrmann painting of her now owned by the Yarmouth County Historical Society in Yarmouth, Nova Scotia. Both the painting and the photograph show a railing at the forward edge of the poop with turned wooden posts, ladders down to the main deck at each side, and a row of fire buckets inside the rail between the two ladders.

Forward of the mizzenmast there was a small cargo hatch in the main deck. Forward of that hatch two of the ship's boats rested on "boat skids," a set of beams spanning the deck on which the boats were stowed in chocks at the same level as the poop. There were sets of iron davits mounted inside the bulwarks on either side for handling these boats. Between the two boats the boat skids supported a small platform on which was located the standard compass, used as a check on the steering compass, and possibly a louvered cabinet containing basic weather recording

equipment. In order to reach this platform there was a catwalk between the poop and the boat skids on the port side of the mizzenmast. This arrangement is shown in the painting and on a simplified deck plan drawn by Captain C. A. Halvorsen in 1909, copies of which survive.

A second set of boat skid beams runs across the roof of the deckhouse, arching downward at either side to where their ends are anchored in the bulwarks. The original shipbuilder's accounts for the BALCLUTHA show she was provided with four boats, built for her in the Charles Connell yard. These were a cutter, a gig, and two lifeboats. The first two boats would have been built with transom sterns, and the two lifeboats would have been double-ended (pointed at each end).

The two lifeboats were probably stowed on the aft boat skids, and the cutter and gig on the boat skids that span the deckhouse. The current boats on the ship were built in 1983, replacing two boats from the STAR OF ENGLAND, ex-ABBY PALMER of 1893 given to the Kissingers by A. K. Tichenor of the Alaska Packers Association when they bought the BALCLUTHA in 1933. The ABBY PALMER boats had deteriorated to the point they were no longer restorable.

Between the aft boat skids and the mainmast the painting shows a capstan in the center of the deck, and forward of that what appears to be a trunked ventilator with a peaked lid oriented fore-and-aft. Underneath the poop extension as it exists today the hatch forward of the mizzenmast has been re-opened to facilitate visitor access to the tweendeck. Forward of this hatch there is a square patch in the deck planking which may mark the former location of the ventilator trunk.

Most of BALCLUTHA's remaining equipment on deck survives. It is also typical of ships of her period. The windlass was operated by men walking around a capstan on the foredeck above. Catheads extending over each bow held the anchors clear of the side of the ship when they were being brought on board, and were also fitted with quick releasing gear for letting go the anchors. When not in use the anchors were stowed on deck. In the BALCLUTHA they were bought on board using a tackle rigged from the foremast, with the hauling part taken to the foredeck capstan. Many ships of her period had the handier arrangement of an anchor davit mounted in the center of the foredeck, or two such davits, one fitted at each rail near the catheads. The ladders between the raised foredeck and the main deck are of appropriate construction, but have been made narrower and mounted at an easier angle for the safety of the visitors.

The Mohrmann painting shows double-geared hand cargo winches immediately abaft both the forward hatch and the main hatch. Both winches are now missing. The Museum re-created a pig sty built of wood against the forward end of the deckhouse based on one that appears in a photograph of the LOCH TAY of 1869. This was the usual location, and such a pig sty is shown in the painting. In addition to pigs, a number of chickens were usually carried on these ships. The location of the chicken coops on the BALCLUTHA is not known.

The BALCLUTHA's main hatch abaft the deckhouse has been adapted to serve as access to the tweendeck. A portion of the coaming had already been cut away for this purpose when the Museum acquired the ship. The wooden gratings currently placed in the hatchway to allow ventilation, while quite nautical in design, are not something she would have had when in active service.

The capstan now mounted on the poop was placed there by the Museum and is not original to the ship. Its history is unknown. The skylight on the poop forward of the mizzenmast was added by the Alaska Packers and is also not original to the ship. The fine barrel-top skylight, and the steering gear box, aft of the charthouse are original. The ship is currently missing the low gratings around the wheel on which the helmsmen would have stood, and the small watch bell which would have been mounted on the steering gear box or the aft end of the skylight. The original furnishings of the chart house have been restored by the Museum based on surviving evidence.

The area below the main deck was primarily devoted to the stowage of paying cargo. It was subdivided vertically at only one point, the steel collision bulkhead extending from the main deck to the keel just forward of the windlass. This was the hull's only watertight compartmentation. If the ship ran into another vessel or an iceberg and only damaged her plating forward of this point, she had a chance of staying afloat. If a collision or grounding resulted in serious damage to plating below the waterline aft of this point there was little chance of keeping her afloat. The space forward of this bulkhead was known as the forepeak. It was accessible through a small hatch forward of the windlass and was generally used as storage for mooring lines and spare rigging line, blocks, and fittings. Low in the hull immediately abaft the collision bulkhead was the chain locker, a large steel box built into the hold in which the anchor chain was stacked when not in use. Twin vertical pipes led down from the main deck immediately abaft the windlass to guide the chain.

Aft of the collision bulkhead the remainder of the hold was divided horizontally by a single continuous deck called the tweendeck, seven feet below the main deck. This deck allowed the cargo to be distributed vertically. If a dense, heavy commodity is stowed only in the bottom of the hold a ship is going to be too "stiff." This creates a quick, jerking roll that can endanger the masts and rigging, aside from being very uncomfortable for the people on board. At the far aft end of BALCLUTHA's tweendeck there are two hatches in the ship's plating, one on either side of the sternpost, each with a heavy bolted-down lid. These are timber ports used to load long baulks of timber that could not be easily handled through the small cargo hatches in the main deck. They were not an original feature of the ship. A dated drawing survives which indicates they were installed in July 1899 by Risdon Iron Works of San Francisco.

The aft end of the tweendeck was often used to store some of the ship's food supplies, and possibly also mooring lines and sails. It could be reached at sea through a small hatch in the main deck just aft of the saloon. In 1912-13 the Alaska packers built a dormitory for Chinese cannery workers in the forward tweendeck. The Packers' 1924 deckplan showing living quarters states that there were 73 berths in this space. It also shows two small rooms at the forward end, one on either side. They are labelled, "Chinese bosses" and "Mexican bosses," and each has two berths. The dormitory for Chinese workers was restored by the Museum as part of its interpretation of that period in the ship's history.

Beneath the tweendeck was the lower hold. Aside from rectangular metal tanks for the ship's supply of fresh water, now missing but probably located on either side of the mainmast, this area was entirely devoted to cargo stowage. Today it contains the ship's ballast in the form of cement slabs and stone in wooden cribs installed in 1960, and catwalks added by the Museum.

The BALCLUTHA's original figurehead is currently in storage in Fort Mason. It was replaced with a very accurate hand-carved copy in 1987. The subject of the figurehead is a woman, clothed, wearing on her head what appears to be a small crown or coronet. Figureheads of the BALCLUTHA's period might relate to the naming of the ship, or they might simply be anonymous female figures. No evidence has been found to indicate that the BALCLUTHA's figurehead was meant to represent any specific person. The figurehead is currently painted white. Early pictures indicate this was always the color scheme. Many ships of her period also

had carved wooden trailboards extending aft from the base of the figurehead in a graceful curve, to merge with the line of the ship's sheer at or near the hawsepipes. There is no evidence the BALCLUTHA ever had this decoration, and its omission seems to be a standard feature of Connell-built sailing ships.

The BALCLUTHA is currently painted in the false gunport color scheme that was particularly favored by British shipowners, with upper topside plating black and plating below the white gunport band gray. The earliest photos of the ship, and those of her near-sistership SIRENIA, indicate that Robert McMillan originally had the ships painted black both above and below the white band. A later photo of the BALCLUTHA, apparently taken while she was still under his ownership, shows the present color scheme.

Exterior bulkheads on deck are currently painted white with gray trim. The trim includes the vertical butt straps between the rivetted plates, creating a panelled effect. The Mohrmann portrait of the BALCLUTHA shows this trim a rust brown or orange buff. The painting also shows a decorative feature of these ships which was apparently common in the late 1800s but is now not only missing from the BALCLUTHA, is no longer to be found on any of the surviving sailing vessels. Each of the white panels is stencilled in the same color as the trim. The panels of the deckhouse, and the panels inside the bulwarks below the pinrails, have additional thin lines around their margins and a decorative device stencilled in each corner. The panels on the inside of the bulwarks above the pinrails have a large decorative device stencilled in their centers.

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APPENDIX 1

Charles Connell-built ships 1861-1972

Histories of sailing ships are given where known.
Abbreviations:
I = iron hull
C = composite hull (wood planks over iron frames)
S = steel hull
s.s. = steamship
pad.s.s. = paddlewheel steamship
m.s. = motor ship
ship = full-rigged ship
T = gross tonnage

1861

PALERMO - I s.s. 380T

1862

CITY OF PARIS - I ship 990T - KIANDRA, missing Oct. 1902, Philadelphia to Portishead, England.
LIVORNO - s.s.
BRISBANE - no information
MESSINA - I s.s. 385T
PENANG - I s.s. 699T

1863

CITY OF BRUSSELS - I ship 990T - BRUSSELS, hulked 1904 at Burutu, Nigeria.
COUNTY OF AYR - I ship 499T - wrecked Oct. 1905 on Danger Reef, Port Chalmers, N.Z. to Lyttleton, N.Z.
COUNTY OF LANARK - I ship 498T
GENOVA - I s.s. 391T
LOCHLEVEN CASTLE - I ship 602T - abandoned in S. Pacific Oct. 1879.
ROSLIN CASTLE - I ship 644T - 1889 TAHITI, LE MARIN, broken up in 1909.
WILD DEER - C ship 1126T - Wrecked on North Rock, Cloughey, Ireland Jan. 1883 outward bound for New Zealand.
MARY ANN - no information

1864

DHOLLERAH - I ship 1017T
CITY OF BERLIN - I ship 1012T - DALSWINTON
COUNTY OF RENFREW - I ship 709T - wrecked c.1866.

PANDORA - ship 1156T - wrecked on Monos Island Oct. 1878 sailing from Port of Spain, Trinidad.
CANADA - no information
MACEDON - s.s.
NAPOLI - I s.s. 635T
EAGLE - I pad.s.s. 208T
DOUGLAS CASTLE - C ship 678T - went missing June 1891, Swansea to Valparaiso.
ST. ANDREWS CASTLE - no information

1865

TAITSING - C ship 815T - lost on Nyuni Island nr Zanzibar Sept. 1883.
MICHEL ANGELO - C ship 1174T
COUNTY OF ARGYLE - I ship 960T - THEODORE, went missing Aug. 1893.

CRUSADER - I ship 1058T - broken up at Dordrecht, Neth. in 1910.
TAYMOUTH CASTLE - no information

1866

NORTHAMPTON - C ship 1174T
CITY OF VIENNA - I ship 1000T - DUNSCORE, CARRICK, abandoned after collision with floating wreckage Dec. 1896. Newcastle, N.S.W. to Valparaiso.
HUNTLY CASTLE - C ship 623T
COUNTY OF BUTE - C ship 793T
CLYDE - C smack 60T
WEMYSS CASTLE - C ship 700T
GLENBERVIE - I ship 800T - wrecked on Manacles Rocks Jan. 1902, London to Algoa Bay.

1867

CITY OF FLORENCE - I ship 1200T - wrecked at Half Moon Bay, California Apr. 1900, Iquique to San Francisco.
CITY OF VENICE - I ship 1200
COUNTY OF ELGIN - C ship 796T
GULNARE - C s.s. 205T
SPINDRIFT - C ship 899T - wrecked nr Dungeness Nov. 1869, London to Shanghai.
ULVA - I bark 499T
KINFAUNS CASTLE - C ship 799T

1868

COUNTY OF STIRLING - C ship 999T
COLUMBINE - C s.s. 811T
NYMPH - C s.s. 810T
FALCON - no information
CITY OF PERTH - I ship 1189T - 1883 TURAKINA, 1899 ELIDA, 1913 TURAKINA, sunk by U-boat May 1915.
JANET COURT - I ship 1000T
MARY ORR - C schooner 84T
COUNTY OF BERWICK - C ship 996T
ELGIVA - no information
WINDHOVER - C ship 847T - wrecked on Bramble Cay, Torres Strait Aug. 1889, Newcastle, N.S.W. to Batavia, Java.

1869

COUNTY OF FORFAR - C ship 997T
ASIA - I ship 1446T - went missing 1873, Newcastle, N.S.W. to Bombay.
CITY OF MADRID - I ship 1191T - AGNES LILLIAN, 1898 LOFTHUS, hulked at Kragero 1914.
DUKE OF ABERCORN - C ship 1050T - went missing May 1892, Cardiff to Callao.
ISABEL CROOM - I ship 996T - SELENE, wrecked at Santa Rosalia, Mexico Sept. 1890.
ZEALANDIA - I ship 1116T - 1907 KALEVA, hulked in 1911 at St. John's, Nfld.
COUNTY OF NAIRN - C ship 999T
EME - C ship 774T

1870

COUNTY OF LANCASTER - C ship 1000T
AFRICA - I ship 1444T - went missing c.1871, Clyde to India.
SCOTSTOUN - no information
AILSA - C ship 1061T
CITY OF POONAH - I s.s. 2288T

1871

CITY OF MECCA - I s.s. 2265T
GOUVENEUR GENERAL MIJER - I s.s. 1079T
OLYMPIA - I s.s. 2051T
ZAMPA - no information

1872

AMERICA - I ship 1504T - 1875 LOCH LAGGAN, went missing Oct. 1875, Liverpool to Melbourne.
CHALDEA - I s.s. 1434T
CASTALIA - I s.s. 2201T
DON JUANA - C bark 296T

1873

WILLIEM KROON PRINS DER NEDERALNDEN - I s.s. 959T
COUNTY OF SUTHERLAND - I s.s. 2617T
CITY OF CARTHAGE - I s.s. 2651T
LOCH ARD - I ship 1693T - wrecked at Curdice Inlet, Australia June 1878, Gravesend to Melbourne.

1874

QUEEN ANNE - I s.s. 2682T
CHARLOTTE CROOM - I ship 1716T - ASTRACANA, 1906 NOR, went missing Nov. 1916.
COUNTY OF PERTH - I ship 1600T - abandoned on fire Oct. 1874.
LOCH ECK - I ship 1701T - 1897 ADRIANA, 1899 CARLO P, 1906 hulk MINERAL at Montevideo, hulked after dismasting.

1875

BLAIRHOYLE - I ship 1351T - 1904 ALLY, 1905 PALLAS, lost on Grand Cayman Oct. 1910, Barbados to Gulfport, Miss.
JURA - I ship 1285T - foundered off Callao Feb. 1908.
LOCH RANZA - I ship 1129T - 1901 ABYSSINIA, 1922 MOLENE, broken up at Le Havre in 1925.
MIDLOTHIAN - I ship 1130T - 1890 INDIA, 1900 VIDUCO, wrecked Jan. 1908.
OIMARA - I ship 1417T - wrecked nr Newcastle, N.S.W. Sept, 1903, arriving from East London, S.A.

1876

CITY OF LONDON - I s.s. 3212T
CITY OF EDINBURGH - I s.s. 3230T
ARES - I bark 530T - JEANNE
EAST LOTHIAN - I ship 1455T - sunk in collision in English Channel c.1898.
SCOTSTOUN - I ship 1710T - lost in South Atlantic Aug. 1876.
STAR OF THE EAST - I bark 757T - wrecked in Ancabra River Jan. 1907, arriving from New York.
GARTHLAND - I schooner 107T

1877

BELLONA - I bark 528T - burned at Pisagua Aug. 1888.
BRENDA - I ship 1291T - LAURA, went missing Feb. 1904, Newcastle, N.S.W. to Chile.
SHEILA - I ship 1295T - 1900 REGINA COELI , lost near Trieste Jan. 1910.
TRAFALGAR - I 4-masted ship 1765T - wrecked nr Pernambuco Nov. 1904, Sydney to Falmouth.
ATHENE - no information

1878

FIERY CROSS - I ship 1456T - sunk by U-boat July 1915.
FIONA - I ship 1450T - lost Dec. 1882.
WATERLOO - I 4-masted ship 1976T - broken up Oct. 1910.
SPEKE HALL - I s.s. 2572T
WISTOW HALL - I s.s. 2674T
GULNARE - C s.s. 247T

1879

CITY OF AGRA - I s.s. 3193T
COMUS - i BARK 733t - 1899 ORLEANS, foundered June 1909.
MONTREAL - I s.s. 3308T
ATHOS - I s.s. 1944T

1880

DIANA - I bark 733t - lost June 1908
TORONTO - I s.s. 3316T
OTTAWA - I s.s. 3712T

1881

MISSOURI - I s.s. 5146T
ATLANTIQUE - I s.s. 2434T
BRETTONHALL - no information
CITY OF CALCUTTA - I s.s. 3836T
ELLIDA - no information

1882

SARNIA - I s.s. 5146T
KANSAS - I s.s. 5276T
WERNETH HALL - I s.s. 4100T
OREGON - I s.s. 3672T
VANDAURA - I 4-masted ship 2086T - sunk by U-boat May 1917, Jamaica to Le Havre.

WEST LOTHIAN - I 4-masted ship 1882T - sunk by U-boat April 1917, River Plate to Norway.

1883

CITY OF CHICAGO - I s.s. 5202T
HUMACAO - no information
RIVADAVIA - no information
NANSHAN - I s.s. 1281T
ALBERTA - I s.s. 2829T

1884

VANCOUVER - I s.s. 5141T
DUNOLLY - I ship 1549T - AVON, went missing April 1918, New York to Campana, Argentina.
WENDUR - I 4-masted ship 2046T - wrecked on Scilly Islands March 1912.
CHARLES MORAND - I s.s. 761T

1885

CHARLES CONNELL - I ship 1724T
EDINBURGH - I bark 1473T - sunk by German raider MOEWE Jan. 22, 1916, Rangoon to U.K.
LISMORE - I ship 1676T - wrecked on Santa Maria Island May 27, 1906, Melbourne to Talcahuano.
SIRENIA - I ship 1670 - lost on Akerfeld Reef, Isle of Wight March 1888.

1886

BALCLUTHA - S ship 1689T - 1906 STAR OF ALASKA, 1933 PACIFIC QUEEN, 1954 BALCLUTHA, museum at San Francisco.
EARL OF ABERDEEN - I 4-masted bark 2204T - wrecked on Hats & Barrels Rocks May 15, 1892, Barry to Montevideo.
MEDWAY - S s.s. 870T

1887

QUEEN VICTORIA - S ship 1685T - went missing Nov. 16, 1911, Tocopilla to English Channel.
ORONSAY - S s.s. 2070T
LIDDESDALE - S s.s. 2422T
HELICON - S ship 1663T - VIUDA LLUSA, broken up at Savona, Italy in 1929.

1888

OLYMP - S ship 1664T - 1889 BARON BALLANTYNE, burned at Iquique 1900. Salvaged and used as hulk.
GLENELG - S s.s. 2470T
TRAVELLER - S s.s. 2966
KLIO - S ship 1664T
RAMON DE LARRINAGA - S s.s. 3200T
KALLIOPE - S ship 1665T - broken up 1924

1889

DRYFESDALE - S s.s. 2645T
ORIENT - S ship 1663T - wrecked at East London, S.A. 1907, arriving from Melbourne.
OCCIDENT - S ship 1663T - hulked after fire 1900. Scuttled off Wellington, N.Z. March 1949.
SOMMERFELD - S s.s. 2606T
HAZELBANK - S ship 1660T - wrecked on Goodwin Sands Oct. 1890, Port Townsend, Wash. to Hull.
ARETHUSA - S ship 1768T - 1916 HIPPALOS
BANDA - S s.s. 3035T

1890

CAPELLA - S s.s. 3193T
MELETE - S ship 1782T
GRIMM - S s.s. 2558T
STUBBENHUK - S s.s. 2922T
IVERNA - S 4-masted bark 2312T - 1915 HERO, broken up at Rotterdam in 1925.
MARTIN SAENZ - S s.s. 3466T
ERATO - S ship 1780T

1891

MELPOMENE - S ship 1787T - 1915 SOLGRAN, 1916 FINSKOG, broken up in 1924.
OTHMARSCHEN - S ship 1787T - ALSTERTHAL, 1911 ALBERTUS VINNEN, LUCIA, Chilean barge VICTOR ARANDA, 1952 ELIA, broken up at Valparaiso 1953.
THISTLE - S 4-masted bark 2284T - lost on Palmerston Reef, South Pacific Nov. 8, 1905, Portland, Ore. to Port Pirie.
VALKYRIE - S ship 2270T - sunk in collision in Elbe River Nov. 9, 1901, sailing for Santa Rosalia, Mexico.
JOHN CARSWELL - S bark 1396T - 1895 CALLUNA, sunk by U-boat April 23. 1917, Aalborg to New York.
CRAIG ELVAN - S bark 1412T - foundered after stranding Jan. 25, 1898, Iquique to Ghent.
LUCKNOW - S bark 1408T - KIRSTEN, VISION

VIMEIRA - S 4-masted bark 2233T - broken up at Dunkirk in 1924.
PYRENEES - S 4-masted bark 2243T - 1901 MANGA REVA, sunk by U-boat April 1917, Channel to Hampton Roads.
ESTE - S bark 1414T
VOLGA - S ship 1817T - wrecked on St. Lucia Dec. 10, 1893, Calcutta to Jamaica.
R. P. RITHET - S bark 1080T - engines installed in 1916. Burned at sea July 24, 1917, Mahukona to San Francisco.

1891

HAWAIIAN ISLES - S 4-masted bark 2097T - 1910 STAR OF GREENLAND, 1929 ABRAHAM RYDBERG, 1942 FOZ DO DOURO. Engines installed 1945. Broken up at La Spezia, Italy 1957.
FLOTOW - S ship 1863T - 1898 ALSTERKAMP, 1912 ARNOLDUS VINNEN, 1917 GAMECOCK, 1918 CHILLICOTHE, 1928 hulk MONTRAVEL. Abandoned nr Noumea, New Caledonia 1937. Later buried there under nickel slag.
KOELLIKER - S ship 1862T
SAINT MUNGO - S ship 1955T - burned at sea Oct. 1906, Liverpool to Sydney.
SAINT ENOCH - S ship 1955T - went missing June 1902, Hamburg to Santa Rosalia, Mexico.
CASTLE ROCK - S ship 1912T - went missing Sept. 1907, Sydney to Seattle.
MARION FRAZER - S 4-masted bark 2396T - hulked after fire 1910. 1916 Chilean motorship PISAGUA.
MARION JOSIAH - S 4-masted bark 2394T - 1910 TIJUCA, sunk by U-boat Nov. 22, 1917, La Pallice to Taltal.
SAMOENA - S ship 1962T wrecked nr Hoek van Holland Sept. 1919, New York to Rotterdam.
YARANA - S ship 1965T - went missing June 1900, Santa Rosalia to Iquique.
SAINT MIRREN - S ship 1956T - sunk by U-boat May 1917, Clyde to Santos.
MARGARET A. B. CARSWELL - S bark 1436T - ANNASONA, wrecked on Middleton Reef Jan. 1907, Callao to Newcastle, N.S.W.

1893

ZINITA - S bark 1633T - 1910 SORKNES, hulked at Dartmouth, England in 1920. Broken up in 1952.
GULNARE - S s.s. 262T
MICMAC - no information
ARNO - S ship 1825T - went missing Oct. 1912, Rio de Janeiro to Ship Island.
EMS - S ship 1829T - FORTUNA, burned at sea Oct. 1927, Clyde to Santos.

CATALINA - S s.s. 4796T
BOURBON - S s.s. 1585T
GLENCLOVA - S 4-masted bark 2369T - MIMI, foundered after refloating nr Astoria, Oregon April 1913.

1894

BEN DEARG - S ship 2349T - 1910 LASBEK, broken up at San Francisco 1930.
ESKDALE - S s.s. 3149T
BORDERER - no information
KNIGHT BACHELOR - S s.s. 6394T
LISMORE - S s.s. 3576T
WHITLIEBURN - S ship 2006T - went missing June 1913, Antofagasta to Leith.
DUDHOPE - S ship 2087T - sunk by U-boat July 15, 1917.
FORTH - S ship 1829T - abandoned at sea Sept. 1915, Liverpool to Port Arthur.
MERSEY - S ship 1829T - 1915 TRANSATLANTIC, 1918 DVERGSO, broken up in England in 1923.
ETTRICKDALE - S s.s. 3719T
EVANDALE - S s.s. 3775T

1895

AZOV - no information
MONEIRA - no information
ATHENE - no information
BARCELONA - S s.s. 4218T
CADIZ - S s.s. 4218T
MORVEN - S s.s. 3939T
MANILA - S s.s. 4134T
DEN OF AIRLIE - S s.s. 3520T

1896

BELLEVUE - S s.s. 3814T
INDRAGHIRI - S s.s. 4927T
AUGSBURG - no information
AMMON - S s.s. 4227T
AMASIS - S s.s. 4552T
CERVONA - no information
DEVONA - S s.s. 3779T
CALISTA - no information
ORIANA - no information
ANPING - S s.s. 1857T
TAISHAN - S s.s. 1962T

1897

INDRA - S s.s. 6036T
CRAFTSMAN - S s.s. 6196T
ORWELL - S s.s. 3789T
INDRAPURA - S s.s. 5312T
INDRAVELLI - S s.s. 4972T

1898

KNIGHT ERRANT - S s.s. 7464T
MARIA DE LARRINAGA - S s.s. 4018T
PINEMORE - S s.s. 6306T
KENMORE - no information
CALISTA - no information

1899

MAPLEMORE - S s.s. 6255T
COLLEGIAN - S s.s. 7237T
GAIRLOCH - no information
TEXAS - S s.s. 4458T
ALABAMA - no information
RAJAH - S s.s. 5662T
RANEE - S s.s. 5660T

1900

CUSTODIAN - S s.s. 9214T
ROWANMORE - S s.s. 10,320T
ORONSAY - S s.s. 3761T
RAJPUT - S s.s. 5628T
DUNBAR - S s.s. 3750T

1901

MERA - S s.s. 4797T
ASSUAN - S s.s. 4793T
INDRALEMA - S s.s. 6669T
GORDON CASTLE - S s.s. 4408T
YEOMAN - no information
INDRASAMHA - S s.s. 5197T
KILBRIDE - S s.s. 3712T
KINCRAIG - S s.s. 3707T

1902

PASHA - S s.s. 5930T
INDRAMAYO - S s.s. 5406T

LOTHIAN - S s.s. 4959T
INDRAWADI - S s.s. 5194T
CIVILIAN - S s.s. 7871T
PUNDIT - S s.s. 5917T
KNIGHT OF THE GARTER - S s.s. 6655T
CALISTA - no information
COGNAC - S s.s. 814T

1903

COMEDIAN - S s.s. 4889T
BARON KELVIN - S s.s. 1591T
KILBRENNAN - no information
DIRECTOR - S s.s. 4931T
SIERRA MORENA - S s.s. 3536T
BARON GORDON - no information

1904

FRANKBY - S s.s. 4182T
SHAHZADA - S s.s. 2246T
MAHARAJAH - S s.s. 2264T
HUNTSMAN - S s.s. 7460T
INDUS - S s.s. 3413T
AUSTRALIND - S s.s. 5568T
GLADIATOR - S s.s. 3359T
FRANKLYN - S s.s. 4919T
GLENELG - S s.s. 4160T
MONTROSE - S s.s. 4452T

1905

ERROL - S s.s. 4457T
GLENAFFRIC - S s.s. 4144T
VANDALIA - no information
DEN OF CROMBIE - S s.s. 4221T
SHAHJEHAN - S s.s. 2261T
KOHINUR - S s.s. 2265T
WARRIOR - S s.s. 3491T
AUTHOR - S s.s. 3496T
KNIGHT TEMPLAR - S s.s. 7175T
GLENDHU - S s.s. 4129T

1906

KILCHATTAN - S s.s. 3758T
KILKERRAN - S s.s. 3755T
GANGES - S s.s. 3497T
CANDIDATE - S s.s. 5858T

COMMODORE - S s.s. 5858T
INVERCLYDE - S s.s. 4995T
FRANKDALE - S s.s. 4836T
VALBANERA - S s.s. 5099T

1907

INVERESK - S s.s. 4986T
DEN OF CROMBIE - S s.s. 4949T
MUTLAH - S s.s. 3499T
DEN OF RUTHVEN - S s.s. 5153T
BAHADUR - S s.s. 4646T
BEGUM - S s.s. 4646T
BISLEY - no information
GLENDEVON - S s.s. 4169T

1908

KINTAIL - S s.s. 3537T
KILLIN - S s.s. 3544T
CADIZ - S s.s. 5617T
BARCELONA - S s.s. 5574T
SUTLEJ - S s.s. 3549T
CENTURION - S s.s. 5945T
MERCHANT - S s.s. 3588T

1909

FLORIZEL - S s.s. 3081T
MINDEROO - S s.s. 2720T
GLENCLUNY - S s.s. 4812T
DUNEDIN - S s.s. 4796T
GLENSHIEL - S s.s. 4799T
ARMADALE - S s.s. 6153T
ARTIST - S s.s. 3570T

1910

INDRADEO - S s.s. 5559T
STUDENT - S s.s. 3603T
SATURNIA - S s.s. 8611T
KNIGHT COMPANION - S s.s. 7987T
EXPLORER - S s.s. 7769T

1911

BERWICK LAW - S s.s. 4680T
HAVILDAR - S s.s. 4911T
FRANKMERE - S s.s. 5330T

GLENETIVE - S s.s. 5212T
GLENARTNEY - S s.s. 5201T
STEPHANO - S s.s. 4018T
SCULPTOR - S s.s. 3846T

1912

GLENSPEAN - S s.s. 5221T
RISALDAR - S s.s. 4919T
SUBADAR - S s.s. 4911T
INDRANI - S s.s. 5706T
INDRAKUALA - S s.s. 5848T
DIPLOMAT - S s.s. 7615T
DUNACHTON - S s.s. 5289T
ARCHITECT - S s.s. 5421T
LANCEFIELD - S s.s. 5761T

1913

DEWA - S s.s. 3802T
KNIGHT COMPANION - S s.s. 7375T
INDRA - S s.s. 5801T
CLAN MACCORQUODALE - S s.s. 5121T
DISCOVERER - S s.s. 5415T

1914

DRAMATIST - S s.s. 5415T
KNIGHT BACHELOR - S s.s. 7264T
NAVIGATOR - S s.s. 3803T
SPECTATOR - S s.s. 3846T
MALAKUTA - S s.s. 7210T
MAHANADA - S s.s. 7181T
NIZAM - S s.s. 5322T
NAWAB - S s.s. 5430T

1915

DEFENDER - S s.s. 8258T
BARRISTER - no information
H.M.S. JONQUIL - S sloop 1200T
H.M.S. LABURNAM - S sloop 1200T
H.M.S. P-14 - S 613T displacement
H.M.S. GLADIOLUS - S sloop 1250T

1916

SHUJA - S s.s. 4932T
MANAAR - S s.s. 7242T

H.M.S. GODETIA - S sloop 1250T
H.M.S. HYDRANGEA - S sloop 1131T

1917

SENATOR - S s.s. 3670T
MAIZAR - no information
BETWA - S s.s. 3819T
GLENLYON - S s.s. 4933T
GLENLEE - no information
H.M.S. PC-63 - S 682T

1918

WAR PROPHET - S s.s. 5340T
WAR SINGER - S s.s. 5249T
WAR CATERAN - S s.s. 5259T
CLANSKENE - S s.s. 5214T

1919

MASIRAH - S s.s. 6578T
BENVORLICH - S s.s. 5193T
SILARUS - S s.s. 5101T
WAR ELAND - no information

1920

MANGALORE - S s.s. 8886T
MATHURA - S s.s. 8890T
DIPLOMAT - S s.sw. 8240T
DRAMATIST - S s.s. 5443T

1921

HUNTSMAN - S s.s. 8196T
TRAVELLER - S s.s. 3963T
BENREOCH - S s.s. 5818T

1922

SCHOLAR - S s.s. 3940T

1923

NURJEHAN - S s.s. 5424T
NURMAHAL - S s.s. 5419T

1924

BARON KELVIN - S s.s. 3081T
AUDITOR - S s.s. 5444T
HISTORIAN - S s.s. 5074T

1925

WANDERER - S s.s. 5079T
MAIDAN - S s.s. 7908T
WAYFARER - S s.s. 5068T
MAHSEER - S s.s. 7911T
BENARTY - S s.s. 5800T

1926

COUNSELLOR - S s.s. 5068T

1927

BENVENUE - S s.s. 5920T
PLANTER - S s.s. 5887T
RANCHER - S s.s. 5882T

1928

OBSERVER - S s.s. 5881T
BENMOHR - S s.s. 5920T
CUSTODIAN - S s.s. 5881T
BENCRUACHAN - S s.s. 5920T

1929

BENWYVIS - S s.s. 5920T
COMEDIAN - S s.s. 5122T
LAMMERLAW - S s.s. 4888T

1930

TRAPRAIN LAW - S s.s. 4976T
ARDANGORM - S s.s. 5200T
BENLEDI - S s.s. 6318T
BENLAWERS - S s.s. 5943T

1931-1937

no launchings

1938

MOUNTPARK - S s.s. 4648T
WELLPARK - S s.s. 4649T
ROTHERMERE - S s.s. 5356T

1939

BARON SEMPLE - S s.s. 4573T
BHIMA - S s.s. 5280T
SETTLER - S s.s. 6202T

1940

INDUS - S s.s. 5187T
SUTLEJ - S s.s. 5189T
BENALBANACH - S s.s. 7153T
TRADER - S s.s. 6087T

1941

EMPIRE SNOW - S s.s. 6339T
EMPIRE ZEPHYR - S s.s. 6327T
EMPIRE GLEN - S s.s. 6327T
EMPIRE MALLORY - S s.s. 4796T
EMPIRE RENNIE - S s.s. 6464T

1942

NARWIK - S s.s. 7065T
EMPIRE BOWMAN - S s.s. 7031T
EMPIRE MORDRED - S s.s. 7024T
EMPIRE GERANT - S s.s. 6991T
EMPIRE CARPENTER - S s.s. 6707T

1943

EMPIRE CELIA - S s.s. 7025T
HUGHLI - S m.s. 6571T
EMPIRE SYMBOL - S s.s. 7027T

1944

BENLAWERS - S s.s. 7804T
MEGNA - S m.s. 6438T
EMPIRE WILSON - S m.s. 9916T

1945

TAPTI - S m.s. 6609T
J 3031 - no information
J 3032 - no information

1946

BENVORLICH - S s.s. 6618T
KALLADA - S m.s. 6612T
MOUNTPARK - S s.s. 6722T
WELLPARK - S s.s. 6722T
MARJATA - S m.s. 6652T

1947

MUTLAH - S m.s. 6652T
PURNEA - S m.s. 5340T

1948

BENMACDHUI - S s.s. 5930T
FACTOR - S s.s. 6533T
BENVENUE - S s.s. 5934T

1949

CORINALDO - S m.s. 8328T
BENCLEUCH - S s.s. 5958T
CARRONPARK - S m.s. 5328T
CORONA - S m.s. 5136T
BANALDER - S s.s. 5959T

1950

TAMESIS - S m.s. 6749T
GANGES - S m.s. 6724T
BETWA - S m.s. 6722T

1951

TARTAR - S m.s. 11,123T
LYLEPARK - S m.s. 5025T
HORN BLOWER - S m.s. 11,102T
CASTOR - S m.s. 11,177T

1952

TALISMAN - S m.s. 6785T

BENREOCH - S s.s. 6877T

1953

NORSCOT - S m.s. 12,704T

1954

TIBETAN - S m.s. 12,308T
INDUS - S m.s. 4902T
TURCOMAN - S m.s. 12,608T

1955

BENVRACKLE - S s.s. 7144T
FERNSTAR - S m.s. 12,550T
FERNMOOR - S m.s. 12,689T

1956

SCOTSTOUN - S m.s. 12,402T
BENDORAN - S s.s. 7304T
GLENPARK - S m.s. 5872T

1957

TEMERAIRE - S m.s. 5893T
BENLOMOND - S s.s. 7304T
TURANDOT - S m.s. 5894T

1958

FERNSTATE - S m.s. 6758T
FERNHAVEN - S m.s. 7082T

1959

BROOMPARK - S m.s. 5874T
BENLOYAL - S s.s. 8179T
TIJUCA - S m.s. 5999T
CRAIGALLIAN - S m.s. 7088T

1960

CRINAN - S m.s. 7086T

1961

BENGLOE - S s.s. 8619T

FOYLE - S s.s. 24,549T

1962

ERNE - S s.s. 14,244T
JUMNA - S m.s. 7119T
BENVALLA - S m.s. 8077T
SAINT AIDAN - S m.s. 973T
TUSKAR - S m.s. 1598T

1963

KOHINUR - S m.s. 7109T
BENARMIN - S m.s. 8063T

1964

INVENTOR - S m.s. 9171T
SCOTSTOUN - S m.s. 8087T
BENDEARG - S m.s. 8199T

1965

BENLEDI - S m.s. 8765T
ROMANDIE - S m.s. 21,449T
MOUNTPARK - S m.s. 21,833T

1966

STONEPOOL - S m.s. 27,049T
BENWYVIS - S m.s. 9487T

1967

BENALBANACH - S m.s. 9481T

1968

BENCRUACHAN - S s.s. 12,092T
BENSTACK - S m.s. 8327T

1969

CANON FOREST - S m.s. 17,658T
SCOTSPARK - S m.s. 16,793T

1970

BENLAWERS - S m.s. 12,784T

CITY OF LONDON - S m.s. 7415T

1971

GLENPARK - S m.s. 16,782T

1972

VANCOUVER ISLAND - S m.s. 16,782T

APPENDIX 2

The Charles Connell Letters

19 October 1885 - to Robert McMillan
(verbatim) "We duly received your favour of Saturday and note that the name of your new ship is to be SIRENIA of Glasgow. Please send us sketch of House Flag and say what colour you wish burgee."

21 October 1885 - to Robert McMillan
gives price for fitting sideports in SIRENIA.

21 October 1885 - to Robert McMillan
(verbatim) "Replying to yours of the 19th inst. Our usual practice is to mark our ships 2 1/4" per foot depth of hold and advise owners not to load deeper than 2 1/2" per foot. In the case of the SIRENIA 2 1/2" gives a freeboard of 4' 8 1/2" and a draught of 21' 3." Gross displacement at this draught is 3710 tons and we estimate Weight of Hull to be about 1080 tons. The freeboard required by Load Line Commission (and which is the one Lloyds will recommend if you apply for it) is 5 ft. - being 3 1/2" more than our usual rule gives. As the SIRENIA displaces at load line 18 1/2 tons per inch, this would reduce your carrying by about 63 tons.
We consulted Mr. Fowling of Lloyds about this question of freeboard and he made out that we could get vessel marked at 5 ft. He also said that although you got their as to freeboard you need not accept them unless you liked - as there was nothing compulsory in their tables."

17 November 1885 - to J. G. Rowan & Co.
SIRENIA to have linoleum and Windsor curtains in charthouse.
(see December 9th)

c.20 November 1885 - unaddressed
gives capacity of hold of SIRENIA; lower 86,398 cu. ft., lazarette 4,050 cu. ft., tweendeck & lazarette 54,245 cu. ft., forepeak 1,867 cu. ft. "If tweendecks were laid 3" thick contents of same would be 1,161 cu. ft. less than above."

20 November 1885 - to Robert McMillan
asks about launching date

27 November 1885 - to Robert McMillan
discusses surveyor for SIRENIA tonnage

1 December 1885 - to Robert McMillan
again asks about launching date

2 December 1885 - to Robert McMillan
same as above

4 December 1885 - to Robert McMillan
launching date again. Are marking loadline.
"200 tons stiffening (pig iron) to be put in at the crane to enable us to get the yards up."

8 December 1885 - to Robert McMillan
measurements from surveyor for SIRENIA:

length	264.8	ft.
breadth	38.15	ft.
depth	22.65	ft.
under deck	1520.17	
poop	80.11	
forecastle	47.42	
house	21.88	
total	1669.58	gross
allowance for crew	71.66	
total	1597.92	nett (sic)

9 December 1885 - to J. G. Rowan & Co.
McMillan wants SIRENIA to have carpets in charthouse instead of linoleum; cocoa matting in officers' rooms & passage instead of linoleum; arm chair for charthouse similar to Captain's room; a set of Holland covers for velvet cushions.

16 December 1885 - to J. G. Rowan & Co.
SIRENIA to have linoleum for bathroom floor in cabin.

16 December 1885 - to Robert McMillan
"Our invariable practice is never to fit topmast cap backstays unless there are Double topgallant yards. ...have exceeded normal practice in fitting six shrouds to the mizzen mast instead of five."

20 December 1885 - to Robert McMillan
preventer backstay on mizzen, "...fitted as described by you."

23 December 1885 - to Robert McMillan
"I am sorry I missed you to day at SIRENIA but I was detained and did not get up till 5 minutes after you had gone.

Undernoted you will find particulars regarding SIRENIA's Displacement from draughts taken last Saturday."

forward	11.3	
aft	10.0	
mean	10.7	1/2 fresh water
	10.4	3/4 salt water

gross displacement at salt water draught 1441 tons

weights on board vessel:

railway chairs	452 tons
slabs	8 tons
cargo gangways	4 tons
lead, etc. for healing	4 tons
	468 tons
weight of hull	973 tons

still to be added:

water	27 tons
steel hawsers, etc.	2 tons
sails	4 tons
upholstery	
nautical inst.	
medicine chest	
chandlery	3 tons approx.
coals	12 tons
	1021 tons

metacentric heights by healing calculations:

launched	5.3" above center of gravity
light w. masts	2.0" above center of gravity
50 ton load	5.5"
100 ton load	10.0"
200 ton load	19.0"
466 ton load	31.0"

25 December 1885 - to Robert McMillan
describes condition of ship during healing

31 December 1885 - to Robert McMillan
has received weights of provisions. Sending plans:
- Displacement scales
- spar plans
- deck plans
- tracing of metacentric curve, center of gravity & buoyancy curves

7 January 1886 - to Robert McMillan
SIRENIA ready to be taken over

11 January 1886 - to Robert McMillan
enclosing SIRENIA account as requested

12 January 1886 - to Robert McMillan
SIRENIA insurance details

14 January 1886 - to Robert McMillan
re building certificate signing and meeting on board SIRENIA.

18 January 1886 - to Robert McMillan
"...sent man to cut tonnage and official number on the main hatch."

25 January 1886 - to Robert McMillan
enclosing Lloyds certificate

25 January 1886 - to Robert McMillan
sending displacement scales

26 January 1886 - to Robert McMillan
enclosing center of gravity & metacentric curves

27 January 1886 - to Robert McMillan
returning displacement scales. ask captain for draughts in Queen's Dock fully loaded and at Tail of Bank when adjusting compasses.

12 February 1886 - to Robert McMillan
SIRENIA stability curves enclosed and account for slabs.

17 February 1886 - to Robert McMillan
vessel safe with 50 tons of ballast. still would not advise shifting in harbour with that amount only. recommend 40 or 50 tons more, "...to make it perfectly safe." only pay pilotage dues - other dues payable by owner.

23 February 1886 - to Robert McMillan
re-states policy of only paying pilotage dues from masting crane to loading berth. owners pay harbour dues.

26 February 1886 - to Robert McMillan re harbour dues controversy

9 March 1886 - same

13 March 1886 - same

16 March 1886 - same

18 March 1886 - to Robert McMillan
sending SIRENIA's lines. will send stability curve.
20 March 1886 - to Robert McMillan
met Mr. Mumford re harbour dues. he will look into matter.

7 April 1886 - to Robert McMillan
received L 25/6/7 in final payment of SIRENIA account.

(First letter dealing with the BALCLUTHA)
22 April 1886 - to Robert McMillan
(verbatim) "We duly received your forms of y'day for which We are obliged. We are going carefully into the matter and will submit our tender early next week."

25 April 1886 - to Robert McMillan
(verbatim) "Mr. Connell expects to have the pleasure of calling on you tomorrow afternoon with our price for a duplicate of the SIRENIA. If you do not expect to be at home you would oblige by sending us a wire in the forenoon."

3 May 1886 - to Robert McMillan, Grand Hotel, London
"...Mr. Connell was under the impression that the LISMORE's length was talked of, but We are now making the new vessel 247 ft. b.p. as wished. Your understanding with reference to dues is quite correct. We are preparing contract and specifications and will have them ready for your formal acceptance by the time you return."

11 May 1886 - to Robert McMillan
(verbatim) "We have now pleasure in enclosing copy specification and agreement for your new ship and trust you will find both in order.
Model will be ready on Thursday and we will be glad to hear when you can make it convenient to call to see it."

19 May 1886 - to Lloyds Surveyors
enclosing section for No. 147.

21 May 1886 - to Robert McMillan
(verbatim) "If it would suit your convenience our clerk would wait on you on Tuesday forenoon to get specifications and agreement signed and save you coming to town. Kindly let us know if this suggestion meets with your approval."

25 May 1886 - to Robert McMillan
signing is being handled by mail. "...would like to get started to cut the decking as soon as possible." 4" x 4" instead of 4" x 5" will add at least L 20 to the cost. ask to be allowed to "go on with Decks as in the SIRENIA. ...see from the papers SIRENIA

has arrived out. ...will be glad to learn if you have any word from the Captain of interest to us."

27 May 1886 - to Port Glasgow & Newark Sail Cloth Co.
request quote for sail cloth for "a duplicate of our No. 144."

27 May 1886 - to Charles Fowling, Lloyds
(verbatim) "Referring to your Committee's remarks on breadth of steel plates proposed by us for our No. 147, We beg to draw your attention to what your committee has possibly overlooked, that to meet the clause in new rules regarding broad plates We propose as compensation to fit angles at both top and bottom of Butt straps. We may say that this plan was suggested by your Mr. Mumford and from the tests We saw will we have no doubt give satisfactory results. This vessel is practically a duplicate of the SIRENIA completed by us in Jan. of this year and which had the broad shell plates but without the compensation referred to above. We trust your committee will reconsider this matter and see their way to pass shell plates as shewn in section submitted by us."

2 June 1886 - to Robert McMillan
acknowledges letter saying SIRENIA arrived safely out.

8 June 1886 - to Clarke Chapman & Co. (windlass builder)
will let you know maker of cable for No. 147.

10 July 1886 - to both George Tweedy and E. F. Jones for bids:
Patent, Ring, Roller, Bushes (all brass)

	pin	thick	flange	body
14	7/8"	1 3/8"	3 5/8"	2 5/8"
12	1"	1 3/8"		
47	3/4"	1 1/8"	3 1/4"	2 1/4"
48	5/8"	1"	2 7/8"	2"
12	1/2"	13/16"	2 1/2"	1 3/4"
6	7/8"	1 1/4"	3 5/8"	2 3/8"
6	3/4"		3 1/4"	2 1/4"
Gun metal Brass Bushes				
6	1 1/4"	1 3/4"	triangle flange	
24	1"	1 3/8"		
12	1 1/8"	1 3/8"		
Good cast iron sheaves with Brass Ring Rollers in Centre				
8	8 3/4" x 1 3/8"		3/4 pin	
9	5 3/4" x 1 1/8"		5/8 pin	
10	5" x 1 1/8"		5/8 pin	
1	4 1/4" x 1"		1/2 pin	

15 June 1886 - to Charles Fowling, Lloyds
returning section of No. 147, having noted your alterations.

18 June 1886 - to Lloyds Surveyors
returning filled out survey forms.

24 June 1886 - to Clarke Chapman & Co.
N. Hingley will make cable for No. 147.

24 June 1886 - to Robert McMillan
requests decision as to breadth of deck.

2 July 1886 - to Robert McMillan
(verbatim) "We duly received your favour of the 30th for which we are obliged.
We are glad that the Captain's report is on the whole so favorable and we trust that with less trying cargo he will get better results in the future.
We will pay special heed in the new ship to the various points noted and do our utmost to avoid all cause for complaint. We note that you have decided to have main deck 4 x 4 and have given instructions accordingly. Of course you understand that this is simply between Poop & forecastle bulkheads."

27 July 1886 - to Robert McMillan
(verbatim) "We beg to inform you that No. 147 Steel Sailing Ship will be in frame on Tuesday night 3rd. August."

28 July 1886 - to Robert McMillan
(verbatim) "We have forwarded today per Bank post, Spar Plan, Main Deck plan, and Plan of top of Poop showing Chart House. We would be glad to know if you approve of Spar plan so that we could get the plates for our Masts ordered."

4 August 1886 - to Robert McMillan
"SIRENIA's floors were painted but we have stopped our painter from doing anything to the floors of New Ship until We see you."

5 August 1886 - to J. Baird Smith
enclose L 3750 "framing installment" for No. 147.

5 August 1886 - to Robert McMillan
returning spar plan with corrections.

6 August 1886 - to Lloyds Surveyors
enclose description of steel spars for No. 147.

10 August 1886 - to Robert McMillan
returning spar plan with "amendments."

11 August 1886 - to Clarke Chapman & Co.
enclose tracing and particulars. will send plan of seating (for windlass).

16 August 1886 - to Robert McMillan
acknowledge receipt of work on approval of spar plan. request signed copy.

16 August 1886 - to N. Hingley & Sons
outfit will be needed about November.

25 August 1886 - to R. C. Wallace & Co.
request quote for bilge pumps for No. 147, "...with two spare sets of brass upper & lower boxes and one spare spear with working bucket leathered complete." (see 27 Aug.)

25 August 1886 - to John Roby
request quote for sidelights; probable quantity 21/9" 10/10" 10/7" for No. 147.

27 August 1886 - to R. C. Wallace & Co.
understand from letter have given up making pumps.

27 August 1886 - to Lloyds Surveyors
return specs. for spars for No. 147.

31 August 1886 - to John Niven
sending rigging plan for list

31 August 1886 - to Robert McMillan
propose Mill's pumps for new ship. Wallace's went into SIRENIA but he seems to have given up pump making.

1 September 1886 - to Paterson Robb & Co.
accept quote to supply sidelights for No. 147

2 September 1886 - to Robert McMillan
received approval for Mill's pumps. "vessel is nearly half plated & partly rivetted. We expect to be completely plated by about the 16th. The main deck is half laid.

3 September 1886 - to W. A. Kinghorn
need windlass by end of next week for No. 147.

6 September 1886 - to Robert Mills, Greenock
accept quote to supply pumps and spare gear for No. 147.

7 September 1886 - to Robert Mills & Co.
particulars of pumps for No. 147. "Note that flywheels are to be inside rails."

9 September 1886 - to John Niven
request rigging list.

9 September 1886 - to John Black
accept quote to supply galvanized charcoal wire rope, and manila rope for No. 147.

10 September 1886 - to Robert McMillan
(verbatim) "Please look at plan of New Ship and let us know where you would put ventilator aft and what size you would want it."

11 September 1886 - to Cameron & McConnell
accept quote to do "plumber works" for No. 147.

14 September 1886 - to A. Brownlie & Co.
enclose specs. for chandlery for No. 147.

14 September 1886 - to John Black & Co.
require galvanized wire rope for No. 147, "...hemp core in ea. strand and in center of rope and to have tally number attached to ea. coil."

15 September 1886 - to Robert McMillan
enclose deckplan. request ventilator particulars. "We would also like to get name to arrange about Figure & etc."

16 September 1886 - to John Black & Co.
will accept, "...rope in your usual style, although we do not think the wire core in the strand adds to the strength."

21 September 1886 - to A. Brownlie & Co.
tanks and ventilators for No. 147:

3 galv. iron water tanks	24"x15x15x16	WG tap & filling screw
5 bread tanks	4'x3'10"x13	WG airtight manhole covers
1 bread tank	3'sq.x14	WG airtight manhole covers
1 oil tank	36"x15x18x16	WG brass filling and cleaning
2 oil tanks	36"x18x18x16	screw and lock cock
2 oil tanks	18"x15x12x18	"
2 oil tanks	36"x15x13x18	"
1 oil tank	24"x15x13x18	"
5 tanks w. lids for pantry	30x22x22x16	WG

4 zinc tanks in pantry for "pease," etc. as supplied to SIRENIA
1 mushroom ventilator 8" dia. 2' above deck with tween deck pipe - 7' 9" between decks

1 16" ventilator, cowl head with watertight cover 7' 3" from top of deck to top of ventilator
1 14" same, 7' 4" from top of deck to underside of lip
1 cowl head to fit oval coamings 15 1/4" x 21" top of cowl 6' 9" above deck.

22 September 1886 - to A. & D. G. Reid
(verbatim) "Figure for our No. 147 is to be a Stylish Modern Demi-woman. We enclose Carving plan and will be glad if you fill it in and return it with your notes."

22 September 1886 - to A. B. Brownlie
accept quote to provide chandlery at L 120, ship's bell and belfry, binnacle bell and stand at L 4.15, for No. 147.

22 September 1886 - to Hartshorne & Co., Dudley
accept quote to provide crane rigging chain for No. 147.

22 September 1886 - to A. Sandilands Sons
accept quote to provide cooperage for No. 147.

22 September 1886 - to N. Hingley & Sons
accept quote to provide cable and anchors for No. 147.

24 September 1886 - to Robert Douglas & Son "Plantation Sail Works"
accept quote to provide sails, awning and livery for No. 147, including bending sails.

24 September 1886 - to Robert McMillan
"With reference to Gangway from poop to Boat Beams in your new ship as it is only 24 feet long we think it would be better and handier to have it hinged all in one piece. It is convenient to mizzen mast for hauling up and it would clear Hatch much better."

27 September 1886 - to A. B. Brownlie
accept quote to provide tanks and ventilators for No. 147.

27 September 1886 - to Lloyds Surveyors
rudder of No. 147 ready for inspector of forgings.

28 September 1886 - to both William Meikle & Son, and G. & J. Rae
request quote for glazier work for No. 147:

saloon skylight	6 bent panes	23x20	1/4"	"with neat design"
	2 circle top	30 1/3x22 1/4		"
	6 straight	9x15 1/2		"
	4 straight	9x8 1/2		"
wt house	8 straight	15x12 1/2	1/4"	"clear plate"
alley	8 straight	10x13 1/2	3/8"	"
(illeg.)	6 straight	17x11	3/8"	

28 September 1886 - to A. & D. G. Reid
(verbatim) "We beg to accept your offer of the 24th inst. to carve No. 147's figurehead to our entire satisfaction for the sum of five pounds ten shillings stg. We return sketch and send Blocks per (illeg.)
29 September 1886 - to A. Brownlie & Co.
re flags for No. 147 (no details).

29 September 1886 - to Whyte & Co., Broomielaw
request quote for following for No. 147:
1 Whytes improved standard compass and binnacle with azimuth
1 steering compass 10" card double needle with B. binnacle top & lamps complete on handsome brass stand
1 spare spirit compass in box to fit binnacle
1 small telltale compass
2 spare compass cards marked with degrees
1 barometer and sympiesometer combined
1 pair of night glasses
1 telescope
1 half hour glass
1 log slate
2 log books
4 log glasses
1 B. speaking trumpet
1 aneroid for Captain's room
1 mechanical fog horn
1 copper thermometer
1 American (illeg.) for companion
1 handsome inkstand for saloon with two penholders
1 book of lights
1 Mate's receipt book
1 German silver salinometer in Mahogany case
1 expenditures of provisions book
1 Brown's tide tables
1 Scott's Telegraph and Code Book
2 inventory of stores books
1 wages book for 50 men
2 cargo books
2 boxes steel pens
2 quires foolscap
1 doz. lead pencils
1 doz. slate pencils
1 disbursement book
2 pint bottles ink
2 quires note paper
2 quires blotting paper
1 doz. 1d passbooks
1 piece india rubber
1 Nautical Almanac

2 October 1886 - to A. & D. G. Reid
(verbatim) "We beg to accept your offer of (illeg.) to execute the internal carved & gilt work for above (147) contract as under.

capitals	4/. ea.
moulding	10d per foot
mirror	60 x 30 please, carved and gilt
frame with clock case	78/-"

5 October 1886 - to G. & J. Rae
accept quote for glazing work for No. 147 at L 4/13/4 Stg., less 2 1/2%.

5 October 1886 - to Robert McMillan
"...sending Bill Stamp and will be glad if you fill it up and return it." (?)

7 October 1886 - to George Hartshorne & Co.
request quote for rigging chain for No. 147.

7 October 1886 - to Robert McMillan
received promissory note for L 3750 payable on demand. "...but as arranged, not to be presented for payment until the ship is ready for delivery."

9 October 1886 - to Robert McMillan
"Would you think of doing anything in steam winches to utilize your boiler for cargo purposes?"

14 October 1886 - to A. B. Brownlie & Co.
re set of galvanized boat tanks for No. 147 (no details).

14 October 1886 - to John Black
accept quote to provide galvanized steel hawsers and manila springs for No. 147.

15 October 1886 - to A. & D. G. Reid
(verbatim) "Please say per bearer when we can send for figure(head)."

18 October 1886 - to Cammeron & McConnell
need scuppers in at once in case of more rain. (No. 147)

19 October 1886 - to A. Brownlie & Co.
re ventilator coamings for No. 147.

19 October 1886 - to James Templeton
accept quote to provide marble sideboard top w. lambs tongue at 28/- for No. 147.

19 October 1886 - to Robert McMillan
"I did not mean you to understand the last time I saw you that I had agreed to pay Messrs Black extra for a superior quality of rope. I meant to think over the matter and see you further about it, as the few pounds extra is a matter of consequence these days of low prices.
Have tried every works for 6 x 4 tees (for boat beams) but without success." 5" x 4" only available. have used in all other ships.
still need name for flag, bells, crockery, etc.

23 October 1886 - to A. Brownlie & Co.
want range finished, side lamps, tanks and ventilators. name is BALCLUTHA, please get bells engraved.

23 October 1886 - to Robert McMillan
cannot have vessel ready first week in Dec. spars are behind. Boat Beams to be 5" x 4" - 4" deep. would use heavier but too small amount to have specially rolled. received name BALCLUTHA. expect rigging done next week. will advise when riggers start to fit it.

25 October 1886 - to R. Cochran & Co., 136 Glebe St.
request price for, "...best ironstone ware, enamelled green band and line & house flag, same as for No. 144."
1 dozen ea. dinner, (illeg.), dessert, & (illeg.) plates
1 dozen dishes assorted 4/10 4/12 2/14 2/16 inch
2 butter boats
2 butter pots
2 sugar basins
2 doz. cups and saucers
6 vegetable dishes
12 mugs
4 pie dishes
12 egg spoons
12 soup basins (30)
4 water (illeg.) for cabin (24)
2 cut pint decanters
2 cut quart decanters (No. 10)
12 cut tumblers
12 cut wine glasses
(three more lines illeg.)

26 October 1886 - to James Stevenson
price for flags a bit high.

26 October 1886 - to George Hartshorne & Co.
ready for rigging chain for No. 147.

27 October 1886 - to J. G. Rowan & Co.
enclose specifications for upholstery for No. 147. quality, colour & patterns same as SIRENIA.

27 October 1886 - to A. & D. G. Reid
(verbatim) "Please send down tomorrow to reconcile figure(head)."

28 October 1886 - to Robert McMillan
riggers probably start "by about Monday first."

1 November 1886 - to Lloyds Surveyors
midship section of No. 148 ready for inspection, "exact duplicate" of No. 147.

4 November 1886 - to James Stevenson
describes houseflag.

4 November 1886 - to R. Cochran & Co.
re chinaware. same color as supplied No. 144, "...which seems to have been green. House Flag is white with a large red 'M' in centre. In No. 144 'Mc' was in centre of flag but in this case only 'M' is wanted."

8 November 1886 - to John Black & Co.
urgent need of wire rigging. had expected it last week.

10 November 1886 - to A. Brownlie & Co.
instead of gun owners want distress signals and socket fitted on rail.

11 November 1886 - to Lloyds Surveyors
enclose sketch of rigging screws for No. 147.

16 November 1886 - to R. Cochran & Co.
put name BALCLUTHA on chinaware.

18 November 1886 - to A. Brownlie & Co.
brief illegible note urging completion of some item.

19 November 1886 - to Robert McMillan
(verbatim) "We will be glad to know if you wish the spare coils Manilla to be fine yarns. We only counted on the Running Gear being this."

22 November 1886 - to John Black & Co.
for No. 147 require: one 6 1/2" manila warp 90 fms., and two 5 1/2" manila hauling lines 120 fms.

22 November 1886 - to John Black & Co.
received unordered cordage.

24 November 1886 - to James McMillan, Lloyds, London
request quote to cover launching risk.

1 December 1886 - to Robert McMillan
(verbatim) "I have received letter from Rowan;s people which I beg to enclose, they apparently cannot give as much information about common engines. The launch of BALCLUTHA should be not later than 11 A.M. on Thursday 9th Dec. With regard to galvanizing hearts in rigging screws, I find the bolts are all clinched and we could not get them out unless by cutting and perhaps destroying some of them. I am sorry we did not notice this before you left, as you could have see the difficulty yourself."

2 December 1886 - to J. G. Rowan & Co.
re upholstering. you can now get all measurements for No. 147.

2 December 1886 - to John Niven
notifying of launching time.

2 December 1886 - to Angus Paterson
notifying of launching time for pilot.

2 December 1886 - to John Black & Co.
require for No. 147:

4 coils 3" manila	fine yarns
8 coils 2 3/4" manila	"
10 coils 2 1/2" manila	"
6 coils 2 1/4" manila	"
5 coils 2" manila	"
2 coils 21 thread manila	"
1 coil 18 thread manila	"

3 December 1886 - to James Storer & Co., 48 French St.
request for quote for paint supplies for No. 147

30 gals. colza oil
40 raw linseed
90 boiled linseed
2 sperm
10 turps
40 kerosene
40 pine oil
40 bright varnish
20 black varnish
1/4 Brunswick black
6 cwt white zinc

6 cwt red oxide
7 cwt black paint
6 cwt red lead
6 cwt stone colour paint
1 cwt whiting
4 cwt tallow
10 lbs Indian yellow
10 lbs umber
1 cask ea. pitch, rosin
1 barrel Stockholm tar
2 barrels Swedish pitch
1 barrel Swedish tar

3 December 1886 - to A. Brownlie & Co.
re price of mushroom ventilators. asks for lamps so joiner can, "...get fixing them up."

15 December 1886 - to James Storer & Co.
re paint. please deliver to ship in Queens Dock.

15 December 1886 - to R. Cochran & Co.
please deliver chinaware and crystal to BALCLUTHA at north east corner of the Queens Dock.

15 December 1886 - to John Babtie
vessel is in Queens Dock. please put medicine chest on board.

15 December 1886 - to Robert McMillan
(verbatim) "We expect to finish BALCLUTHA by Wednesday the 29th Dec. Regarding the sails we have left Capt. Constable to arrange with Mr. Douglas when to have them bent. We are arranging to heel vessel on the 28th if suitable, when we think everything will be on board and have written Prof. Jenkins regarding this."

16 December 1886 - to John Black & Co.
spare cordage for No. 147:

100 fms. ea.	4 1/2" & 4" ordinary yarns
120	3 1/2"
120	3 1/4" fine yarns
240	2 3/4", 2 1/2", 2 1/4"
40	5", 4", 3 1/2", 3", 2 3/4", 2 1/2" boltrope
2 coils ea.	18 & 21 thread ratline

3 cwt spunyarn
2 cwt hambroline, houseline, marline
14 lbs. seizing wire

16 December 1886 - to James Spiers Kenneth, 57 Hope St.
spare canvas for No. 147:
8 bolts canvas, boiled G

1 ea. Nos. 1,4,5,6
2 ea. Nos. 2,3
3 bolts Orient No. 3
2 bolts 30" tarpaulin
25 yards duck

16 December 1886 - to Robert McMillan
(verbatim) "To suit Prof. Jenkins we will have to heel vessel on 22nd inst. You could arrange to put remainder of Ballast on board any day after that."

18 December 1886 - to J. G. Rowan & Co.
(verbatim) "Owner was on board today and finds fault with table cover as not being what Captain selected. Also covers for sofa elbows are not taped and the hinges do not fold sufficiently far up. Please get these little matters put right at once."

18 December 1886 - to A. Brownlie & Co.
please get all lamps on board Monday. two oil tanks & side light glass are not as ordered - needs to be put right.

18 December 1886 - to John Black & Co.
note on price for boltrope, spunyarn, etc.

20 December 1886 - to Robert McMillan
annexing particulars of BALCLUTHA (below). Displacement scale by end of week.

length	256.5	breadth	38.65	depth 22.75
	under deck		1533.97	
	poop		80.07	
	forecastle		51.35	
	houses		23.91	
			1689.30	gross
	allowance for crew			
			75.68	
			1613.62	nett

list of crew space:

seamen F.C. certified to accommodate	34	seamen
petty officers D.H.	6	"
Boys D.H.	6	"
1st Officer - Poop	3	"
2 & 3 Officers "	3	"

Hospital (Hospital for Crew Cut on Beam)

22 December 1886 - to Robert McMillan
sends BALCLUTHA account.

23 December 1886 - to Philip Jenkins, London
enclosing information for doing center of gravity for No. 147, sketch of ballast, tanks, tracing of sail plan, with weights.

23 December 1886 - to Robert McMillan
certificates of cables in surveyors hands, expect to have tomorrow. understand Capt. Constable has arranged to have sails bent on Monday & vessel will be practically completed by that night. will have plans ready to post tomorrow night. will wait on you with builder's certificate any time convenient.

24 December 1886 - to Robert McMillan
sending two deckplans, two spar plans, and displacement plans parcel post. tonnage and official number to be put on in the morning.

28 December 1886 - to Robert McMillan
"Met Capt. Constable at tonnage office & cleared ship."
enclosing receipts for L 21/11/1 for which request cheque.

29 December 1886 - to Lloyds Surveyors
No. 147 tonnage (same information as sent to McMillan on 20 December).

30 December 1886 - to Robert McMillan
received L 21/11/1 for Clyde dues. enclose certificates of anchors, cables, and hawsers and will forward Lloyd's certificate when received. busy with stability curves. will send as soon as possible.

7 January 1887 - to Robert McMillan
"Complements of the Season." above documents still coming.

12 January 1887 - to Robert McMillan
enclose Lloyd's certificate and stability curve. "...have allowed for stone ballast in ea case stored to height of not more than 3' mean above top of ceiling for 100 tons, and 3' 6" for 150 tons. metacentric height with everything on board 10."

13 January 1887 - to Robert McMillan
sending further copy of stability curve.

20 January 1887 - to Robert McMillan
(verbatim) "In answer to yours received this morning if you can give us the average height of cargo left in when you heel ship and also its correct weight by deducting we will get C. of G. of Hull without anything on board and then we can give you the curves, worked out in same ballast as allowed for in BALCLUTHA's curves. The calculations were taken with everything aloft and in

position, both Jenkins' curves and our own coming out almost identical The metacentric heights as well. We will work out a curve for you with the Royal yards on deck and all the sails unbent. I can't understand Capt. McIntyre saying SIRENIA is so very tender, as her curves don't shew her to be so, and they are right, up till the point of immersion of deck, but it is iron ballast that is allowed for in her case. We will make out new curves for her with stone ballast and see how they look.

I am glad you are pleased with BALCLUTHA and hope she may be a success in every way. If you think of building, things are rising steadily, in fact steel is dearer ap present than when you contracted for SIRENIA, so I think you should look into the matter as soon as you can."

8 February 1887 - to Robert McMillan
sorry could not meet at exchange. sending second tracing of stability curve for Captain. doing curve at load draft for different cargoes. please send results of heeling SIRENIA. will make out curves similar to BALCLUTHA's.

"...regret exceedingly to hear about sweating in SIRENIA."

10 February 1887 - to Robert McMillan
telegram to Capt. McIntyre returned for insufficient address. will write tonight.

11 February 1887 - to Robert McMillan
sending particulars of hawsers and spare ropes supplied to SIRENIA, as requested.

14 February 1887 - to Robert McMillan
enclosing stability curves for both ships. show BALCLUTHA better at 1 deg. to 12 deg. heel, but SIRENIA better at greater angles. believe due to SIRENIA having less weight in rig, and "better proportions" of BALCLUTHA giving greater metacentric height.

28 February 1887 - to Robert McMillan
explains curves further. discusses ballast needed to shift. Prof. Jenkins feels vessels should have positive stability up to 40 deg. 35 deg. might be sufficient. will be interested in opinion you get from Martell and Read.

7 March 1887 - to Robert McMillan
re SIRENIA's defective topsail brace runner. offers a coil of 2 1/4 flexible steel rope to settle matter. LISMORE's owners accepted similar offer for similar complaint.

8 March 1887 - to Robert McMillan
enclosing "sketch of BALCLUTHA's ballast."

16 March 1887 - to Robert McMillan
more on SIRENIA defective wire settlement.

25 March 1887 - to Robert McMillan
sending cheque for L 11/11/1 to settle above.

6 September 1887 - to Robert McMillan
will be pleased to meet in Royal Exchange tomorrow about 11:45.

APPENDIX 3

Movements of the BALCLUTHA 1886-1989

1886	29 Dec.	Sailed from Tail of Bank, Firth of Clyde for Cardiff Capt. J. F. Constable	ballast
1887	15 Jan.	Sailed from Penarth	2650 tons coal
	9 June	Arrived San Francisco	
	26 Aug.	Sailed from San Francisco	59,179 centals wheat
1888	7 Jan.	Arrived Queenstown, Ireland	
	21 Jan.	Arrived Fleetwood, England	
	3 Mar.	Sailed from Swansea, Wales	2660 tons coal
	26 July	Arrived San Francisco	
	2 Sept.	Sailed from San Francisco	60,389 centals wheat
	28 Dec.	Arrived Queenstown, Ireland	
1889	10 Jan.	Arrived Plymouth, England	
	5 Feb.	Sailed from Plymouth, England Capt. John Binnie	
	5 Apr.	Sailed from Antwerp, Belgium	merchandise
	17 Aug.	Arrived San Francisco	
	23 Oct.	Sailed from San Francisco	59,514 centals wheat
1890	20 Mar.	Arrived Falmouth, England	
	1 Apr.	Arrived Sunderland, England	
	21 June	Sailed from Cardiff, Wales	
	1 Sept.	Arrived Cape Town, South Africa	
	20 Sept.	Sailed from Cape Town, South Africa	
	11 Nov.	Arrived Napier, New Zealand	

1891	2 Jan.	Sailed from Napier, New Zealand
	12 Apr.	Arrived London
	31 May	Sailed from London Capt. J. W. Morrell
	1 July	Arrived New York
	13 Aug.	Sailed from New York
	1 Dec.	arrived Rangoon, Burma
1892	20 Feb.	Sailed from Rangoon, Burma
	26 June	Arrived Falmouth, England
	30 June	Arrived Amsterdam, Netherlands
	15 Nov.	Sailed from Amsterdam, Netherlands
	19 Nov.	Arrived Barry, Wales
	7 Dec.	Sailed from Barry, Wales
1893	1 Mar.	Arrived Callao, Peru
	26 Apr.	Sailed from Callao, Peru
	29 Apr.	Arrived Lobos de Tierra Islands
	14 June	Sailed from Lobos de Tierra Islands
	4 Oct.	Arrived Antwerp, Belgium
	14 Nov.	Sailed from Antwerp, Belgium
	28 Nov.	Arrived Barry, Wales
	26 Dec.	Sailed from Barry, Wales
1894	26 Mar.	Arrived Callao, Peru
	4 June	Arrived Iquique, Chile
	3 Nov.	Arrived Rotterdam, Netherlands
	28 Nov.	Sailed from Rotterdam, Netherlands

	1 Dec.	Arrived Barry, Wales	
	14 Dec.	Sailed from Barry, Wales Capt. Alfred H. Durkee	
	24 Dec.	put back after collision	
1895	22 Jan.	Sailed from Barry, Wales	
	5 June	Arrived Iquique, Chile	
	19 Sept.	Sailed from Iquique, Chile	
	31 Dec.	Arrived Falmouth, England	
1896	7 Jan.	Sailed from Falmouth, England	
	11 Jan.	arrived Antwerp, Belgium	
	1 Apr.	Sailed from Antwerp, Belgium	2197 tons coal 397 tons coke
	15 Aug.	Arrived San Francisco	
	13 Oct.	Sailed from San Francisco	salmon, canned fruit, beans,
1897	21 Feb.	Arrived Gravesend, England	barley, wine
	5 May	Sailed from London	
	24 Sept.	Arrived San Francisco	
	18 Nov.	Sailed from San Francisco	58,558 centals wheat
1898	2 Apr.	Arrived Falmouth, England	
	9 Apr.	Arrived Le Havre, France	
	22 Mar.	Sailed from Le Havre, France	
	23 June	Sailed from Greenock, Scotland	
	8 Aug.	Arrived Montevideo, Uruguay	
	4 Oct.	Sailed from Montevideo, Uruguay	
	6 Dec.	Arrived Calcutta, India	
1899	4 Feb.	Sailed from Calcutta, India	

	27 May	Arrived San Francisco	
	26 July	Sailed from San Francisco Capt. Hatfield	
	15 Aug.	Arrived Port Townsend, Washington	
		Port Blakely, Washington	1.5 million feet of lumber
	30 Sept.	Sailed from Port Townsend, Wash.	
1900	16 Jan.	Arrived Port Pirie, Australia	
	14 Feb.	Sailed from Port Pirie, Australia	ballast
	1 Mar.	Arrived Newcastle, Australia	
	27 Mar.	Sailed from Newcastle, Australia	2608 tons coal
	9 June	Arrived San Francisco	
	7 July	Sailed from San francisco	
	28 July	Arrived Port Blakely, Washington	
	23 Aug.	Sailed from Port Blakely, Wash.	1,535,000 feet of lumber
	31 Aug.	Sailed from Port Townsend, Wash.	
	19 Nov.	Arrived Port Pirie, Australia	
1901	12 Jan.	Sailed from Port Pirie, Australia	
	29 Jan.	Arrived Newcastle, Australia	
	15 Apr.	Sailed from Newcastle, Australia	2621 tons coal
	2 June	Arrived Honolulu	
	3 July	Sailed from Honolulu	
	23 July	Arrived Port Blakely, Washington	
	31 July	Arrived Port Townsend, Washington	
	17 Aug.	Arrived Port Gamble, Washington	
	3 Sept.	Sailed from Port Gamble, Wash.	1,408,800 feet of lumber

	22 Nov.	Arrived Melbourne, Australia	
	28 Dec.	Sailed from Melbourne, Australia Capt. George Wester	
	31 Dec.	Arrived Newcastle, Australia	
1902	12 Jan.	Sailed from Newcastle, Australia Capt. B. Bremer	2138 tons coal
	19 Mar.	Arrived San Francisco	
	8 Apr.	Sailed from San Francisco	
	22 Apr.	Arrived Loring, Alaska	
	2 Nov.	Sailed from Loring, Alaska	
	14 Nov.	Arrived San Francisco	
1903	25 Apr.	Sailed from San Francisco	
	13 May	Arrived Karluk, Alaska	
	23 June	Arrived Nanaimo, British Columbia	
	30 July	Sailed from Port Townsend, Washington	
	30 Aug.	Arrived Karluk, Alaska	
	16 Oct.	Arrived San Francisco	
1904	27 Apr.	Sailed from San francisco	
	16 May	Ashore on Geese Island, Alaska	
	3 Oct.	Sailed from Alaska following salvage, but forced to put back	
1905	12 July	Sailed from Alaska Capt. N. Wagner	
	7 Aug.	Arrived San francisco	
1906	27 Mar.	Sailed from San francisco	
	19 Apr.	Arrived Chignik, Alaska	

	29 June	name changed to STAR OF ALASKA
	7 Sept.	Sailed from Chignik, Alaska
	22 Sept.	Arrived San Francisco
1907	6 Apr.	Sailed from San Francisco Capt. C. A. Halvorson
	22 Apr.	Arrived Chignik, Alaska
	12 Sept.	Sailed from Chignik, Alaska
	27 Sept.	Arrived San Francisco
1908	1 Feb.	Sailed from San francisco
	9 Feb.	Arrived Bellingham, Washington
	1 Mar.	Sailed from Bellingham, Washington
	8 Mar.	Arrived San Francisco
	31 Mar.	Sailed from San Francisco
	19 Apr.	Arrived Chignik, Alaska
	10 Sept.	Sailed from Chignik, Alaska
	22 Sept.	Arrived San Francisco
1909	30 Mar.	Sailed from San francisco
	16 Apr.	Arrived Chignik, Alaska
	12 Sept.	Sailed from Chignik, Alaska
	23 Sept.	Arrived San Francisco
1910	26 Mar.	Sailed from San francisco
	19 Apr.	Arrived Chignik, Alaska
	7 Sept.	Sailed from Chignik, Alaska
	23 Sept.	Arrived San Francisco
1911	15 Mar.	Sailed from San Francisco

	3 Apr.	Arrived Chignik, Alaska
	9 Sept.	Sailed from Chignik, Alaska
	22 Sept.	Arrived San Francisco
1912	15 Mar.	Sailed from San Francisco
	3 Apr.	Arrived Chignik, Alaska
	9 Sept.	Sailed from Chignik, Alaska
	23 Sept.	Arrived San Francisco
1913	15 Mar.	Sailed from San Francisco
	7 Apr.	Arrived Chignik, Alaska
	30 Aug.	Sailed from Chignik, Alaska
	9 Sept.	Arrived San Francisco
1914	31 Mar.	Sailed from San Francisco
	19 Apr.	Arrived Chignik, Alaska
	31 Aug.	Sailed from Chignik, Alaska
	11 Sept.	Arrived San Francisco
1915	8 Apr.	Sailed from San Francisco Capt. Johnson
	30 Apr.	Arrived Chignik, Alaska
	26 Aug.	Sailed from Chignik, Alaska
	7 Sept.	Arrived San Francisco
1916	4 Apr.	Sailed from San Francisco
	29 Apr.	Arrived Chignik, Alaska
	17 Sept.	Sailed from Chignik, Alaska
	11 Oct.	Arrived San Francisco
1917	3 Apr.	Sailed from San Francisco

	27 Apr.	Arrived Chignik, Alaska
	16 Sept.	Sailed from Chignik, Alaska
	30 Sept.	Arrived San Francisco
	16 Dec.	Sailed from San Francisco
1918	10 Jan.	Arrived Honolulu
	28 Jan.	Sailed from Honolulu
	11 Feb.	Arrived San Francisco
	6 Apr.	Sailed from San Francisco
	29 Apr.	Arrived Chignik, Alaska
	3 Oct.	Sailed from Chignik, Alaska
	19 Oct.	Arrived San Francisco
1919	5 Apr.	Sailed from San francisco
	27 Apr.	Arrived Chignik, Alaska
	23 Sept.	Sailed from Chignik, Alaska
	5 Oct.	Arrived San Francisco
1920	9 Apr.	Sailed from San Francisco
	27 Apr.	Arrived Chignik, Alaska
	2 Oct.	Sailed from Chignik, Alaska
	13 Oct.	Arrived San Francisco
1921	16 Apr.	Sailed from San Francisco
	13 May	Arrived Chignik, Alaska
	25 Sept.	Sailed from Chignik, Alaska
	9 Oct.	Arrived San Francisco
1922	5 Apr.	Sailed from San Francisco
	23 Apr.	Arrived Chignik, Alaska

	8 Sept.	Sailed from Chignik, Alaska
	28 Sept.	Arrived San Francisco
1923	11 Apr.	Sailed from San Francisco
	5 May	Arrived Cook Inlet, Alaska
	2 Sept.	Sailed from Chignik, Alaska
	22 Sept.	Arrived San Francisco
1924	4 Apr.	Sailed from San Francisco
	6 May	Arrived Chignik, Alaska
	4 Oct.	Sailed from Chignik, Alaska
	17 Oct.	Arrived San Francisco
1925	4 Apr.	Sailed from San Francisco Capt. Bertoncini
	29 Apr.	Arrived Chignik, Alaska
	14 Sept.	Sailed from Chignik, Alaska (in tow)
	28 Sept.	Sailed from Alitak, Alaska
1926	3 Apr.	Sailed from San Francisco Capt. M. Mortensen
	17 Apr.	Arrived Chignik, Alaska
	9 Sept.	Sailed from Chignik, Alaska
	20 Sept.	Arrived San Francisco
1927	7 Apr.	Sailed from San francisco
	30 Apr.	Arrived Chignik, Alaska
	2 Oct.	Sailed from Chignik, Alaska
	23 Oct.	Arrived San Francisco
1928	3 Apr.	Sailed from San Francisco
	22 Apr.	Arrived Chignik, Alaska

	6 Oct.	Sailed from Chignik, Alaska
	21 Oct.	Arrived San Francisco
1929	6 Apr.	Sailed from San Francisco Capt. C. Peterson
	25 Apr.	Arrived Chignik, Alaska
	4 Oct.	Sailed from Chignik, Alaska
	25 Oct.	Arrived San Francisco
1930	2 Apr.	Sailed from San Francisco (in tow)
	11 Apr.	Arrived Chignik, Alaska
	7 Sept.	Sailed from Chignik, Alaska (in tow)
	16 Sept.	Arrived San Francisco
1933	29 Sept.	name changed to PACIFIC QUEEN
1934	4 Feb.	Sailed from San Francisco Capt. Charles Watts
	14 Feb.	Arrived San Pedro
	June	Sailed from San Pedro
	June	Arrived Santa Monica
	Sept.	Sailed from Santa Monica
	Sept.	Arrived San Pedro
1935	9 July	Sailed from San Pedro Capt. R. Moyes
	11 July	Arrived San Diego
1936	4 July	Sailed from San Diego
	16 July	Arrived San Geronimo Island, Mexico
	18 July	Sailed from San Geronimo Island, Mexico
	10 Sept.	Arrived Long Beach

1937	14 Apr.	Sailed from Long Beach
	14 April	Arrived San Pedro
1940	April	Sailed from San Pedro (in tow)
	22 Apr.	Arrived San Francisco, Pier 43
1941	July	Shifted to Hyde Street Pier
1942	29 Jan.	Shifted to Islais Creek
	19 Aug.	Shifted to Sausalito
1946	11 Nov.	Sailed from Sausalito (in tow)
	15 Nov.	Arrived Long Beach
1952	15 Oct.	Sailed from Long Beach (in tow)
	18 Oct.	Arrived Sausalito
1954	13 July	Shifted to Bethlehem Steel Shipyard
	August	Shifted to Alameda
1955	16 May	Shifted to Oakland
	19 July	Shifted to San Francisco, Pier 43
1960	19 March	Shifted to Bethlehem Steel Shipyard
	9 June	Returned to Pier 43
1966	7 March	Shifted to Bethlehem Steel Shipyard
	25 April	Returned to Pier 43
1981	18 Sept.	Shifted to Alameda, Pacific Dry Dock
	28 Oct.	Returned to Pier 43
1986	14 Apr.	Shifted to Alameda, Pacific Dry Dock
	16 Sept.	Returned to Pier 43
1988	28 Apr.	Shifted to Hyde Street Pier

APPENDIX 4

Repairs and Alterations to the STAR OF ALASKA,
ex-BALCLUTHA made by the Alaska Packers Association

(Obtained from the Company's records during the 1940's
by Captain Harold Huycke

1905-06 Laid new ceiling, chipped and painted hull from keel to rail; bulwarks, main, poop and gans'l focs'l decks.

1906-07 Installed bunks for 50 fishermen and 100 Chinese; furnished 1 tested anchor 5895 lbs. from I. E. THAYER.

1907-08 None

1908-09 Scaled and painted forepeak.

1909-10 Scaled and painted hull to water line, lower hold and masts under decks. Repaired spar ceiling.

1910-11 Furnished a wooden lower tops'l yard, carried away in heavy gale in outward voyage in 1910. Repaired topmast injured in same gale. Built 72 fishermen bunks, tables and bunks in Tween decks. Furnished Tanner Sounding machine; supplied fire fighting tools.

1911-1912 Extended poop 68' 8" which was arranged in two sections with a passageway between. The port side has 8 rooms, two toilets, and one wash room; the starboard side 86 berths for fishermen, a passageway between the two giving admittance to the rooms and the cabin. The forward house and space under the focs'l head was rearranged for a donkey room, ship's galley, Italian galley, and Chinese galley with two lockers and two toilets. Repairs were also made to broken knees in the Tween deck beams and seven broken knees in the main deck beams. The vessel was at the United Engineering Works from October 23, 1911 til December 12, 1911. Four lights (portholes) were installed on each side of the Tween deck to admit light in the Oriental quarters. laid new poop deck and caulked entire main deck.

1912-13 Rebuilt Oriental quarters in accordance with our latest approved methods for accommodations of 102 Orientals. Enlarged the Italian galley.

1913-14 Supplied a Hooker double-acting hand pump no.3 and a 50 gallon drinking water tank for Orientals.

1914-15 Shifted ballast; scaled and cemented bottom and angle irons. Removed ceiling and replaced it with new material. Furnished new deck on forward house.

1915-16 Furnished main gans'l, mizzen upper tops'l and mizzen gans'l yards. Scaled lower hold 4 feet above the ballast. Supplied derrick and complete equipment for launching boats.

1916-17 Caulked poop deck.

1917-18 New fore gans'l yard and new mizzen gans'l mast.

1918-19 Lower rigging lifted, stripped and re-served; renewed two new cap shrouds on foremast; caulked forward house inside; caulked fors'l head on port side. Caulked main deck port side of main mast and put in several new planks; tarred main deck.

1919-20 Survey #3: Removed all standing ballast and ceiling; chipped out all loose cement and scaled where necessary and replaced the cement. Scaled all reverse bars, stringer bars and floors from the shelving and down to the keelson and painted all with two coats of cement wash; new ceiling 3 x 12 planks in new c(?) cement shelving; replaced standing ballast and laid floor on same; scaled and painted forepeak with two coats of red paint. Fitted double plates on sheel(?) in way of fore peak tank below water line, one extending from stern frame to a point 42' forward of stern frame.

1920-21 Examined vessel in dry dock, donkey boiler, survey and certificates.

1921-22 None

1922-23 Furnished new mizzen royal yard.

1923-24 New main gans'l mast; new mizzen lower topsail yard; installed electric light. Rearranged berths in Oriental quarters.

1924-25 None

1925-26 Painted ship and spars as required; overhauled and repaired rigging, blocks, etc., overhauled and repaired sails; overhauled and repaired windlass, donkey engine, boiler, pump etc. Docked, cleaned and painted with one coat of anti-corrosive and one coat of anti-fouling paint by hand. Overhauled, cleaned and painted one sea suction valve.

1926-27 Painted ship and spars $ 845.33. Repaired rigging and blocks $ 530.05. New sails $ 518.38. dockage at drydock $ 372.60.

1927-28 Painted ship and spars as required $ 326.42; repaired rigging $ 423.53. Repaired sails $ 691.43. New Main gallant yard $ 365.15. Caulked deckhouse above galley $ 51.09.

1928-29 Painted ship and spars as required $ 651.77. Overhauled rigging $ 426.65. Repaired sails $ 457.21. Special survey #2, $ 303. Dockage at dry-dock $ 372.60.

1929-30 Painted ship and spars $ 362.55. Repaired rigging $ 583.31. Repaired sails $ 619.19. Renewed floor in lower hold $ 113.66. Renewed for gans'l yard $ 302.05. Drydocked vessel, cleaned bottom painted and repacked 1 sea valve, $ 518.01.

APPENDIX 5

Specifications for Repair of S/V "PACIFIC QUEEN"
(Decks, deckhouses, deck furniture, quarters)

Prepared by Karl Kortum, August 1954

Note: These specifications provide an indication of the condition of the ship prior to its restoration by the San Francisco Maritime Museum, and the philosophy of the Museum when it embarked on that restoration. Not all the restoration was carried out in the manner specified here. When the Museum acquired the ship it had no money in hand with which to restore it. These specifications assumed the work would have to be done as economically as possible. In fact, tremendous donations of funds, tools, materials, and particularly skilled and unskilled labor, made it possible to do more than originally anticipated, and to avoid using techniques, such as extensive modern welding, which while less costly would also have resulted in a less historically authentic final product.

1. Forecastle Head:

Fair iron railing. Replace missing sections.
Replace top plate on low bulwark right forward so that mooring chocks can be faired.

Scrape to bare wood catheads, knighthead pinrail, capstan bars, jibsheat pinrails port and starboard, and rail and stanchions at break of forecastle head. Finish with spar varnish.

Supply three fathoms 7/8" chain for ring painter and secure starboard anchor outboard under cathead.

Replace decking and caulk openings for galley funnel port and starboard.

Remove and polish ship's bell and small brass caps on rail stanchions.

Wirebrush all metal fittings. Redlead rusty areas two coats and paint:

Railings, Redwood
Chocks and bitts, India Red

Anchors, black
Capstan, India Red & Black
Lighthouses, Redwood

Caulk deck.

Supply small teak skylight as per photograph for illumination of crew's forecastle (to fit closed opening in deck). Skylight equipped with two circular lights on each side; 9" diameter to pattern of light in lazarette hatch.

2. Under Forecastle Head:

Remove wooden bulkheads and lockers port and starboard.
Remove chain messenger blocks and pulleys to windlass.
Remove hand force pump.
Remove galvanized tank, starboard side.
Remove electrical conduit,
Scrape and wirebrush overhead, ship's sides, to remove loose rust and paint scale. Red lead rusty areas.

Scrape, wirebrush, and clean windlass and compressors with kerosene. Soogie, clean and red lead. Paint base black, India red trim on wildcats and brake bands.

Fair portion of athwartship bulkhead remaining on starboard side.

Make 18" coaming portion of bulkhead of steel to match existing coaming.

Install marine plywood bulkhead to simulate steel bulkhead at after end of forecastle, fitted with teakwood doors in style of others aboard.

Install four sets double tiered bunks port and starboard from after bulkhead to pattern of ship "Alcinuous." Length of each bunk to be 6 ft. Double tier of athwartship bunks to abutt aftermost fore and aft bunk. End of this pair of bunks to determine position of door into forecastle on either side.

Fit plank table port and starboard as per ship "Alcinuous," fitted to raise and lower on 4 x 4 wooden stanchion and be held in raised or lowered position with wedges.

Paint out Camellia, leaving bunk faces bright.

Scrape or otherwise clean deck to bare wood.

3. Main deck bulwarks:

Fair collision damage to bulwark starboard side.

Supply and lightly tack weld in place three swing port doors in each bulwark.

Supply where necessary teak pinrail. Secure pinrail where loose. Fit plugs and graving pieces as necessary. Scrape existing pinrail bright and finish with spar varnish.

Convert pipe in starboard waterway to fireline with shore connection on starboard side.

Replace section of bulwark cut out for access on port side. (This section now in lower hold.)

Scale inside of bulwarks, apply two coats of red lead.

Paint waterways Redwood, bulwarks Aspen Green, pinrail and bead Aspen Green.

Fit 2 x 6 teak billboards on either side of access cut through starboard bulwark.

4. Main deck, forward of midship house:

Scale outside of W.C. (port) as per bulwarks. Patch wasted areas with cement.

Fit wooden cornice, now missing.

Remove door, remove paint and refinish with spar varnish. Repair lock.

Remove shelves, etc. from interior, clean and red lead as under forecastle head.

Fit wooden shelf toilet with tin receptacle fitted to existing drain as per Gavin Craig drawing.

Paint out interior Aspen Green.

Scale and paint outside of bosun's locker (starboard) as per bulwarks. Patch wasted areas with cement.

Fit wooden cornice, now missing.

Remove door, remove paint and finish with spar varnish.

Repair lock.

Remove cleats, but leave wooden lining. Clean and red lead as under forecastle head.

Paint out interior Clay.

Supply and install two teakwood ladders for access to forecastle head as per existing ladder on board, but with less pitch.

Supply iron handrails for one ladder as per sample on board.

Finish ladders bright (spar varnish).

Remove booby hatch from forward hatch, fit wooden strongback and fit with teak gratings.

Scale and apply two coats red lead to hatch coaming. Paint hatch coaming Redwood.

Remove paint on fiferail to bare wood. Finish with spar varnish. Remove small brass caps, also sheave plate in bitts and polish.

Wirebrush and paint Redwood both ventilators on fore deck. Supply cowl ventilator to replace patent ventilator abaft foremast.

5. Mid-ship House:

Remove iron water tank on forepart of house. Close bolt holes in house.

Remove iron ladder, niggerheads & shaft, all pipes, electrical fittings, chafing battens on starboard side, and fairlead on starboard forward boat skid for chain messenger. Close holes left by removal of these fittings. Supply steel plate and replace double hinged door at after end of house with construction as per forward end of house.

Remove door on starboard side forward and fill in opening with plate.

Remove three teak doors starboard side, remove paint, repair as necessary, overhaul hardware and replace. Remove middle door port side of house, remove paint, repair as necessary, overhaul hardware and replace. Supply teak doors for two other port side.

Scale boatskids on either side of house, apply two coats of red lead, paint Clay.

Supply and bolt new 3 x 6 Douglas fir chafing board for top of each boat skid. Finish with spar varnish.

Remove roofing paper from top of house. Fit Douglas fir skylight (as per photograph of forecastle head skylight) amidships to illuminate galley. Supply through-deck fitting for galley range funnel. Install funnel now on starboard side of poop to position shown in photograph.

Close all other openings in overhead, replacing deck planking as necessary and caulk.

Scale outside of house. Repair wasted areas with cement. Apply two coats of red lead. Paint with Aspen Green with India Red coaming. Repair cornice at after end and paint cornice India Red right around house.

Strip interior of present bulkheads, lockers, pipe and electrical fittings. Remove donkey engine. Scrape and wirebrush interior to remove loose rust and paint scale. Red lead rusty areas.

Clean deck with caustic soda solution.

Supply and fit steel plate bulkhead at after end of galley (as defined by cement floor area). Replace galley range against bulkhead. Build forward athwartship bulkhead at forward end of cement floor of 5" T & G as used in chart-house aft. Fit out galley with dressers, locker and coal bin of T & G as per plan of galley in ship "Alcinuous." Paint out galley Aspen Green.

Build fore and aft bulkhead of T & G dividing space abaft galley. In apprentice's room (port side) build two bunks athwartship at forward end, two bunks fore and aft along center bulkhead and right aft, to pattern of ship "Alcinuous." Paint out Camellia, leaving bunk boards bright.

Build carpenter's work bench along center bulkhead in room to starboard. Fit existing drawers under carpenter's bench. Paint out Aspen Green.

Burnish brass porthole rims.

Clean interior of starboard boat, wirebrush, and paint Aspen Green. Stow "keel up" on boat skids and fit canvas cover. Secure loose fittings by lashing to thwarts.

6. Main deck, abaft mid-ship house:

Replace after section of hatch coaming, now in hold. Rivet in place through existing rivet holes and weld at base. Grind away excess bead.

Chip, wirebrush and apply two coats of red lead to rusty areas of hatch coaming. Paint hatch coaming Aspen Green, interior Redwood.

Supply strongback and teak hatch gratings. Fit wooden ladder of Douglas fir to match construction of deck ladders but of heavier construction, less pitch, and half athwartships width of hatch. Fit with iron handrails to pattern of forecastle head ladder handrails. Ladder to lead aft from port forward quarter of hatch. Fit pair of wooden steps to give access over coaming to ladder into 'tween decks. (Two or three sections of gratings to be lifted to give access to ladder.)

Remove paint on fiferail to bare wood. Finish with spar varnish. Remove small brass caps, also sheave plate in bitts and polish.

Dismantle and overhaul bilge pumps, check piping, foot valves and roseboxes, and put in working order.

Inspect sounding wells for good working order.

Paint pump flywheels India Red, shaft and other iron work Aspen Green, and outlet boxes black.

Supply cowl ventilator to replace patent ventilator abaft mainmast.

Remove flange from small fresh water pump abaft ventilator.

Supply two teakwood ladders for access to poop as per existing ladder on board, but with less pitch. Supply handrail of brass tubing to pattern of iron handrail to forecastle head ladder. Poop handrails to engage threaded brass fitting existing on teak railing at break of poop.

Weld angles to flange across deck at break of poop to correspond with overhead flanges. Drill and bolt 4 x 4 Douglas fir furring pieces to flanges. Fit marine plywood bulkhead flush with cutaway plating of former poop bulkhead. Fit marine plywood door 40" wide on port side.

Paint bulkhead Aspen Green with Redwood coaming cut in to height of existing coaming.

Burnish brass porthole rims.

7. Poop deck:

Remove paint on teak railings at break of poop to bare wood. Finish with spar varnish. Similar treatment of adjoining teak pinrails port and starboard. Chip loose scale on supporting iron stanchions, red lead and paint Aspen Green. Remove and polish small brass caps on rail stanchions.

Scrape teak cap on railing right around poop. Secure and refasten where loose. Finish with spar varnish. Chip loose scale on stanchions, wirebrush, red lead, and paint Aspen Green.

Wirebrush and chip any scale from chocks, cleats, bitts and eyebolts on poop. Red lead. Paint India red.

Scrape base of standard compass to bare wood. Finish with spar varnish. Replace missing lamp receptacle in brass hood and polish. Remove electrical fittings.

Repair booby hatch over mizzen hatchway. Remove paint on outside of structure. Re-canvas and make watertight. Repair lock. Paint Aspen Green, canvas and coaming Redwood. Scrape and finish gratings with spar varnish.

Burn off or use paint remover to clean fiferail to bare wood. Finish with spar varnish. Remove small brass caps, also sheave plate in bitts, and polish.

Scrape to bare wood crojik sheet blocks at side of ship. Finish with spar varnish. Remove sheave plate and polish.

Remove tanks, pipes, and galley funnel adjacent to chart-house. Fit graving pieces in deck to fill openings.

Canvas and make watertight charthouse roof. Caulk poop deck over original after quarters (abaft original poop bulkhead).

Remove and clean to bare wood charthouse door. Repair lock. Finish door with spar varnish.

Scrape to bare wood window gratings, clean paint from brass bars, finish wood with spar varnish. Supply one grating, now missing.

Remove paint on outside of charthouse. Paint Aspen Green, coaming and cornice Redwood.

Wirebrush capstan, paint black, India Red base and whelps. Burnish brass plate with name "Balclutha."
Scrape skylight bright. Replace wooden handrails now stored in lazarette. Finish with spar varnish. Remove and polish brass gratings. Supply fitted canvas cover.

Remove and polish brass dolphin binnacle stand. Fit and polish brass hood now stored aboard. Remove electrical fittings. Re-install binnacle.

Repair small lazarette hatch, overhaul hardware, scrape bright and finish with spar varnish.

Scrape wheel box bright. Finish with spar varnish. Supply fitted canvas cover for wheel and also for wheel box.

Remove sounding machine and sheave on taffrail.

8. Shelter deck:

Fit false 5 x 8 coaming around mizzen hatch with false hatch covers at forward end to receive foot of ladder leading up to booby hatch. Supply Douglas fir ladder to width of companionway and in style of ladders at break of poop. Ladder rail to be of iron in style of ladders at break of forecastle head. Build railing around hatch coaming in style of railing at break of poop, i.e. on turned stanchions, but of Douglas fir construction. Railing to be open at after end to accommodate ladder full width of hatch into tween decks.

Clear original iron door into break of poop. Remove door jambs of present door and close opening with marine plywood to conform with plating.

Fit two brass rimmed portholes now aboard in poop bulkhead, cover third porthole with disc of marine plywood.

9. After quarters:

Fit eight feet of bulkhead on starboard side of alleyway panelled in style of original construction. Bulkhead to have one door into pantry. Replace glass panel with wood in door on port side of alleyway. Overhaul hardware, fitting graving pieces as necessary. Finish bulkheads on either side of alleyway in style of saloon.

Remove electrical fittings from saloon. Overhaul hardware. Refinish overhead and interior of skylight in white.

Refinish panelling bright. Gild capitals on pilasters. Refinish table top. Replace cracked mirror and gild frame. Re-upholster settee and benches in red plush. Sand and finish deck with spar varnish.
Remove all electrical fittings, pipes, shelves and lockers, patent toilet in captain's bathroom. Fill openings, paint out Aspen Green, white overhead. Sand and scrape deck bright, finish with spar varnish.

Remove all electrical fittings from captain's cabin. Remove T & G clothes locker on starboard side forward, and replace section of dresser top. Remove washbasin, faucet, and back-

board. Refit this area as small built-in table. Build in double width single tier bunk to height of dresser and coming flush with dresser, drawers underneath. Finish to match other dark finished woodwork. Remove Yale locks, fit graving pieces, and refinish hardwood woodwork throughout cabin. Scrape or san deck bright and finish with spar varnish. Re-upholster settee in red plush. Paint out overhead and T & G surfaces with white enamel.

Remove T & G bulkhead alongside iron railing in charthouse. Remove electrical fittings.

Burn off or use paint remover to remove old paint from interior of chartroom. Refinish in white enamel.

Remove paint from locker faces under settees. Refinish these and all hardwood surfaces bright. Re-upholster settees in red plush. Remove linoleum from deck, scrape bright, and finish with spar varnish.

Build door for bulkhead in lazarette.

Replace partially removed T & G bulkhead at after end of portside messroom.

10. Tween decks:

Remove scale and wirebrush overhead and skin of ship from twelve feet forward of main hatch to sail locker bulkhead. Red lead rusty areas.

Remove piping throughout tween decks.

Overhaul three electrical conduit lines in overhead (port starboard, and amidships). Extend electrical conduit through deck and fit outlet box in concealed position in

crew's quarters, forepart of mid-ship house, galley, carpenter's shop, half-deck, shelter deck (three outlet boxes), saloon, captain's cabin, captain's bathroom, and charthouse. Also extend conduit and provide outlet box at either end of lower hold and at main hatch.
Fit expanded metal screen across tween decks at second deckbeam forward of main hatch. Equip with removable section about eight feet and access door about three feet in width.

Complete partial plank bulkhead at after end of tween decks. Fit with access door about 3' wide.

Box in pump well as per existing original construction.

Overhaul hatchcover boards in main hatch and mizzen hatches. Mizzen hatch to be closed at all times. Main hatch to have public access provided to lower hold. Fit adequate pipe railings for this access.

Apply approximately 3/4" of fireproof asphaltum mixture to entire tween deck surface from expanded metal bulkhead to plank bulkhead aft.

11. Lower hold:

Level sand ballast in area of square of hatch and cover with gravel. Screen off square of hatch with re-enforcing mesh welded to framework of iron piping. Fit ladder of construction of ladders into tween decks with similar handrails.

12. Outside hull:

Weld discs over W.C. drain in sheer strake forward (in way of forecastle, port side), and two drains in sheer strake aft, port side. Weld plate over hole under counter, port side aft. Weld disc over hole in starboard bulwarks at mid-ship house.

Scale topsides, chip as necessary, and apply two coats of red lead. Extend boot topping upward from present waterline to meet black and white paint plan as per photographs.

13. Not included:

No general treatment of the decks is included in these specifications, aside from caulking the forecastle head and the and the after deck over the original living quarters, and

making watertight the top of the mid-ship house and chart-house.

No use is contemplated for the mid-ship house forward of the galley.

The rooms to be displayed in the after quarters are four in number, mainly saloon, captain's cabin, captain's bathroom, and charthouse. This will give a sample of each type of room in this area.

Screens of re-enforcing mesh (approximately six inch squares) will have to be provided to allow a partial entrance into the crew's quarters and visibility into both galley doors, into the half-deck and carpenter shop doors, into the captain's bathroom and cabin, and across the charthouse and across the saloon forward of the table.

These specifications do not include any work upon the masts or rigging.

APPENDIX 6

Artifacts from the BALCLUTHA in the collection
of the San Francisco Maritime National Historical Park

(Based on Accessions card file)

4 boat chocks
officer's sink & 6 basins
porthole woodwork
porcelain toilet
square head cowl ventilator
3 capstan bar racks
portion of pin rail
end of fife rail
threshold plate and wood
compass
chopping block
swivel stool
bell clapper
bell rope
2 running lights
hand rail
clothes iron
pump handle
log flywheel
plate rack
clock ring
6 iron furniture legs
2 lamp fragments
10 items of door furniture
17 ladder fragments
28 tools
2 tank filler caps
4 pump leathers
10 parts to donkey engine
2 wood chest handles
2 coal shovels
2 conveyor rollers
6 pipe flanges
pipe valve
2 oil cans
4 firehose nozzles
2 water valve handles
hasp
decorated boat rudder yoke
2 sea boots

furniture dog
2 ladder foot iron pads
gangway stanchion
8 metal stair treads
chart case
hinge
pump spout
pump handle
pump well cover
3 sounding leads
decorated chair back
scupper discharge
hawse cover
figurehead

Rig:
48 shackles
91 blocks
section of yard
2 sections of masts
86 sheaves & pins
2 block bands
2 served eyes
spanker head bale
3 belaying pins
17 hooks
2 parrel fragments
4 mast hoops
sail fragment
9 clew irons
31 jackstay stanchions
30 eyebolts
thimble
42 lizards
chafing pad
11 yard band wedges
deck fairlead
3 patent jib hanks
20 strops
25 fairleads
22 sheet fairleads
stay batten
3 tack belaying pins
yard arm band
2 shroud ends
truck ball

Donated by families of BALCLUTHA captains and crewmember:
N. J. Pearse seachest
Alice Durkee sewing basket and contents
Inda Frances Durkee baby dress
Captain Bremer's seachest
Captain Binnie's concertina and case
Captain Binnie's voyage map
Captain Bertoncini's sextant and box

APPENDIX 7

Surviving plans of the BALCLUTHA which pre-date her ownership by the San Francisco Maritime Museum

1886 Outboard profile and Sail Plan
Structural midship section
(Original copies filed with Lloyd's Register of Shipping in London, and later transferred to the collection of the National Maritime Museum in Greenwich, England.)

1899 Plan and construction details for lumber ports installed in stern plating of the ship by the Risdon Iron Works.

1909/1944
Outboard profile and Sail Plan
Deck Plan
(Traced from an original rigging plan by Capt. C. A. Halvorson in 1909. Re-drawn by F. W. Shaw in 1944.)

1910 Deck plan with some measurements
Plan of living quarters under foc'sle head and poop
(Drawn in designated location on Alaska Packers' Association printed form; "Description of the STAR OF ALASKA.")

1924 Plans of Accommodations under poop, under foc'sle head, in deckhouse, and in tweendeck, with locations of furniture
(Apparently drawn by, or for, the Alaska Packers Association.)

1925 Sketched plan of layout of rooms under poop, indicating uses
(Drawing in logbook kept by Capt. Bertoncini.)

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Letters from veterans of the BALCLUTHA and sailing ship historians containing information which proved useful in the restoration of the ship.

J. Porter Shaw Library SFMNHP. "Plan of Accommodation of Ship BALCLUTHA." by George W. Munro, April 1957.
Drawing of probable original layout under poop, apparently based on an surviving plan of the Connell-built ship ORIENT.

Sea Breezes Magazine. "'BALCLUTHA' Deck Details." March 1954.
Karl Kortum letter to magazine seeking information on the ship's original layout.

RESTORING THE BALCLUTHA:

J. Porter Shaw Library SFMNHP. Capt. T. C. Conwell letters, Sept. 23, 1953 to Mar. 13, 1956.

Organizing support for the Museum's acquisition of the ship, and donated services for her restoration.

J. Porter Shaw Library SFMNHP. Capt. T. C. Conwell "Status Reports."
July 22, 1954 to Aug. 16, 1954: Reports of progress in planning, funding, and organization of labor for the restoration.
Aug. 24, 1954 to Feb. 16, 1955: Reports of progress in the actual restoration work, with acknowledgement of the people involved.
Bill Dodge and Bob Harding "Restoration Reports."
Jan. 10, 1955 to July 25, 1955: Reports on progress in the restoration of the ship's rigging.
Karl Kortum "Status Reports."
Feb. 23, 1955 to July 13, 1955: Reports on progress in the restoration of the ship, acknowledgement of the people involved with biographical sketches, and new information on the history of the ship as it was turned up.

Kortum, Karl, personal files. Letter to Harry Dring, Oct. 26, 1954.
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Seeks support for obtaining tidelands oil funds to create a maritime state park, to preserve additional vessels which will supplement the BALCLUTHA in telling, "the whole story of West Coast seafaring."

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