MARITIME MUSEUM ASSOCIATION OF SAN DIEGO



VOL. 34, NO. 1 WINTER 1998

MAINS'L HAUL



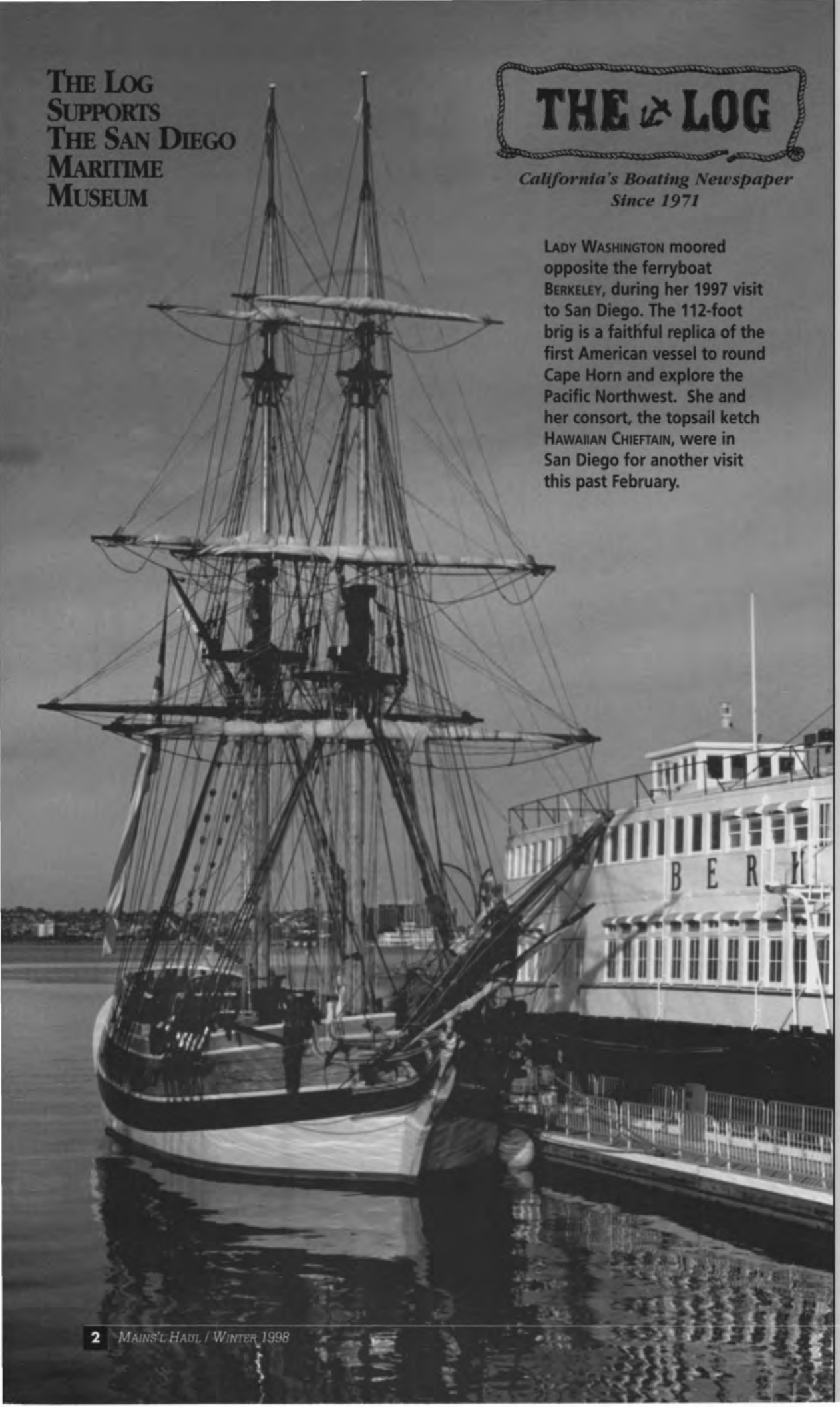
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A JOURNAL OF MARITIME HISTORY



THE LOG SUPPORTS THE SAN DIEGO MARITIME MUSEUM

THE LOG
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LADY WASHINGTON moored opposite the ferryboat BERKELEY, during her 1997 visit to San Diego. The 112-foot brig is a faithful replica of the first American vessel to round Cape Horn and explore the Pacific Northwest. She and her consort, the topsail ketch HAWAIIAN CHIEFTAIN, were in San Diego for another visit this past February.

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(619) 234-9153
FAX (619) 234-8345
e-mail address:
library@sdmaritime.com

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MAINS'L HAUL

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On the cover . . .

A portion of "San Diego: a View of Point Loma from Santa Fe Wharf in 1888" by John Stobart. Currently an exhibition of Stobart's work can be viewed in the hold of the STAR OF INDIA. For more on Stobart, see the reproductions and article inside.



Mains'l Haul is the quarterly historical journal of the Maritime Museum Association of San Diego. Its mission is to engage our members and the public in the study of maritime history, expanding their knowledge and appreciation of this field. The journal is also a benefit of membership in the Maritime Museum Association of San Diego.
Articles on West Coast and Pacific Ocean maritime history subjects are welcome. Send all submissions and inquiries to Editor, *Mains'l Haul*, at 1306 N. Harbor Drive, San Diego, CA 92101. Contributors' guidelines are available on request. For advertising rates and information, please contact the Advertising Sales Manager at (619) 234-9153. No portion of this journal may be reproduced or stored in any electronic retrieval system without the written permission of the Editor.

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"*Mains'l Haul*—An order in tacking ship bidding 'Swing the main yards.' To loot, steal, or 'acquire'."
—John Masefield















FROM THE HELM

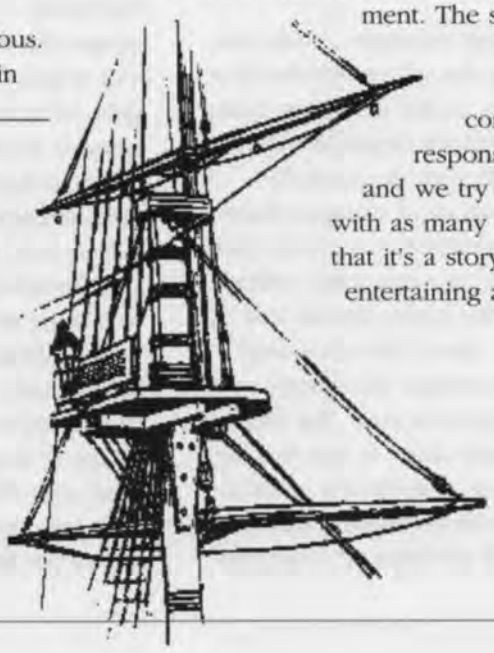
Setting the Course for 1998

This issue of *Mains'l Haul* finds our museum moving into a new year with a well-established and exciting momentum for exhibits and programs. Construction is underway for our newest permanent exhibit, "Charting the Sea," which aspires to link two of our regional core themes, the age of exploration and the advent of oceanography, within a single story line arguing that cartography is destiny. Following in short order will be an exhibition of the entire Dennis Connor collection of Gardiner America's Cup models. This collection is an exquisite achievement of the modelmaker's art. It will be the first time anywhere that the entire history of the America's Cup will be represented through models of every challenger and defender, all built by the same artist, all to the same scale. The winning entries of last year's marine photo contest will soon go on exhibit. We'll be installing "Mechanics of Seafaring," a collection of hands-on stations that demonstrate the physical principles of sailing a ship like the STAR OF INDIA and the way in which the enormous masses and forces involved are managed by human strength. Having obtained material from the recent feature film "Titanic," this spring we are also planning to install our own interpretation of this highly charged and highly symbolic tragedy. Finally, by summer's end, preparations for our next permanent exhibit, "The BERKELEY and the Age of Steam," will be completed, allowing us to install it by the conclusion of her centennial year.

Our programming agenda is no less ambitious. Our present schedule of visitor participation in setting STAR OF INDIA's sails will expand to a daily activity once summer begins. The increasingly popular living history programs will be augmented in February by our first "Day on the Bay." This new program, held in conjunction with the San Diego County Office of Education and the Chula Vista Nature Center, is designed to explore the developmental history and ecological evolution of our bay from an on-the-water perspective. Our Internet program "STAR OF INDIA: Virtual Voyage!" will soon add another dimension to our Internet Web page, providing an ongoing series of connections linking the historical voyages of our ship to the array of unfolding political, cultural, and technological developments of the world in which she sailed. Our members' meetings continue to open a series of fascinating windows into our maritime past. In early March, the STAR OF INDIA will be featured in a national broadcast of the History Channel's "Great Ships" series. In April our museum will host the annual conference of the North American Society for Oceanic History, the premier professional association of scholars in maritime and naval history. We will be hosting visiting historic and historic replica vessels throughout the year, including LADY WASHINGTON and HAWAIIAN CHIEFTAIN. Movies Before the Mast, theatrical performances, and "Haunted Star" schedules will be as ambitious in 1998 as they were in 1997.

With such an explosion of activity, it is sometimes easy to lose sight of the underlying premise that binds it all together. All of the above underscore the Museum's central premise: maritime endeavor, past and present, is at the core of our region's and civilization's development. The sea constantly demands the highest and best of our science, technology, art, and commitment. The story of our response is immensely complicated, and we try to tell San Diego's role in it with as many voices as we can. We hope that it's a story that you will find challenging, entertaining and moving in 1998.

Raymond Ashley
Executive Director



An explosion of Museum activity: (clockwise from the upper left corner) MEDEA steams on the bay; Tim Reagan caulks STAR OF INDIA's main deck; Karin Wyman briefs an overnight school group; (l. to r.) John Merrill and Jim Davis, staff members, and volunteer Bob Ross "star" in "Windjammer" on History Channel; docent Jana Van Blaricom leads a tour on the BERKELEY; staff artisans Leonard Ingrande and James Maul work on a fender; and Bob Crawford, Curator of Models, adjusts a model of a proposed Maritime Museum complex.

THE EDITOR'S LOG



As a living and growing thing, a museum, like a person, experiences the inevitability of change throughout its lifetime. These changes take many forms – personnel, management styles and techniques, emphasis, appearance, perspective – but they all serve to keep the museum moving forward to meet the challenges of preserving the past. Our museum is no exception to the rule of change. Over the past year we have survived some poignant changes as some people said good-bye and left to accept new challenges elsewhere and other people signed on board. As one of these new members of the crew, I take great comfort in the fact that change also brings consistency and continuity to one's life. "The more things change the more they stay the same" expresses that sense of continuation from one watch to the next.

The *Mains'l Haul* is an excellent example of this concept. In the Summer 1995 issue the editor introduced a new format, the one we still use, as the next logical step in the evolution of this journal, which began in 1964 with a two-page newsletter. Although the journal's appearance has undergone a number of changes since 1964, the focus remains the same: (1) the maritime history of San Diego and vicinity, (2) the same topic within the scope of the West Coast of the United States, and (3) Pacific Ocean maritime history. Since 1964 dedicated individuals have researched and written this history and labored to produce this publication for you. For the last three issues Chuck Bencik worked alone to see that the *Mains'l Haul* continued its record of unbroken publication. Chuck continues working on the *Mains'l Haul* as the managing editor in charge of production. Together we hope to continue to educate and entertain you with articles about our maritime past.

The articles chosen for this issue cover a broad range of Pacific maritime experiences. In "Keeping the Lights," Part One of Radford Franke's oral history, you learn about the hardships and joys of life on a lightship and at Año Nuevo Lighthouse in the early part of this century. "John Stobart: A Celebration of Pacific Maritime Heritage" discusses the life, art, and current exhibition on board the STAR OF INDIA of marine artist John Stobart. Each spring the United States celebrates Black History and Women's History months. It is, therefore, fitting that in the article "Bold Lines Connect" this issue examines the life and contributions of whaling Captain William T. Shorey, the first black captain on the Pacific Coast, and his family. The final article, "Surveying the Pacific," relates the story of the GALILEE's three-year magnetic survey of the Pacific between 1905 and 1908. Although the data collected on this survey offered the first comprehensive look at the magnetic elements in the Pacific Basin, scientists now consider it as merely a footnote to later magnetic work. Anyone who has ever used a compass at sea will be interested in this article.

Although history is the study of the past, it also tends to change as new sources are discovered that allow a re-examination of well-known topics and shed light on previously unknown or overlooked topics. Please feel free to send us your comments and to help us fill in missing pieces of knowledge. By sharing our love for the maritime past and our knowledge of it we can work together to insure as much of that past as possible will be preserved for generations to come.

LETTERS TO THE EDITOR



"California's Tuna Clipper Fleet 1918-1963" (Summer 1997)

Dear Editor Bencik,

This is to confirm our conversation last week regarding the error in the article entitled "California's Tuna Clipper Fleet 1918-1963 (Part Three)," published in Volume 33, No. 3, Summer 1997 *Mains'l Haul*.

The error may be found on page 36, in the second full paragraph, third sentence. This sentence should read as it was originally written, namely, "unlike the Mexican Convention, it provided for accession by other countries upon receiving unanimous consent from the parties." The current words in such sentence, "for tuna clipper access" should be deleted.

The term "accession" refers to "the act by which one nation becomes party to an agreement already in force between two other powers." See ***Merriam-Webster's Collegiate Dictionary***, 10th Edition, page 7.

It is with considerable disappointment to note that none of the subtitles provided in my paper were printed. The published article was completely devoid of subtitles or separations of thought. An examination of the previous two articles (Fall, 1996, and Winter 1997) will show that subtitles were effectively used. There may have been good reasons for their deletion in the Summer 1997 issue. I would have appreciated being informed. Perhaps, some compromise could have been negotiated.

Thank you.
August J. Felando.

[Mr. Bencik responds: "Due to limitations and editorial constraints we regret that your article was not published exactly as you submitted it. We take responsibility for the altered sentence that created the error and apologize for any misunderstandings it caused."]

"USS San Diego, the Unbeatable Ship" (Spring 1997)

Dear Sir:

I just finished reading the fine article on USS San Diego (CL-53) in *Mains'l Haul* – Enjoyed it very much.

Enclosed find recent article from *THE SILENT DEFENDERS*, the quarterly magazine of Naval Minewarfare Assn.

You might find it interesting.

Andrew H. Bofinger,
Marine Surveyor (Ret)

[Editor's note: An article by "Joseph Schreiber, Historian" in the publication provided by Mr. Bofinger contains a paragraph about the sweeping of Tokyo Bay. It describes the minesweeping ships as being ahead of the USS Missouri and USS Iowa, accompanied by several destroyers and two cruisers, and stating that "Admiral Halsey had selected the destroyers Taylor, Nicholas and O'Bannon to lead the battleships still astern of the three DMS's (Destroyer-minesweeper). *The light cruiser San Diego was also well astern of the fast minesweepers!*" [Editor's italics inserted]. Elsewhere, a facsimile of Secretary of the Navy James Forrestal's October 31, 1945 letter to Senator J. H. Bankhead is reproduced. Forrestal writes, "However, we can find *no record here of any other ship, including the USS San Diego, being named as the first Allied ship to enter the Bay*, [editor's italics] nor of any kind of award, monetary or otherwise, being given to any other vessel for that reason." Forrestal confirms the contention of the crew of the USS Revenge (AM 110) "that their ship was the first to enter Tokyo Bay as part of the occupation fleet." A copy of Revenge's Deck Log for August 28, 1945 is included, in support of the claim. The editor of *Mains'l Haul* forwarded the material to writer Fred Whitmore. USS San Diego, however, still appears to have been the first allied warship to berth alongside Japanese soil, and land the first American Navy men at Yokosuka.]



"Restoration of an Iron Star," (Fall 1997)

January 5, 1998

Dear Sir,

As a fortunate participant in some of the restoration of the Star, it was most pleasant for me to read Ken Reynard's article in the *Mainsail Haul* 33 (4) and reminisce about the earlier and much less formal days when it was possible to drive down from Orange County for the weekend, get thoroughly dirty, and grab a bunk in the foc's'l, a stateroom, or on the Medea for Saturday night.

I don't recall the particular occasion of the photo on page 17, when we were apparently setting the main topgallant, but got quite a surprise upon showing the magazine to my nephew, Tim Adams, to hear him exclaim "That's me!" It hadn't occurred to me (he looks a little different now), but on closer inspection, it is he, with no doubt, between Capt. Reynard and Bill Cooper, and not Doug Smith. Tim worked and lived aboard the Star for nearly a year, in 1971 I think, and is now a computer executive in Silicon Valley. Where Doug Smith is now, I have no idea – but perhaps the Museum is in touch with him.

I don't think the change is important enough to require a printed correction, but I think it would be worth while to change the record associated with the photograph in the Museum's files.

Sincerely yours,
Phillip Adams

[Chuck Bencik responded: "Thank you for your letter... We have heard from Richard Reming, as I mentioned when you came here about a week ago. By now we know (probably) the correct names of everyone in the picture. They are, from left to right: Ken Reynard, Tim Adams, Bill Cooper, Phil Adams, Robert Scott and Richard Reming."]

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Adam Smith

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The CABIN BOOKSHELF

THE MOWAT NAUTICAL TRIO

Farley Mowat, *Grey Seas Under*, Little Brown, 1958, 341 pp.
Farley Mowat, *The Serpent's Coil*, Little Brown, 1961, 222 pp.
Farley Mowat, *The Boat that Wouldn't Float*, Bantam Books, 1969, 197 pp.
Farley Mowat, *The Dog that Wouldn't Be*, Doubleday, 1957, 195 pp.

Book Reviews by Bob Crawford

Farley Mowat has been called "the chronicler of the North." His many books dealing with the history, ethnic diversity and natural wonder of that area are well known. Books such as *The People of the Deer*, *Never Cry Wolf*, *A Whale for the Killing*, *The Siberians*, *The Snow Walker*, *The Desperate People*, and *Sea of Slaughter*, just to name a few, have entertained and informed us of the riches of the North. Mr. Mowat also writes some wonderful, adventuresome, and entertaining sea stories in what I'll refer to here as "the Mowat Nautical Trio."

In *Grey Seas Under* the author tells of the origin and early development of a Canadian salvage company named Foundation Maritime. Shortly after the end of the First World War they acquire the war surplus oceangoing steam tug FOUNDATION FRANKLIN which, with the courage and determination of her master and crew goes about showing the salvage world how it should be done. Mr. Mowat goes into great lengths to tell us the remarkable story of open ocean salvage operations during the years between the world wars. FOUNDATION FRANKLIN ventures out rescuing men and ships in peril, in the worst conditions the North Atlantic can offer: ships aground on the Newfoundland coast, adrift in mid-ocean or afire and sinking from collision at sea. Story after story tells of men against the elements and their ability to overcome adversity.

The title of the next book in the series, *The Serpent's Coil*, alludes to a climactic hurricane. The story begins in September 1948 with a new generation of Foundation Marine adventurers setting out in two World War II surplus tugs, FOUNDATION JOSEPHINE and FOUNDATION LILLIAN. A nearly capsized Liberty ship, the LEICESTER is adrift in mid-Atlantic. The ship's ballast has shifted, causing her to roll 70 degrees; loss of the ship is almost certain. Caught in the "serpent's coil" LEICESTER is abandoned to her fate by her crew and captain. By salvage law, she's anyone's prize if they can get aboard, secure a towline, and bring her to a safe harbor. In the ensuing weeks, two companies try to reach and bring her to Bermuda. The ending of this story comes far too quickly and is one that would make O. Henry, the master of surprise endings, proud, had it been fiction. The fact that it is not makes the reading all the better.

The third book is *The Boat that Wouldn't Float*, a charming, humorous account of the author's misadventures before the mast. Trying to fulfill a lifelong dream of sailing to the Caribbean in a small boat, his plans go slightly adrift when, in a rum induced stupor, the soon-to-be-captain buys his dream boat, the HAPPY ADVENTURE. Its bilges contained the residue and "ghosts" of tens of thousands of long dead Atlantic cod. The 31 foot converted fishing schooner is equipped with "a seven horse power, single-cylinder, make-and-break (but mostly broke) gasoline engine" nicknamed "bullgine" for its temperamental disposition. In any particular crisis, when (or if) the engine starts, it invariably runs in the direction he doesn't wish to go. And crises there are aplenty, all over the Canadian Atlantic Coast. The colorful Newfoundland residents provide rich comical subjects that blend with the colorful Newfoundland seacoast setting for Mr. Mowats' marvelously funny tale.

The Farley Mowat "nautical trio" is three volumes of enjoyable adventure and pure entertainment from start to finish. By the by, my all time favorite book is *The Dog That Wouldn't Be* by the same author. It's not nautical, but you'll "laugh till you hurt." Enjoy!

[Editor's Note: Bob Crawford is the Chief Engineer of the steam yacht MEDEA, and Curator of Models for the San Diego Maritime Museum.]

A DREAM OF THE SEA

Captain Niels Peter Thomsen, *Voyage of the FOREST DREAM and Other Sea Adventures*, (published by author 1997). See information contained on the Voyage of the FOREST DREAM web site on the Internet at http://www.geocities.com/SoHo/Studios/3409

Book Review by Gordon Jones

This is an unusual story, and one of the best to come out in a long time. What begins as a memoir for the author's great-grandchildren becomes, through ensuing circumstances, a wonderful account of the author's coming of age aboard one of the very last commercial ventures under sail in this country.

While in his early teens, Thomsen's life took a down-turn when he learned his "parents" had abducted him at a very early age and then emigrated to Fresno, California. Fifteen-year old Niels, suffering from not knowing his true identity, ran away. He rode the rails with a group of hoboes to San Francisco where he envisioned finding sailing ships and leading the life of a wind ship sailor as described in the books by Joseph Conrad and Richard Henry Dana. But there were no sailing ships in port when he arrived. Three years passed before he realized his dream.

In 1925 he and a good friend from the Sailors' Union found themselves at Victoria, British Columbia, signing ship's articles aboard the five-masted barkentine FOREST DREAM. In their ignorance, they became part of a six-man crew which should have been double that size for a vessel of that tonnage.

Prohibition was the law of the United States at the time, and the FOREST DREAM, being of U.S. registry, was in reality engaged in smuggling when the Captain secretly took possession of 100 cases of Scotch whiskey. As the voyage progressed it was obvious that the Captain and Mate were imbibing the firewater at a goodly rate.

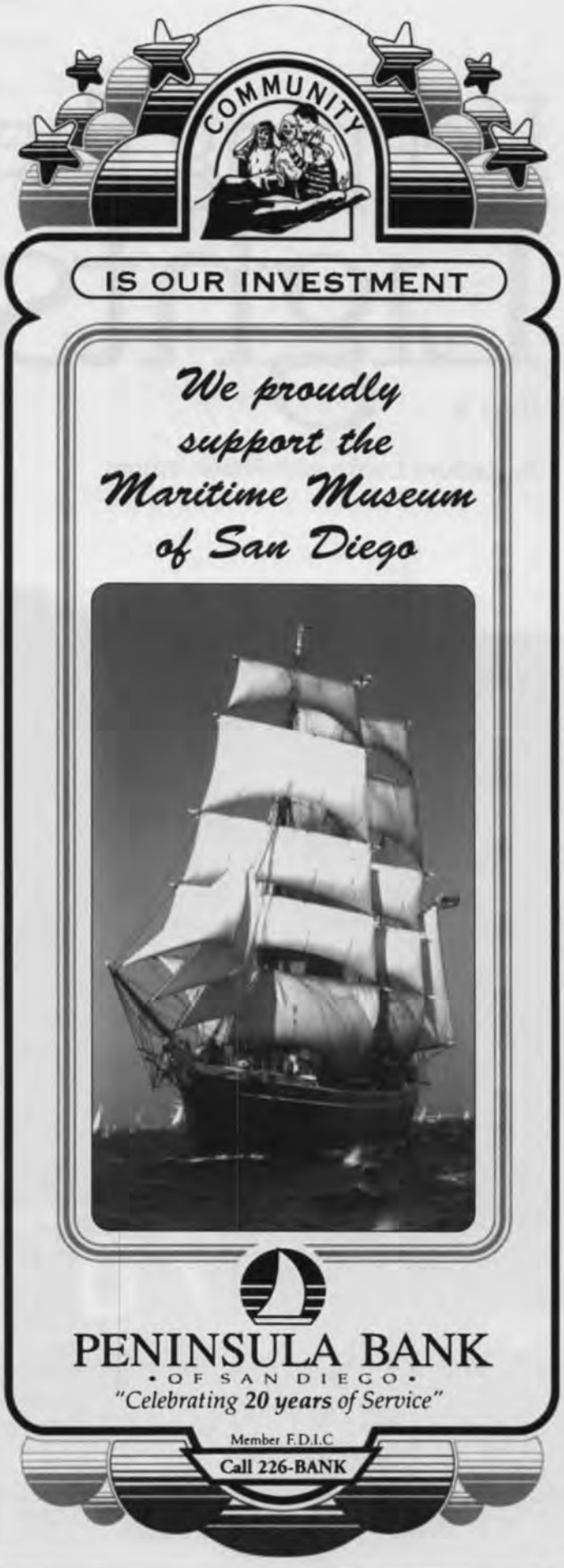
The voyage, to the island of Mauritius in the Indian Ocean was an eye-opener to the young lad, whose sense of adventure was somewhat dimmed by the experience. Fourteen months after departing Victoria, Canada, he left the ship in Newcastle, Australia, where it was sold at auction to Swedish buyers. Niels was exploring the Hunter River with backpack and a friend, so was unaware of the sale of the FOREST DREAM and the dispersing of the crew. Most of them he never saw again and was very sad to have missed them.

As years passed, the story of the unfortunate voyage in the FOREST DREAM grew in importance. With the author's persistence and some luck thrown in, he gradually contacted - up to 40 years after the trip – a few surviving members of the crew. Their views, combined with a long-lost journal written by a crew member during the voyage, fill out the story and make it one of the most interesting and complete sea stories in a long time.

You will encounter the full gamut of emotions, from hatred for the afterguard, frustration and pathos, to the crewmembers who held an unspoken love, as brothers, for one another. And more ... love for their ship that I doubt anyone of them ever forgot.

And you'll love the story.

[Editor's Note: Gordon Jones is a West Coast maritime historian and amateur sailor. He has written for numerous maritime magazines, and is a freelance author.]

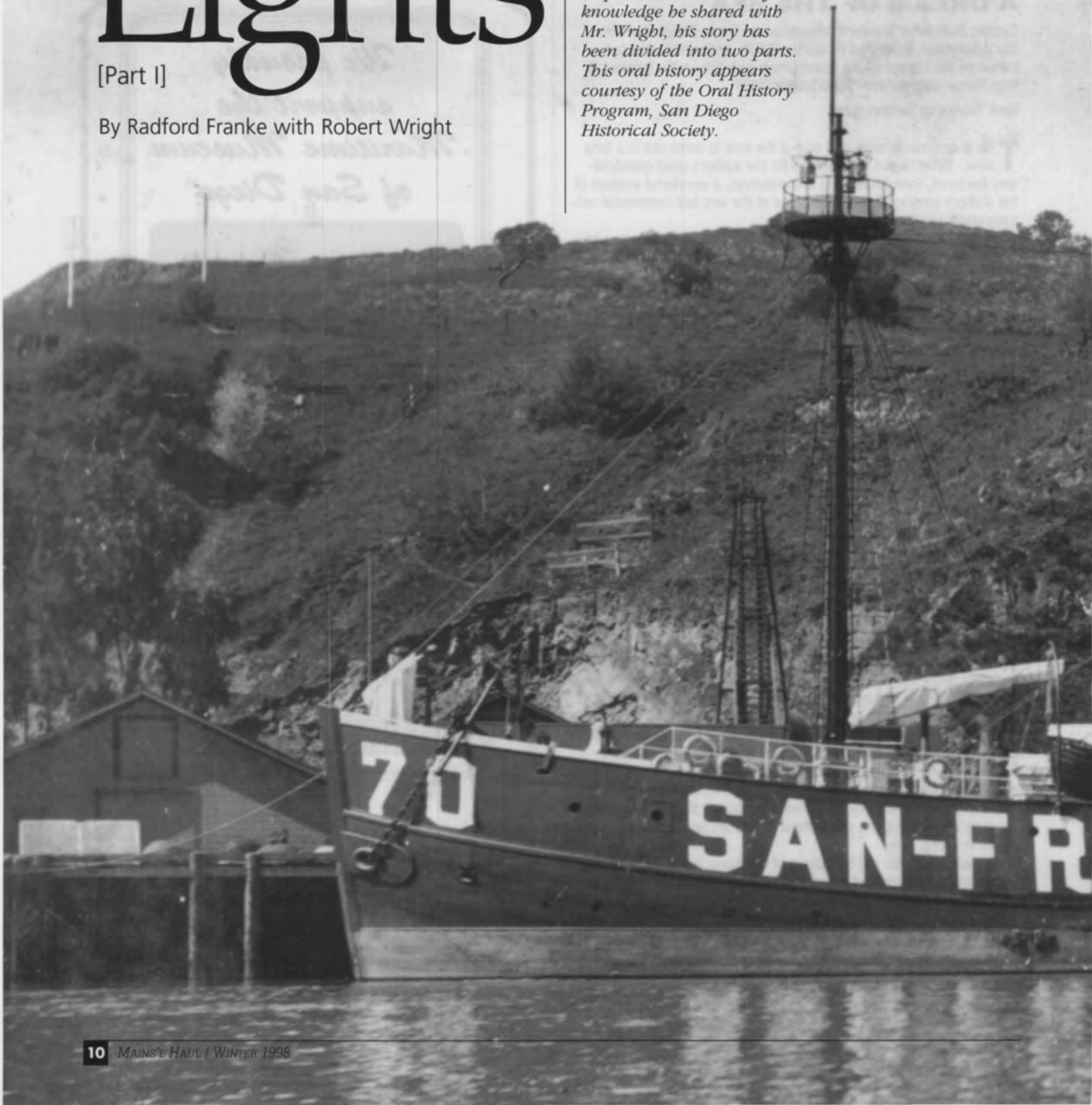


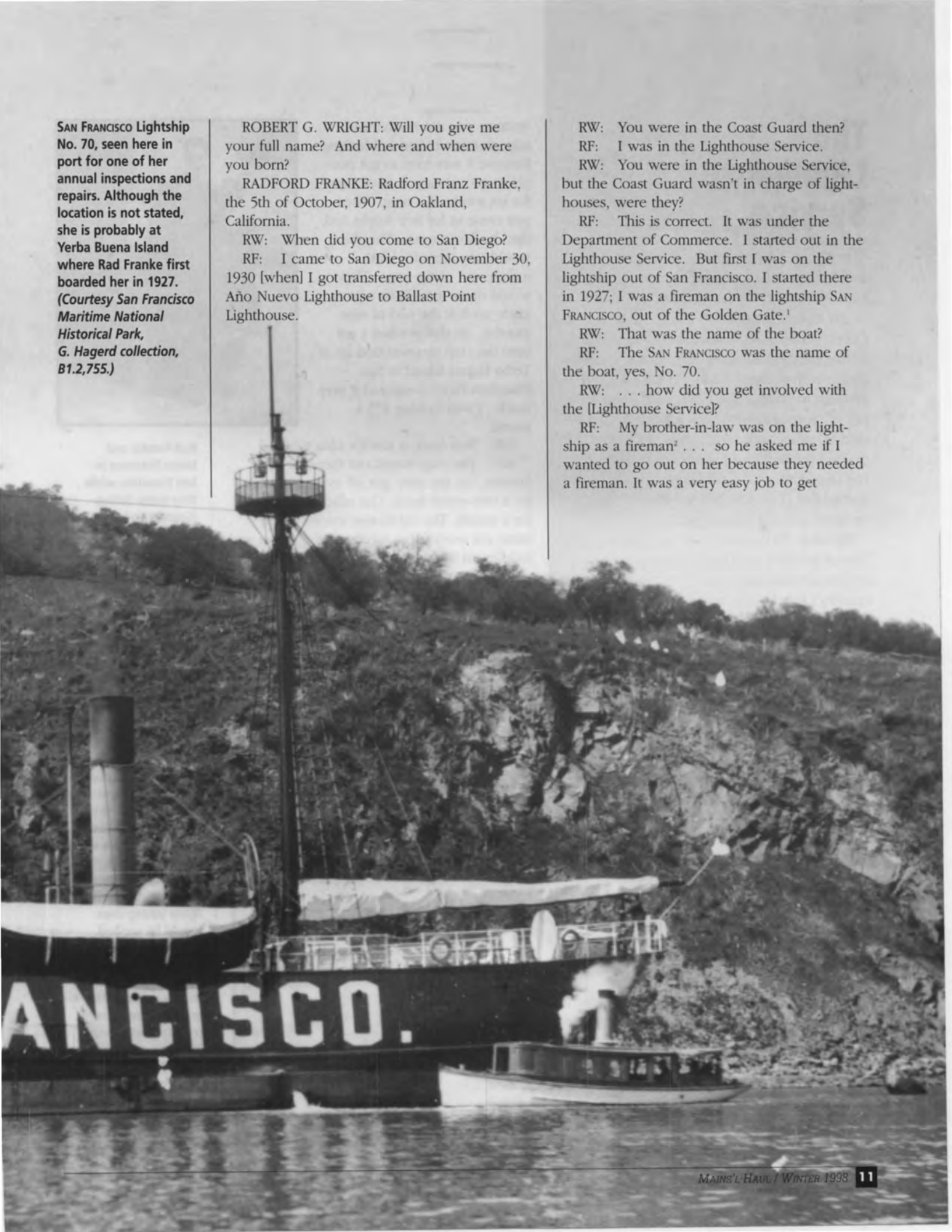
Keeping the Lights

[Part I]

By Radford Franke with Robert Wright

During February 1990, Mr. Robert G. Wright, under the direction of the San Diego Historical Society, conducted the following oral interview with Mr. Radford F. Franke. Due to the length of Mr. Franke's service as a lighthouse keeper and the wealth of knowledge he shared with Mr. Wright, his story has been divided into two parts. This oral history appears courtesy of the Oral History Program, San Diego Historical Society.





SAN FRANCISCO Lightship No. 70, seen here in port for one of her annual inspections and repairs. Although the location is not stated, she is probably at Yerba Buena Island where Rad Franke first boarded her in 1927. *(Courtesy San Francisco Maritime National Historical Park, G. Hagerd collection, B1.2,755.)*

ROBERT G. WRIGHT: Will you give me your full name? And where and when were you born?

RADFORD FRANKE: Radford Franz Franke, the 5th of October, 1907, in Oakland, California.

RW: When did you come to San Diego?

RF: I came to San Diego on November 30, 1930 [when] I got transferred down here from Año Nuevo Lighthouse to Ballast Point Lighthouse.

RW: You were in the Coast Guard then?

RF: I was in the Lighthouse Service.

RW: You were in the Lighthouse Service, but the Coast Guard wasn't in charge of lighthouses, were they?

RF: This is correct. It was under the Department of Commerce. I started out in the Lighthouse Service. But first I was on the lightship out of San Francisco. I started there in 1927; I was a fireman on the lightship SAN FRANCISCO, out of the Golden Gate.[1]

RW: That was the name of the boat?

RF: The SAN FRANCISCO was the name of the boat, yes, No. 70.

RW: . . . how did you get involved with the [Lighthouse Service]?

RF: My brother-in-law was on the lightship as a fireman[2] . . . so he asked me if I wanted to go out on her because they needed a fireman. It was a very easy job to get

The Lighthouse Service

In 1820 Congress assigned the administrative responsibility for lighthouses to the Fifth Auditor of the Department of Treasury. Under the auspices of his office the local Collectors of Customs operated independently, creating a loosely structured organization with no operational standards. In an attempt to standardize operations a number of reorganizations took place over the next 90 years until 1910 when Congress created the Bureau of Lighthouses within the Department of Commerce. It later named the United States Lighthouse Service as its official operating agency.

Between 1910 and 1939 the Lighthouse Service brought structure, standardization, and modernization to the country's lighthouses and lightships. It developed and perfected the use of the radiobeacon, modernized illuminants and optical equipment, improved fog signal methods, advanced the use of automated aids, and demonstrated the feasibility of unattended and radio controlled light vessels and lighthouses.

Despite its success, Congress disbanded the Lighthouse Service and transferred responsibility for all aids to navigation to the Coast Guard in 1939. The Coast Guard offered members of lightship crews and lighthouse keepers the option to retain their civilian status or to enter the Coast Guard with a military rank commensurate with their experience and existing status.

because you did not have to take an examination or anything because it was hard to get people to go out as you stayed out for six weeks at a time. Then you came in for two weeks and then back out again. The ship would stay there for nine months out of the year. They would come in to have repairs made on it at the end of nine months. So this is when I got onto the ship that was tied up at Yerba Buena Island in San Francisco Bay.[3] I enjoyed it very much. I was making $75 a month.

RW: You were at sea for nine months?

RF: The ship stayed out there for nine months, but the crew got off every six weeks for a two–week leave. The officers were off for a month. The lighthouse tender would come out every other week to bring water and supplies to the ship and then the following



Rad Franke and Marie Petersen in San Francisco while they were dating. *(Courtesy of Radford Franke.)*



Marie Franke with a young sea lion pup at Año Nuevo. Franke observed that "after the young were born they would have to be encouraged into the water by their mothers and taught to swim. Many young ones would be washed from the rock and eventually wound up on our beaches where they would die. The mothers never really tried to find them. This was an unhealthy time of year because of the decomposing seal bodies on the beach." *(Courtesy of Radford Franke.)*



Rad Franke dressed in his foul weather clothes, standing on the deck of SAN FRANCISCO Lightship No. 70 while working as a fireman on board. ***(Courtesy of Radford Franke.)***

San Francisco Lightship No. 70

On April 7, 1898 the first lightship station off the Golden Gate was established when the steam powered San Francisco Lightship No. 70 dropped anchor approximately 3¼ miles outside the bar. Built by Wolf & Zwicker Iron Works of Portland, Oregon, No. 70 spent 32 years as a seamark for the Pacific Coast's busiest and most dangerous oceanic crossroads.

Equipped with a cluster of three 100 candlepower electric lens lanterns permanently mounted in galleries on each mast, a 12 inch steam chime whistle, a hand operated 1,000 pound bell, and, after 1910, a submarine bell, No. 70 became the most valuable navigational aid for mariners calling at the port of San Francisco. During 1915 and 1916, fog enveloped the lightship and the entrance to the bay an average of 2,200 hours, or 25% of the year, requiring the use of the fog whistle. The San Francisco Lightship No. 70 fog signal's distinctive code consisted of a two second long blast of the steam whistle at 13 second intervals. This resulted in 240 blasts per hour. Even though the noise from these ear-shattering blasts was torturous and inescapable, crewmembers got used to it. One individual commented that the only time he noticed the fog signal was when it stopped.

For 32 years No. 70 and her crew carried out the duties of a lightship station with little fanfare or notoriety and, except for a few minor incidents noted in her log, had an uneventful career. The most notable event occurred during August 1899 when the crew conducted a 17 day experiment with wireless telegraph equipment. The experiment, though plagued with problems, culminated in the United States' first wireless message dispatched from a vessel and received on land. The historic message, "Sherman is coming," created a wave of excitement throughout the city as No. 70 reported the first sighting of the U.S. Army transport Sherman, which carried troops returning home from the Spanish-American War.

A second and rather humorous incident occurred during a series of severe northern California forest fires. The log entry for September 15, 1901 recorded the arrival of a large number of owls, cranes, hummingbirds, and other land fowl that had flown out of the dense coastal smoke caused by these fires. The birds took refuge on board the vessel and remained until the smoke dissipated allowing them to safely return to the mainland and their natural habitats.

On February 3, 1903 the schooner Novelty collided with San Francisco Lightship No. 70. This potential danger was considered one of the greatest hazards facing a lightship station. Apparently neither vessel sustained any real damage since the only mention of the incident was in the ship's log and the lightship was not removed from her station for repairs. The other extremely hazardous situation faced by lightships was the dangerous seas during storms. In the early 1920s a severe storm dragged No. 70 off her anchorage. This incident was reported in both the ship's log and the *San Francisco Chronicle*.

By 1927, when Radford Franke boarded No. 70, many considered her "already condemned but still in service." When Franke reported for duty he discovered the bilges had been filled with cement in an attempt to secure the boilers after their bolts had rusted through. Once at sea he learned that the cement "acted like a pendulum and caused the ship to roll more." In 1930 the Lighthouse Service replaced San Francisco Lightship No. 70 with San Francisco Lightship No. 83. Twenty years later San Francisco Lightship WAL 612 became the third and final vessel to serve off the entrance to San Francisco Bay. The Coast Guard discontinued the San Francisco Lightship Station in April 1971 and replaced it with a Large Navigational Buoy



San Francisco Lightship #70 as seen on station a little more than three miles outside the bar at the entrance to the Golden Gate. ***(Courtesy of Radford Franke.)***

week a Navy tug would come out and bring newspapers and things while they were taking supplies out to the Farralon Island where there was another lighthouse. The Navy tug would take a liberty party in and take the other ones out on one weekend and the next weekend the lighthouse tender would bring the men who were ashore back to the ship and take the next liberty party ashore again.

RW: How far out was it moored from the Golden Gate?

RF: Three miles, I believe, as near as I can remember.

RW: Between the Farralon Islands and the Golden Gate? Did that San Francisco lightship kind of roll around?

RF: They had some real weird winters out there, believe me. In fact, when I first went out there I had never been to sea. I don't know how I ever became a sailor in the first place. I had no idea of even being one except that my brother-in-law had suggested it to me and I thought it was a good chance for me to get started. We got to going through the Golden Gate and I was quite excited about this. I'd run up from the engine room and look out to see



Franke and his crewmates relied upon the Lightship Tender SEQUOIA to keep No. 70 supplied during her nine months on station. The crew also depended upon the SEQUOIA to transport them to and from San Francisco every six weeks for their two weeks of liberty. *(Courtesy of Radford Franke.)*

where we were. About the third trip up I began to feel kind of peculiar and there was no fourth trip.

Finally, when I got out on the station I was so darn sick I couldn't perform my work for three days. I stayed in bed and my brother-in-law took my duty for me [in addition to his duties as cook]. I wanted to quit; I wanted to jump overboard; I wanted the captain to have somebody come out and get me; but they wouldn't pay any attention to me. After the third day I became quite a sailor. Yeah, I mean the weather out there sometimes... I can remember standing up alongside of the bulkhead while we were eating our dinner one day, and one minute we would be almost with our face against the deck and the next minute we'd be back up against the bulkhead.

The ship was only about 200 feet long.[4] It had a one-cylinder engine in it. It was only strong enough to get us out on station and get us back in again because the rest of the time we were anchored. We had to go out when the tide was going out, otherwise we couldn't buck the incoming tide. And the same way, when the ship would come in she would wait till the low of the tide was going in again so that we could ride in with the tide.

I've seen times when we had to have the engines running full forward in order to keep the strain off of the anchor chain, the waves would be so rough. That was a very exciting experience. But after Marie and I got married I didn't like that business of being gone for six weeks and only back with her for two weeks.[5] So I resigned the job.

[I]n the meantime I had applied for a job in the lighthouses [and early in] 1929 I was called to go on the lighthouse up at St. George's Reef.[6] But this was a very disastrous light station. It was about three miles out at sea. There was just one tower out there and at times it would get so rough that the waves would break over the top of the light. I didn't think I wanted that kind of a job, so I refused it.

The next one that was offered to me [in April 1929] was the Año Nuevo Lighthouse which was down near Santa Cruz. It was an island that was about a half mile off of shore. I had to accept that, otherwise I was afraid they wouldn't pay any attention to me anymore. So I packed up and got my suitcases and took the bus. My wife was working for the Hartford Insurance Company



Marie Franke's sister, Ruth, photographed on the elevated wooden walkway that connected the keepers' quarters with the lighthouse. The powerful winds often made crossing the walkway difficult and dangerous. Rad remembered one time in particular when a fierce wind tore planks off the walkway. Note the single story keeper's quarters behind her on the left. First assistant keeper Oliver Berg and his wife lived there. The Frankes and Chambers lived in the house on the right. *(Courtesy of Radford Franke.)*

at the time, so she stayed in San Francisco to keep on earning some money while I was going on down there to experience myself on the lighthouse.

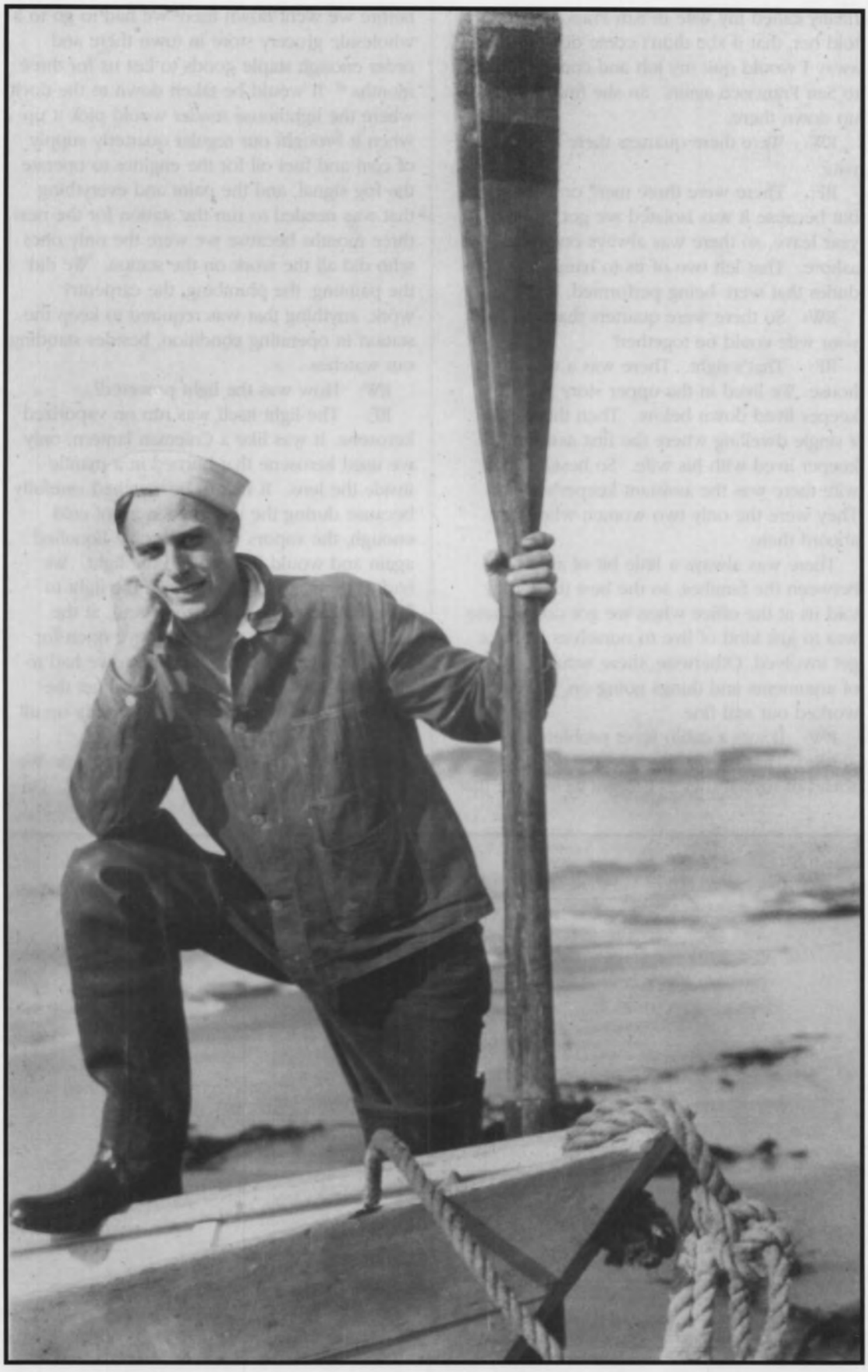
The bus took me down the coast and I got off at a ranch house opposite the lighthouse. I had my overcoat on as it was in April and it was still pretty cold yet. I had two suitcases with my clothes and things that I needed. I started on down through the ranch area and after I passed the ranches I came to the sand dunes.[7] I walked across the sand dunes; the wind was blowing and my suitcases were getting tangled up in my legs. By the way, I was beginning to wonder why I had accepted the job, but I had to go ahead and get that part of it taken care of.

When I got to the beach I had to signal to the island for the guy to come over and get me in the boat [an 18-foot dory]. He finally showed up, a fellow by the name of Jack Chambers. He was a bachelor and had once been on the Point Bonita Lifeboat Station.[8] Then he got into the Lighthouse Service, but he was a real salty guy. He talked some of the worst language you would ever hear in your life, but he was a goodhearted soul.

After I was on the island for about a week and a half I was getting so lonesome. I was getting tired of eating beans out of a can. I



The Frankes resided in the second story of this keeper's quarters. Jack Chambers lived on the first floor. According to Franke these quarters were "excellent - two bedrooms, bath, kitchen and living room." Chambers' first floor accommodations were exactly the same. *(Courtesy of Radford Franke.)*



Rad posing with the lighthouse dory on the mainland. ***(Courtesy of Radford Franke.)***

finally called my wife in San Francisco and told her, that if she didn't come down right away I would quit my job and come back up to San Francisco again. So she finally showed up down there.

RW: Were there quarters there for both of you?

RF: There were three men[9] on the station, but because it was isolated we got 96 days a year leave, so there was always one man ashore. That left two of us to handle the duties that were being performed.

RW: So there were quarters that you and your wife could be together?

RF: That's right. There was a two-story house. We lived in the upper story and the keeper lived down below. Then there was a single dwelling where the first assistant keeper lived with his wife. So besides my wife there was the assistant keeper's wife. They were the only two women who were aboard there.

There was always a little bit of animosity between the families, so the best thing they told us at the office when we got down there was to just kind of live to ourselves and not get involved. Otherwise, there would be a lot of arguments and things going on. Everything worked out real fine.

RW: It was a cabin fever problem then?

RF: That's probably it, yes, indeed. I got ahead of myself there. I forgot to tell you that before we went down there we had to go to a wholesale grocery store in town there and order enough staple goods to last us for three months.[10] It would be taken down to the dock where the lighthouse tender would pick it up when it brought our regular quarterly supply of coal and fuel oil for the engines to operate the fog signal, and the paint and everything that was needed to run the station for the next three months because we were the only ones who did all the work on the station. We did the painting, the plumbing, the carpentry work, anything that was required to keep the station in operating condition, besides standing our watches.

RW: How was the light powered?

RF: The light itself was run on vaporized kerosene. It was like a Coleman lantern, only we used kerosene that burned in a mantle inside the lens. It had to be watched carefully because during the night when it got cold enough, the vapors would become liquefied again and would flame up in the light. We had to preheat the generator in the light to keep the kerosene vaporized. And, at the same time, we had to keep an eye open for fog. In the case of that coming in we had to get down and start the engines and get the foghorns going so there was somebody up all the time.

We stood six and six, around the clock. We would be six hours on and six hours off. On



Steller's sea lions at Año Nuevo. The sea lions on the near rock appear to be immature bulls while the group on the distant rock are most likely a harem of mature female sea lions. *(Courtesy of Radford Franke.)*

our off time, by the time we got our meals and got to bed, we would probably get five hours of sleep at one time, if we could get that much. It was a good job; I was really happy with it. We got along very well.

RW: How did your wife take to all of this, she was so limited?

RF: Because of the fact that I had been confined at home for all of those years I didn't mind being isolated and getting paid for it. My wife, being raised in a convent, living alone like that didn't seem to bother her. We enjoyed reading and we got an old portable phonograph with about a dozen records that we used for entertainment. We'd play them over and over again.

RW: Radios weren't in yet?

RF: The keeper had a radio, an RCA radio with what they called peanut tubes in it. He had to buy batteries to operate it. After the batteries were dead, if he didn't have enough supply to keep him going, then the radio didn't do him any good either. Even our communications with the mainland wasn't too good because we had a suspended line across from the island to the mainland. If a storm would come up, sometimes that telephone line would go down. Then we would be without communication until we could get ashore and get parts.

RW: How far was it from the shore to the island?

RF: It was between a quarter and a half a mile cross in a dory. The waves would come around from both sides of the island and break in the middle there, so we had an area marked with steel poles to indicate where the calmest water was so we could get back and forth.[11]

A lot of times we would order groceries, like meat and stuff from the nearest town of Pescadero[12] and they would send the food down on the bus and put it in our mailbox.[13] The mailbox was built like an outhouse where a man could go in and sit down if he was waiting for the mail to come and it happened to be stormy weather. The stuff could be put in there for us.

A lot of times we would order our stuff in the morning and the bus didn't come up until the afternoon. By that time the wind would come up maybe and we couldn't get ashore. So then our food would be over there spoiling. By the time we could get back over there to get it, it wouldn't be fit to eat anymore. So we had to try to pick a day when we knew the weather would be good enough to get over there and get our food. We would buy bacon and ham. Everything had to be canned goods, canned milk.

We were able to raise chickens out there, so we had fresh meat. We kept eggs, but we didn't have any refrigeration.

We had what they called water glass at that time.[14] You mixed the stuff in water and put it in an old five-gallon oil can. We could preserve our eggs in that stuff, so we would always have four or five dozen eggs on hand. They wouldn't be good enough to have sunny-side up because the yolks after they were preserved for a while would break after you opened the eggs up. But they were good fresh eggs to eat.

And we had plenty of fish. Abalones were abundant around there. We ate very expensive-type food, but it didn't cost us anything. But when you'd get ashore and wanted to buy that stuff, it would be pretty expensive. Then the wife would make chowder out of abalone meat. We could catch some fish just about anytime we wanted it, so we really weren't going hungry out there. We did like to have a pork chop, or hamburgers, or frankfurters once in a while. We would get that by ordering through the mail.

RW: . . . why don't you tell us a little . . . about the sea lions . . .

RF: . . . it was very interesting about Steller's sea lions.[15] [There] was a rookery for them on the north end of the island. We could walk within 50 feet of them, but we wouldn't dare go any closer than that because they would probably attack us. It was very interesting because the females would stay there all the year long, but the males would migrate from Alaska and come down to do their mating. Then they would leave and the females would be there to do their own whelping.

The pups would have to be taught how to swim; they weren't natural swimmers. They would be basking in the sun on the edge of the rocks and the killer whales would be hanging around.[16] That was one thing we had to worry about when we went across on our boat to go ashore. We thought that they would be dangerous, but apparently from what we see nowadays, they are not that dangerous.

Año Nuevo Lighthouse

On May 29, 1872 the 12-inch steam whistle installed at the newly constructed Año Nuevo fog signal station shattered the quiet of the nearby farming communities with its first official blast. In answer to the signal's bellow, neighboring dairy cows stampeded to the beach searching for what sounded like a "very wonderful bull."

This new fog signal station, the first of its kind built in California, was located on a nine-acre island of clay and sand half a mile off Point Año Nuevo and six miles south of Pigeon Point. Originally the station consisted of a keeper's dwelling built at one end of the island, the signal building situated at the other end, and a wooden walkway connecting the two structures. By the time Radford Franke arrived at Año Nuevo a two-story duplex had been built next to the original keepers' dwelling in order to provide separate housing for each of the three keepers assigned to this light station.

Shortly after the fog signal went into service a mounted lens lantern was installed on the water tower. A few years later the 49 foot tower with a watch room, lantern room, and Fresnel lens replaced the lens lanterns. The tower was built on a slight hill, which sloped down towards the fog signal. The graded and cemented hill diverted rain runoff into the cistern at its base.

There were rarely dull moments when on watch. Lightkeepers at Año Nuevo had to keep a close eye on the light since it burned kerosene vapors and was prone to flaring and cooling. They used an alcohol torch to heat the small kerosene tank in the lens to keep the kerosene in a vapor state. Like all lights, the burning mantel, similar to those used in Coleman lanterns, attracted moths. If a moth got into the lens, it eventually flew into the mantel and broke it, extinguishing the light.

When the fog started rolling in, the keeper switched his energy and attention to the fog signal. This system consisted of two distillate engines capable of running a large air compressor. The compressor kept the air receivers filled with air for the fog sirens. The keeper alternated the use of the engines in the event of a prolonged spell of fog. Franke remembered ten straight days as the longest period of fog he experienced on the island.

In May 1948 the Coast Guard closed the Año Nuevo Island Lighthouse and replaced it with an automated light and sound buoy. The island and abandoned buildings, now occupied by sea lions and elephant seals, became part of the Año Nuevo State Reserve.

RW: What about drinking water on the island?

R.F: The drinking water was nothing but rain water. No other source of water except from the rain which would fall onto a rain shed and the water would run down into a cistern. We would then pump it from the cistern up into our 38,000-gallon storage tank up on the hill next to the light tower. We also had another tank at the quarters where we would catch the water off of the roof.

The tank on the hill had been replaced by a new tank, but the wood hadn't been treated properly and there was still a lot of dye from the redwood that would get into the water so that it wasn't fit to drink. But we could use it for bathing and washing. The water that came through the faucet was only used in the tub for washing clothes and for bathing. The drinking water would come from the tank beside the house.[17] We would have to carry it up to the kitchen in buckets and use it out of the bucket.

When it came to bath time my wife would take her bath first and then I would bathe next. Then we would use the water we had after we got through bathing. [We'd] carry [it] down to our garden and water the plants that we had down there, the vegetables. We could raise carrots, beets, turnips, lettuce. We used to keep a lot of kale because we had chickens in the chicken yard. The kale was for chicken feed; they needed a certain amount of grass to eat. The sand wouldn't raise anything except what we planted inside of tin cans, so we could put the water in the cans and let the water soak down into the ground rather than run off.

RW: Did you ever resolve getting along with [the] other family and the old lighthouse keeper?

RF: We got along just by staying to ourselves and being sociable whenever we had a chance. We talked to one another, but there were usually only two men on the station at a time. The keeper was a single man so he would be an easy man to live with. I mentioned already the fact that we had all that time on leave.

RW: And did the women get along?

RF: Well, yes. It was kind of a peculiar situation because the first assistant keeper's wife had a Maytag washing machine with a gasoline engine in it. My wife had a washboard - that is the way she washed our clothes. But there was never any effort made to share the washing machine with my wife. That is the way things were to be. We would never ask them to do that as a favor.

We had kerosene lamps for lighting in our house. We did have a gasoline-powered iron that my wife could use to iron her clothes rather than use the old flatiron. It was kind of a dangerous thing to use, but it was very convenient.

We spent Christmas that year [1929] out there. We had our own Christmas tree with candles on it for lights.

Then the next year, 1930, I got a phone call from the main office and [they] wanted to know if I would accept a transfer to San Diego to the Ballast Point Light Station. [I] asked them if I could call them back. I wanted to talk to the keeper about it. So I asked Chambers and told him that they wanted me to go down to Ballast Point Light Station, and what he thought about it. He said, "For (blank, blank) sakes, go back there and tell them you'll go. It is the best station along the coast." So I accepted the station.

While we were on the island though, we managed to save enough money to go out and buy ourselves a Model A Ford coupe. We paid

$600 for it. It was a good thing we had this transportation. So when we got ready to go down to San Diego we loaded our mattresses on top of the car and loaded things in the trunk of the car we thought we might need when we got down here.

[End of Part I; to be continued.]

NOTES

1 The term Golden Gate refers to the two mile wide and five mile long strait that connects the Pacific Ocean and San Francisco Bay. In May 1937 work was completed on a bridge that spans this entrance to the Bay and bears its name.

2 Fred Christ, Radford's brother-in-law, began his lightship career as a fireman but became the cook shortly before he encouraged Radford to sign on.

3 The lightship was at Yerba Buena Island for her annual overhaul when Radford joined the crew. His first two weeks aboard the lightship SAN FRANCISCO No. 70 were spent at the Yerba Buena Island dock.

4 The vessel was 122 feet 10 inches in overall length with a 28 foot 6 inch beam and a 13 foot 9 inch draft. She weighed 450 gross tons and displaced 590 tons.

5 During a weekend visit to San Francisco's Playland at the Beach, near the Cliff House, Radford met Marie Petersen. They were married on 17 June 1928.

6 Completed in 1892, St. Georges Reef Lighthouse, a wave-swept light exposed to the full force of the sea, was one of the Pacific Coast's most dangerous and difficult stations. Located on Northwest Seal Rock, which had a surface diameter of only 300 feet, the light stands six miles off the California coast northeast of Crescent City. The light station and tower were built atop a 66-foot high granite pier designed to withstand wave forces of four tons per square foot. In 1923 a particularly violent storm sent waves crashing over this pier and up against the light tower and other station buildings. The force of the waves tore the donkey-engine house from its foundation. Keepers disliked this station with its dank granite walls, remote location, incessant storms, and dangerous boarding process. A hoisting boom, approximately 90 feet above the ocean's surface, stood out over the water from a point on the lighthouse structure. From the boom a hook equipped with either a hoisting bucket (for individuals) or a hoisting sling (for specific types of boats) was lowered and used to bring people and supplies onto the pier. To leave the island, the process was reversed and people and supplies were lowered back down to the water's surface. Several men were injured or killed while making this transfer.
In 1975 a Large Navigational Buoy (LNB), located to the west of Northwest Seal Rock, replaced the St. Georges Reef Lighthouse. Eight years later the first order Fresnel lens was removed from the abandoned station and put on permanent display in the Del Norte County Historical Society Museum.

7 The bus dropped Radford about one mile from the beach. At that time the only way to gain access to the beach was to walk through a half mile of privately owned ranch land and then cross another half mile of sand dunes.

8 In 1899 the Lifesaving Service constructed the Point Bonita Lifeboat Station along the shore of Bonita Cove located on the northern headlands of the entrance to San Francisco Bay. The original boat launch was rebuilt in 1911 to accommodate the Lifesaving Service's first West Coast powerboat.

9 Jack Chambers served as the light keeper with Oliver Berg as the first assistant keeper and Radford Franke as the second assistant keeper.

10 The lack of electricity and, therefore, refrigeration limited the types of food the keepers purchased. Food preservation problems were compounded by their somewhat isolated location which made access to ice for use in an icebox impossible.

11 In April 1883 four lives were lost while making this passage. An unexpected wave swamped the dory and washed the men out to sea while their wives watched helplessly from the island.

12 Pescadero, originally a stagecoach way station, is a small town approximately 10 miles north of Año Nuevo.

13 The mailbox shack, located along the highway a mile from shore, served as the lighthouse bus stop.

14 Marie Franke described water glass as a gelatin-like preservative which, when mixed with water, created a thin coating that sealed the porous egg shells. This blocked the normal transfer of air through the shell and, therefore, extended the shelf life of the eggs. Neither Marie nor Radford remember ever having to throw away any of the eggs they preserved in water glass.

15 Steller's sea lions, the largest species of eared seals, range from the Channel Islands off the coast of Southern California north to Alaska's Aleutian and Pribilof Islands and on to the islands of the Okhotsk Sea. Adult males can reach 11½ feet in length and weigh over a ton. The smaller adult females grow to a length of 8 feet and weigh approximately 700 pounds. Although hunted extensively for their valuable skins and oil during the nineteenth century, Steller's remain the most abundant species of sea lions in North America.

16 Franke observed, "The small seals would be crowded along the edges of the rocks and the killer whales would swim by close, and sweep them from the rocks with their dorsal fin, and, of course, eat them."

17 This tank supplied gravity-fed water to the light keepers' quarters.

JOHN STOBART'S

"A Celebration of Pacific Maritime Heritage"

By Adam Koltz



Below: "Newport Beach: the Pavilion Overlooking the Harbor at Sunrise in 1910." The Pavilion still stands in Newport Beach, with the upper floor occupied by a restaurant. The rising sun highlights the masts and rigging of the square riggers anchored in the harbor, illustrating Stobart's wonderful treatment of light in his paintings. ***(Courtesy of Maritime Heritage Prints)***



Left: John Stobart, a resident of Westport, Massachusetts, travels throughout the world conducting research for his paintings of vessels and historic port scenes. *(Courtesy of Maritime Heritage Prints)*

Above: "Seattle - A View Looking North from Yesler's Wharf, c. 1880." Stobart painted this intriguing reconstruction of a wharf scene in the late 1880s as accurately as possible. Today, all that survives of this scene is the lay of the land and the distant promontory. Notice the characteristic treatment of the first rays of sunlight to penetrate the clouds of a passing rainstorm. *(Courtesy of Maritime Heritage Prints)*

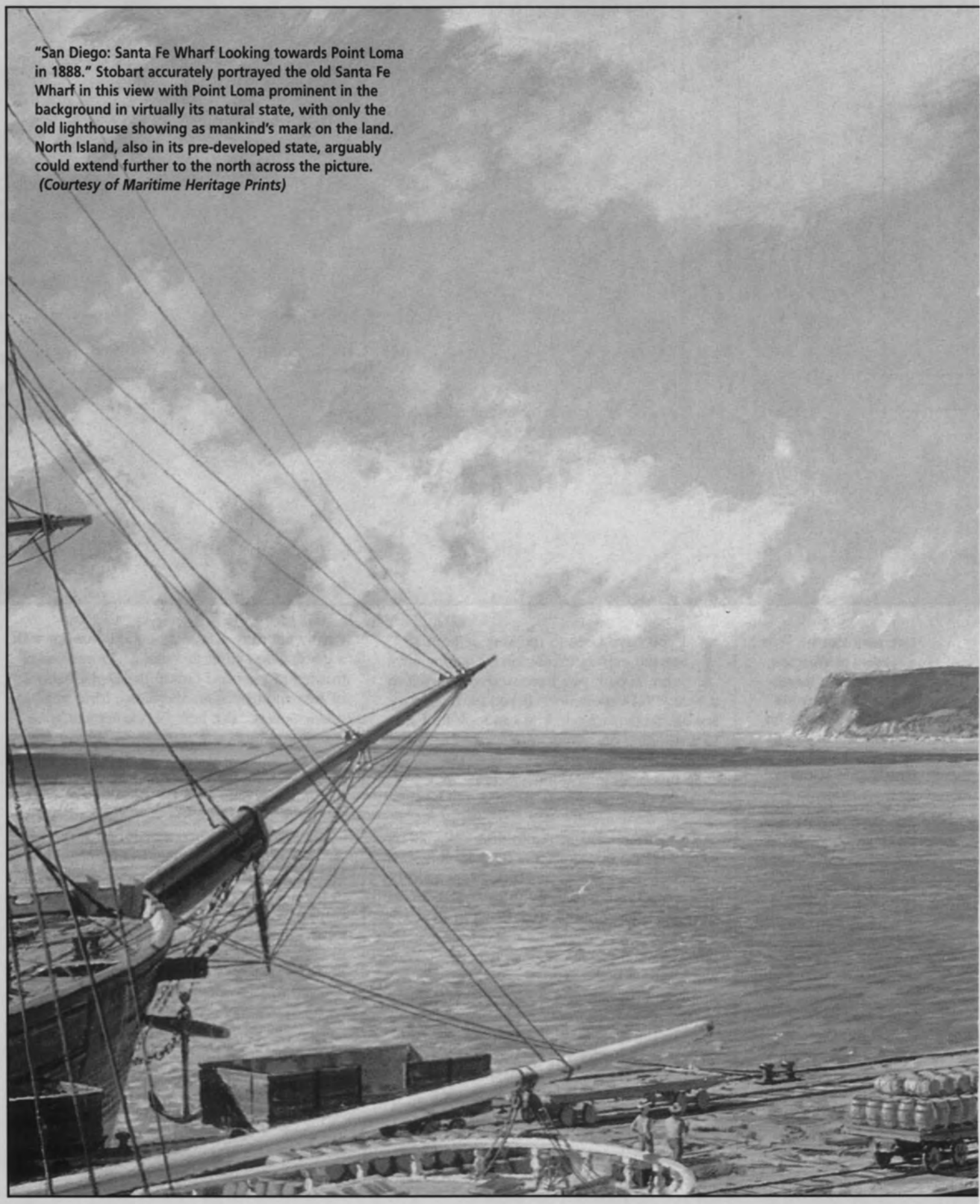
If you have been to the STAR OF INDIA to see the current exhibition by marine artist John Stobart, you have treated yourself to a wonderful experience. If you have yet to see Mr. Stobart's work, you can look forward to a stunning encounter with West Coast maritime history.

In this biographical introduction, Mr. Stobart's development as an artist will be discussed. Concurrently, key elements of his career will be investigated to develop answers to two critical questions: (1) does John Stobart accurately interpret marine technology, and (2) does he represent truth in his interpretation of maritime history of the West Coast of the United States? Throughout this discussion, other elements which characterize Mr. Stobart's work will be highlighted.

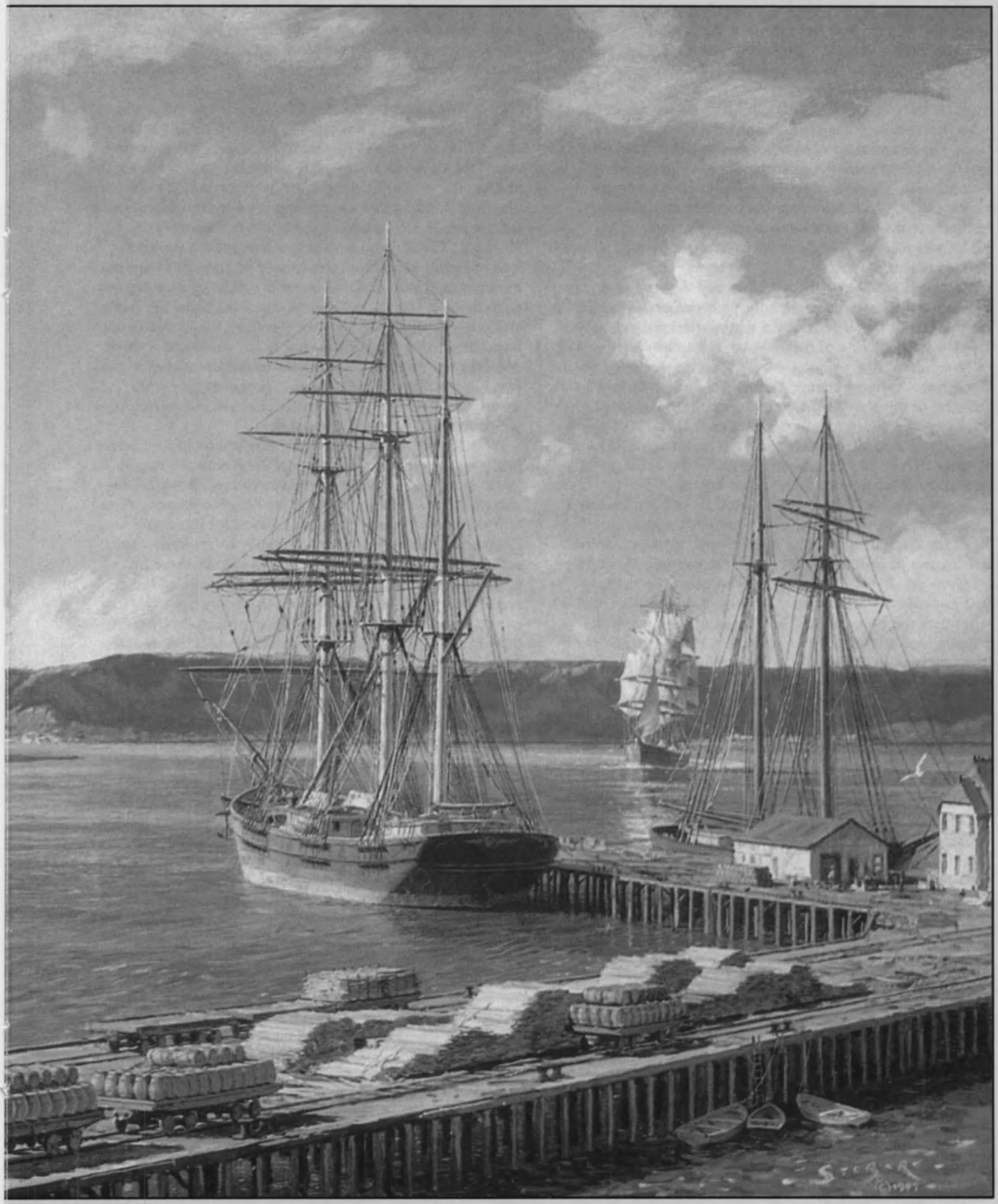
Born in England in December 1929, John Stobart spent his early years in Newcastle-on-Tyne in Derbyshire. He performed miserably in school, as his interests lay in exploring the English countryside and in making sketches, rather than in his relatively dull lessons. During this period, a holiday visit to his grandmother's home introduced him to the great harbor at Liverpool, which offered him an exciting distraction from his school work. Finally his early schooling ended, but not with a graduation certificate. John's father, out of frustration, enrolled him in the Derby School of Arts and Crafts, an alternative for academic nonachievers. But here his excitement was stirred and he began to excel. Thus we see early trends toward the John Stobart we know today: the emerging artist and his fascination with the maritime scene.

At the Derby School of Arts and Crafts Stobart reached a major turning point in his development as an artist when a mentor encouraged him to paint outdoors and to feel the space and experience the light. He carried these lessons and experiences with him when, after receiving a National Diploma from the school, he accepted a scholarship to the Royal Academy of the Arts. There Stobart realized that he was becoming a successful artist. He continued painting from life. During this period the artistic styles of John Constable and of Corot exerted a strong influence on Stobart's work. The two artists deeply moved and inspired Stobart by their ability to capture the effect of light. Today, his treatment of light is what characterizes John Stobart as one of the great artists of our time.

Prior to graduating from the Royal



"San Diego: Santa Fe Wharf Looking towards Point Loma in 1888." Stobart accurately portrayed the old Santa Fe Wharf in this view with Point Loma prominent in the background in virtually its natural state, with only the old lighthouse showing as mankind's mark on the land. North Island, also in its pre-developed state, arguably could extend further to the north across the picture. *(Courtesy of Maritime Heritage Prints)*



Academy, John Stobart elected to satisfy his National Service requirement in the Royal Air Force (RAF). While in this service, he painted "The Coronation Review," a painting that hangs today in the Queen Elizabeth Anteroom of the Royal Naval College at Greenwich. After his RAF service, he traveled by ship to South Africa to see his father, who had finally recognized his son's talents as an artist. In Cape Town, and numerous other ports visited during the voyage, Stobart's interest in harbors and ships blossomed and his path toward a life as a professional artist began taking shape. As his Academy years drew to a close, he knew that he did not want to teach, as many of his classmates elected. He chose to "starve", as he puts it, and become a painter.

Stobart decided to put his African trip to work, and began painting merchant ships for their owners. His love for the harbor scene provided a natural background, as in his first ship painting of the BRAEMAR CASTLE leaving the port of Mombasa. That painting won Stobart an election into the Royal Society of Marine Artists. This was followed by a painting of the EMPRESS OF ENGLAND departing Liverpool. In 1957 two significant milestones occurred: (1) Stobart graduated from the Royal Academy and (2) he immigrated to Canada. There he continued to paint for the accounts of steamship companies and marine architects.

Stobart relates one comical anecdote of his career as a painter of steamships. He completed a painting of the ship REINA DEL MAR in Liverpool, then called upon the owners in an attempt to market the picture. While the directors admired the painting, they announced that they had just sold the ship to new owners! Since he was unable to contact the new owners, he sanded the surface of the painting and changed the ship to the S.S. AUREOL, another liner that was in Liverpool. Upon seeing this painting, the owners of that ship purchased it immediately. Three years later, however, he received a call from the company, asking that he come by and look at the painting. Puzzled by this call, Stobart visited the company offices and saw that the old name REINA DEL MAR had not been sufficiently sanded down and had resurfaced through the white paint used for S.S. AUREOL! Embarrassment turned to laughter upon his confession, and a quick trip to the studio rectified the problem.

Tiring of painting steamships in the mid '60's, John Stobart turned to his secret love, the era of merchant sail. Upon receiving advice to take his work to New York, he boarded a train with four paintings of clipper ships. Through determination, a willingness to take risks, and some incredible luck, this trip turned out to be a major milestone in his career.

Stobart boarded the train without the vaguest notion of where to go once he arrived in New York City. As the train neared the city and more commuters boarded, Stobart moved to allow a man to sit beside him. He soon noticed that the gentleman was looking through books of art. Finding his courage, Stobart asked him where he might go to show "averagely good" paintings of clipper ships. Although reluctant, the man politely opened Stobart's portfolio. Impressed by what he saw, he wrote the names of four New York galleries on a slip of paper. After he left the train at Grand Central Station, Stobart looked at the man's card: Donald Holden, Editorial Director, Watson-Guptill Publications and *American Artist* Magazine. Each of the galleries offered Stobart an exhibition, all four paintings sold within three weeks, and his career soared.

Now let's return to the first question posed at the beginning of this article. Does John Stobart accurately interpret marine technology? The success of many great marine artists, such as the late Jack Spurling, is attributed to their first-hand knowledge of sailing ships. Mr. Spurling, in addition to possessing great artistic talent, spent time at sea in big square riggers such as SOBROAN and HESPERUS. Conversely, Stobart first learned the technical side of sailing ships from the curator of Toronto's maritime museum, and still turns to Underhill's *Masting and Rigging* for reference. He admits that he does not know the name and purpose of all the lines on his ships. Does this detract from the accuracy and credibility of his paintings? I think not. He has learned well, and his incredible attention to detail allows him to portray these vessels as they truly were. Observe closely the details of ships and rigging in the paintings, and see if you agree.

Now for the second question: Is maritime history accurately portrayed in these paintings? John Stobart's "trademark" is the historical settings portrayed in his work. His success in this regard is born of his belief in painting directly from nature coupled with his passion for recreating long-disappeared harborscapes as accurately as possible. As with his technical expertise, he has obviously done his geography and history homework. Since many of these scenes do not currently exist even in photographs, we can expect some range of individual interpretation and subjectivity in this regard. Each of us may interpret a scene differently. In "San Diego: Santa Fe Wharf Looking towards Point Loma in 1888," one can argue validly that North Island would extend almost across the entire picture from this viewpoint. Has Stobart sacrificed historical accuracy for artistic composition in this case? Perhaps the individual viewer must answer this question. Stobart once explained, "I took up the pattern of never disagreeing or agreeing" with other people's opinions.

In creating art, there is a fine line between interpreting historical detail and composing the subject matter in a way that "works" for the artist and the viewer. Perhaps we can get a better sense for this by looking at the process Stobart went through to compose this painting. Fortunately, the exhibit on the STAR OF INDIA includes a display of his working drawings and preliminary painting for "San Diego: Santa Fe Wharf Looking towards Point Loma in 1888." These drawings help us interpret the artist's intentions in developing this painting. Mr. Stobart writes: "I enjoy playing around with countless compositional ideas, searching endlessly for a winning idea until I hit on something worthy of developing." He certainly has achieved this in the detail and composition of the foreground ships and the activity portrayed on Santa Fe Wharf. The observer is seemingly transported back to San Diego in 1888.

In viewing this wonderful exhibit, one can conclude that Stobart has, for the most part, truthfully interpreted maritime history of the West Coast of the United States. Subtle,



"San Pedro - the Bark VIDETTE Towing into Port at Sunrise in 1890." Toward the end of the 19th century the VIDETTE, a 610-ton bark built at Bath, Maine in 1865, transported lumber from the Puget Sound to a variety of Pacific ports. Note how the rising sun is indirectly depicted by the patterns of light and shadow in the foreground, and even more dramatically in the masts and rigging of the ships moored alongside the wharf. *(Courtesy of Maritime Heritage Prints)*

yet important historic detail is portrayed not only in the ships, but in the harborside buildings and wharves and in the bustle of life and work depicted.

The exhibition represents John Stobart as one of the all-time great marine artists. But more importantly, Stobart is among the finest of artists, marine or otherwise. It has been said that an artist paints not physical objects, but actually paints light. Stobart is a master of light. Browse the exhibition, and note the important role that light plays in all of his paintings. The rising sun is dramatically represented by its effects in Stobart's "Newport Beach: the Pavilion Overlooking the Harbor at Sunrise in 1910" and "San Pedro: the Bark VIDETTE Towing into Port at Sunrise in 1890." Moonlight graces with subtle light the scenes in "Seattle - Mill Street by Moonlight in 1884" and "San Francisco: Vallejo Street Wharf." The setting sun as well as the glow of artificial light from shoreside buildings is used to create warmth and vitality. But perhaps the most compelling and dramatic use of light is in the individual lines of the ships' rigging. Upon close examination of the shrouds, stays and halyards, the viewer notes the effects created by Stobart's painting one side of each individual line in reflected light and the other side in shadow. Prime examples are seen in "Seattle: A View Looking North from Yesler's Wharf, c. 1880" and on the moored ships in the foreground of the painting "San Pedro: The Bark VIDETTE Towing into Port at Sunrise in 1890." These remarkable details present effects which seem to transport the viewer into the scene and make the paintings come alive with light.

Stobart is a master, regardless of the subject of his paintings. Those of us with an interest in ships and the sea are fortunate that he shares his talent through that same venue. Visit John Stobart's "A Celebration of Pacific Maritime Heritage" aboard the STAR OF INDIA for an exciting trip into our maritime past.

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[Editor's note: Adam Koltz , a marine artist, avid sailor and maritime historian, served in the Navy, and is known for his works depicting Navy vessels. He specializes in paintings of ships done on nautical charts, and his work has been displayed in galleries on both coasts.]



BOLD LINES CONNECT:

THE SHOREY'S, A UNIQUE MARITIME FAMILY

by Daphne Lagios

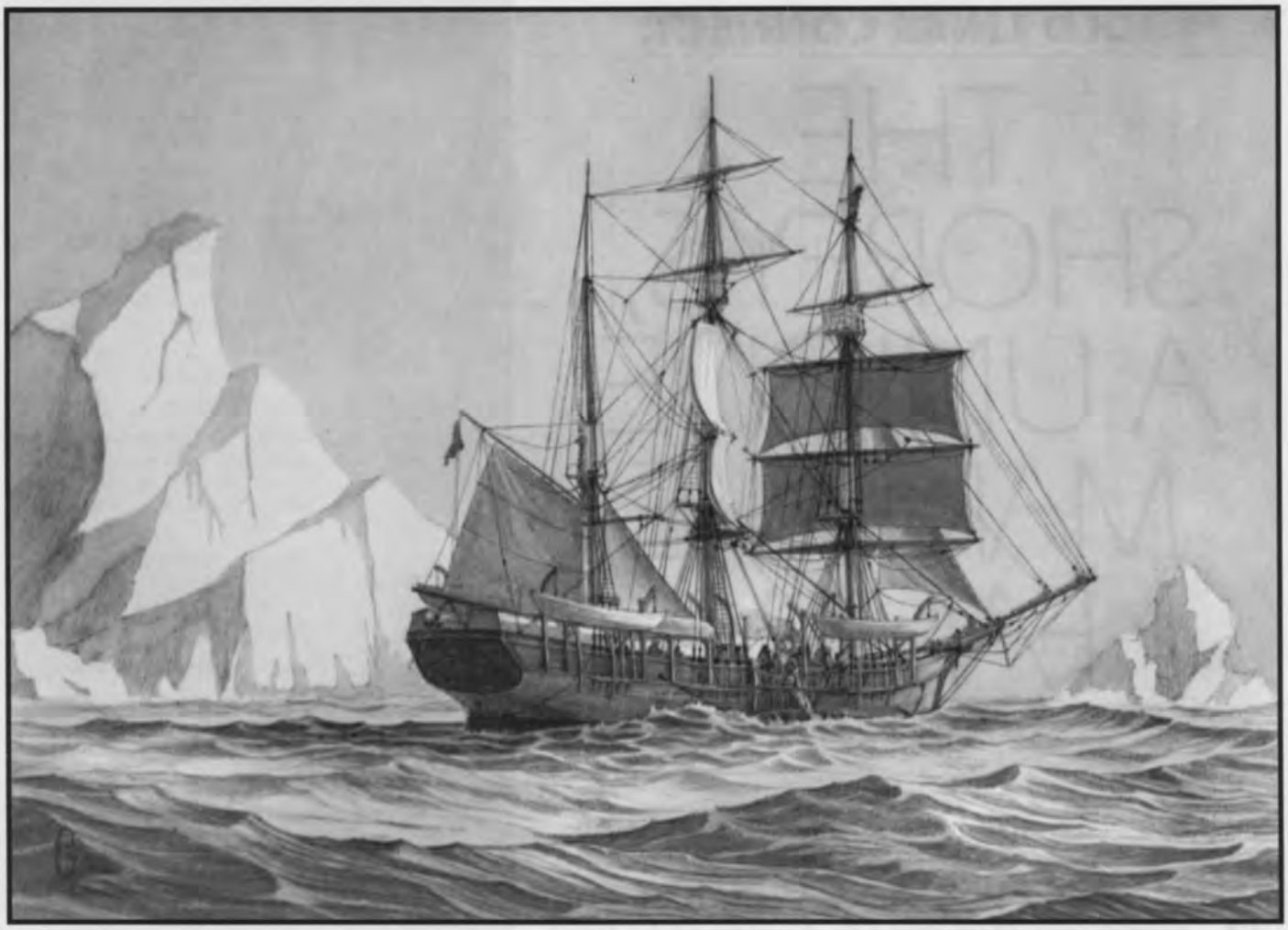
At the turn of the century, a whaling ship captain, his wife and three-year old daughter were aboard the whaler ANDREW HICKS trapped in ice off the coast of Siberia. A newspaper account of the adventure stated: "Commanded by Baby Shorey and the baby's father, Captain Shorey, the whaling bark ANDREW HICKS came down from the north this morning. She is the third vessel to return from the Arctic cruising this year. The baby is only three years old and it is considered creditable to so young a navigator that she and her father steered their bark further to the north than any other whaler ventured this year."

The Captain told of the perils of the Arctic waters: "On a wild stormy night we were driven into an ice drift ... There was nothing in the world we could do but wait for the ice fields to break up, and for eight days we lay wedged in the drift while the tides carried us back and forth, ever threatening to carry us on rocks or dash us on the shore." According to the Captain's wife, the child "...is a remarkable sailor ... She knows all the ropes and has perfect command of her father."[1]

The Shorey family posed for this photo at an Oakland studio around the turn of the century. They are, from left to right: Zenobia, Captain William T. Shorey, Victoria, and Mrs. Julia Shorey. ***(Courtesy of San Francisco Maritime National Historical Park, Victoria G. Francis Collection, P21, 578).***

Shorey Chronology

January 25, 1859	William Thomas Shorey born in Barbados, West Indies
June 10, 1865	Julia Ann Shelton born in San Francisco, California
By 1876	Shipped out as cabin boy and arrived in Boston; began learning navigation
1876	Shipped out on a whaler as a green hand
1876-1879	Became boat steerer on whaler Survived near fatal whale attack
1880	Became an officer
1880-1883	Served aboard whaler EMMA F. HERRIMAN on three year voyage; Rose in rank from 3rd mate to 1st officer. First visit to San Francisco Bay Area
1886	Attained rank of Captain Married Julia Ann Shelton who sailed with him to Hawaii
1886-1888	Captain of the EMMA F. HERRIMAN
19 August 1888	Daughter Zenobia Pearl born
1889-1891	Captain of the ALEXANDER
November 1891	Daughter Elvira J. born; died in infancy
1892-1894	Captain of the ANDREW HICKS
1894-1895	Captain of the GAY HEAD; most profitable voyage of his career: 500 barrels of oil and 9000 pounds of bone
1895-1902	Captain of the ANDREW HICKS; Julia and daughter Victoria sailed on at least one of these voyages
June 1897	Daughter Hazel E. born; died in infancy
1 August 1898	Daughter Victoria Grace ("Baby Shorey") born
25 May 1902	Son William Thomas, Jr., born
1903-1908	Captain of the JOHN AND WINTHROP
October 1907	JOHN AND WINTHROP, under his command, survived two typhoons in Sea of Okhotsk
1908	Captain of the GAY HEAD; Julia and daughter Zenobia accompany him to Hawaii, Zenobia contracted tuberculosis
November 1908	Daughter Zenobia died
1909	Retired from the sea
1910-1919	Maintained current master's license Involved in local affairs and activities of Oakland, California
15 April 1919	Died, age 60 years three months, victim of influenza epidemic
1944	Julia Shelton Shorey died, age 79
1971	Victoria Shorey Francis, the last living member of Shorey's family, died, approximate age 70 years



Who was this unique family? William T. Shorey holds maritime honors as a successful whaling captain and as the first African American to be appointed ship captain on the West Coast. His wife, Julia Shelton, trained in the art of French embroidery, often accompanied William on his voyages as did their children. The Shorey family occupies a unique place at the intersection of African American history, traditional maritime history and the growing study of women's lives at sea. The Shoreys' maritime experiences offer us hints and glimpses into both the complicated racial relationships aboard ship and the challenges and joys of family life at sea. Their stories also remind us that although William was both a captain and father, and Julia a wife and traveler, their family came first and they chose to place their children at the center of their lives.

William T. Shorey was born January 25, 1859 in Barbados to a Scottish sugar planter and a West Indian mother. By the mid-nineteen century the West Indies' long history of seamanship had created an intricate maritime world.

> Imagine a graphic rendition in black of the volcanic Caribbean archipelago. From each island radiates short spokes that dead-end, like antennae: the out-and-back daily voyages of slave fishermen. Each island too is encircled by loops from point to point along its shore: the coastal trips of slave boatmen. Bold lines connect virtually every island to others: the inter-island voyages of black and white crews and runaway slaves.[2]

The whaling bark JOHN AND WINTHROP. William Shorey proved his coolness and expert seamanship on a rough passage in 1907 from the Sea of Okhotsk to San Francisco. ***(Print courtesy of SDMM, Chandler Collection.)***

Right: Photograph of the orginal crew list for the 1900 whaling voyage of the bark ANDREW HICKS. The first signature, dated "Nov. 26 99," belongs to William T. Shorey, master. The majority of the crew signed on two months later. ***(Courtesy of National Archives and Records Administration, Pacific Region.)***

WHALEMEN'S SHIPPING PAPER.

1st. **IT IS AGREED,** between the Owner, Master, Seamen and Mariners of the Bark Andrew Hicks now bound from the port of San Francisco on a Whaling, Walrusing and Trading Voyage to the North Pacific and Arctic Oceans, or elsewhere, as the Master may direct. **Term of Service** not to exceed twenty four calendar months. **Officers and Crew** to pay their respective proportions of freight on whatever catch may be shipped by some other vessel or vessels. **Officers and Crew** to remain by the vessel eight (8) days after her arrival at her final port of discharge, or in default to pay two dollars for each and every day of absence. **Interest to be charged** on all money advanced, at the rate of twelve per cent. per annum. **Officers and Crew** not to participate in trade.

That, in consideration of the share against each respective Seamen or Mariner's name hereunder set, they severally shall and will perform the above mentioned voyage; and the said owner and master do hereby agree with and hire the said Seamen or Mariners for the said voyage at such wages, to be paid pursuant to this agreement.

2d. And they, the said Seamen or Mariners, do severally hereby promise and oblige themselves to do their duty, and obey the lawful commands of the Officers on board said vessel or boats thereunto belonging, as becomes good and faithful Seamen or Mariners, while cruising for whales, and at all places where the said vessel shall put in, or another at, during the said voyage; to use their best endeavors to obtain a cargo of oil; and for the preservation of the vessel and cargo;—and not to neglect or refuse doing their duty by day or night; and that they shall not go out of said vessel, on board any other vessel, or be on shore, under any pretense whatever, until the aforesaid voyage be ended, and the vessel discharged of her loading, without leave first obtained of the Captain or Commanding Officer on board; that in default thereof, he or they shall be liable to all the penalties and forfeitures mentioned in the Maine Law, enacted for the Government and Regulation of Seamen in the Merchant Service, it being understood that said forfeiture shall be retained according to his or their respective shares of the voyage, and the length of the same conjointly.

3d. And it is further agreed by all the parties to this contract, that such regulations as a just regard to the good order, effectual government, health and moral habits of the Officers and Men, shall be established and observed on board the said vessel. And to insure proper attention on this important object, it shall be the duty of the Officer having the care of the Log-Book to note therein daily all flagrant breaches of the same. It shall especially be his duty to record all instances of drunkenness, all cases of absence from the said vessel by any Officer or Seaman, with or without permission, after sunset or beyond the time prescribed for their absence—every instance of absence, by any Officer or Seaman through the night, whether on shore or on board of any other vessel; every instance of the introduction of any woman or women into the ship for licentious purposes; every instance of disability for ship's duty which may occur, with the cause of ill—if ascertained by sickness or inferiority, the particular and origin of the same, if known, to be particularly stated, especially if it be the consequence of their own misconduct. And to the end of the Officer who may usually have charge of the Log-Book being implicated in any of the misdemeanors or disabilities herein mentioned, it shall be the duty of the Master to make, or cause to be made by another hand, an entry of the same on the Log-Book. And it shall be the duty of the Master to see that a proper record is kept thereon of all the matters mentioned in this Article, according to its true intent and meaning.

4th. The Officer having charge of the Watch on Deck, for the time being, shall be responsible for the strict essence of the regulation in regard to the admission of women—and in case of any getting on board unperceived, they shall forthwith be expelled by him, or if not able to do so, the case shall be immediately reported to the Captain or Commanding Officer on board, whose duty it shall be to enforce their immediate expulsion. On the failure of any officer on this part of his duty, either wilfully or through negligence, each and every Officer so failing shall forfeit twenty days pay for every such offense, and any other Officer or Seamen who shall alter any breach of said Regulation, or refuse, when lawfully recited upon, to aid in sustaining it, or shall be proved to have had a criminal intercourse with any such woman or women on board, shall forfeit for every such offense five days' pay—for every instance of drunkenness, two days' pay shall be forfeited, and a similar forfeiture shall take place for each day that any Seaman or Officer shall be off duty from sickness or disability caused by intemperance or licentiousness—the forfeitures in all these cases to be collected as in the second Article, and to go to the use of the owners of said vessel.

5th. All expenses which may be necessarily incurred during the voyage, with direct reference to any of the misdemeanors or disabilities enumerated in the third Article—as to any attempt at desertion or other disobedient and insolvent conduct, shall be charged to the refractory or individuals by reason of whom they may have been incurred.

6th. It is further agreed that if any Officer or Seaman, after a fair trial, if his abilities and disposition shall be judged by the Master incompetent or indisposed in the proper discharge of the duties of his station, the Master shall have a right to displace him and substitute another in his stead—a corresponding reduction of the lay of such Officer or Seaman with reference to the duty which he may thereafter perform, thereabouts to take effect; and a reasonable increase of the lay of the individual who may thereupon be promoted to a higher station shall be made on the final adjustment of the voyage.

7th. It is understood and agreed that if any Officer or Seaman shall be prevented by sickness or death from performing the voyage, his legal representatives shall be entitled to such part of the whole amount of his stipulated share as the time of his services on board shall be of the whole term of the voyage.

8th. It is further agreed, that whatever apparel, furniture or stores belonging to said vessel, may be given charge by the Master to any Officer or Seaman, shall be accounted for by him, and in case anything should be lost or damaged through his carelessness or neglect, it shall be made good to the owners by such Officer or Seaman. And whatever Officer or Seaman the Master shall appoint for the duty, shall take charge of any portion of the cargo or ship's stores required to be landed or brought on board in any boats or lighter, and faithfully perform the services assigned, and see that the said cargo or stores are safely landed and delivered, or brought on board the said vessel, as the case may be.

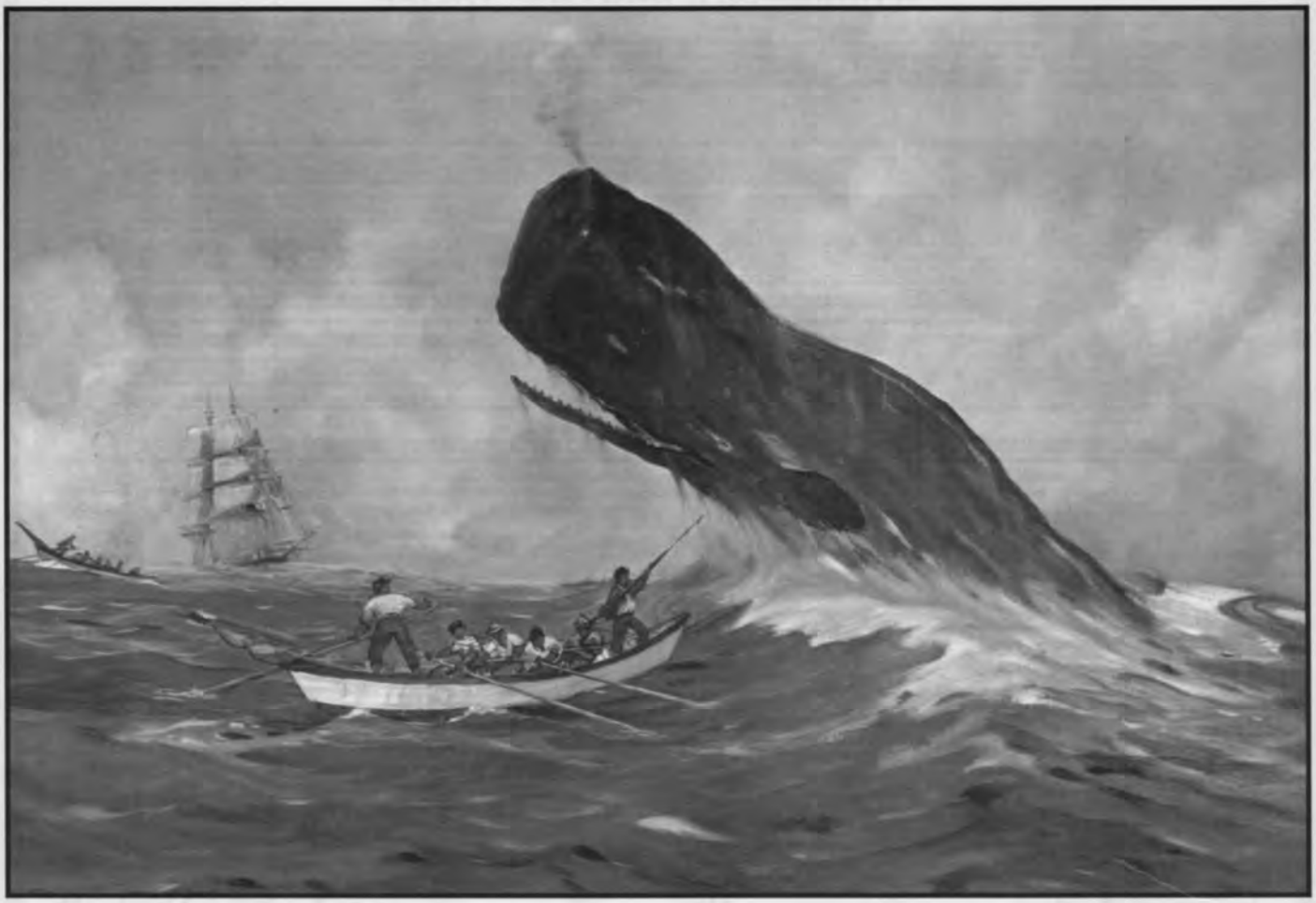
9th. Each and every Officer and Seaman who shall have well and truly performed the above mentioned voyage, complied with the regulations and duties herein specified, and committed no dishonest or unlawful acts, shall, on the return of said vessel to the port of San Francisco, be entitled to be, and shall be, settled with and paid in San Francisco, his share of the catch of said vessel at the following rates: Whale oil at twenty cents per gallon; sperm oil at forty cents per gallon; whale bone (in case the total catch at the whole winding fleet of vessels sailing from or arriving at ports on the Pacific Coast for the season in the Arctic shall exceed two hundred whales) at one dollar and twenty-five cents per pound, but in case said total catch shall not exceed two hundred whales, then at one dollar and fifty cents per pound; said settlement to be made for all at the above named rates, and bone at one dollar and twenty five cents per pound as soon after the return of the ship to the quantity of her oil and bone can be ascertained, and the twenty-five cents per pound in addition thereto as soon as it shall be ascertained that the total catch of the whole of said fleet does not exceed two hundred whales.

10th. In testimony of our assent, consent and agreement, faithfully to perform the various duties and obligations implied in the preceding Articles, and on acknowledgment of their being voluntary, and without any compulsory or clandestine means being used, we have each and every one of us, severally hereunto affixed our names, on the day and year against them respectively written. And it is hereby understood and mutually agreed, by and between the parties aforesaid, that they, the said Seamen and Mariners, will render themselves on board the said vessel on or before the day of at o'clock in the noon

☞ No Distilled Spirituous Liquor will be put on board the vessel by the Owner, except for strictly medical use; and by their signatures the other parties to this contract PLEDGE themselves not to take any of these articles with them, as their private stores or for trade, either from this port or from any other port or place where they may be during the voyage. And in case of a violation of this pledge by the Master or any Officer or Seaman, his entire share of the voyage shall be thereupon forfeited to the use of the owners of the said

Time of Entry		NAMES.	STATION.	ADVANCE. Dollars.	Cts.	WITNESS TO SIGNING.	LAY.	SHARES.
Nov 26	99	1 W. T. Shores	Master			H. H. Kelly	1/25	one twenty fifth
Dec. 15	99	2 W. H. Hoalton	First Mate			C. J. Laffin	as per agreement	
Nov 28	99	3 William Seymour	Second Mate				as per agreement	
" "	"	4 Jos Andrew	Third Mate	150	00		1/35	one thirty fifth
" 29	"	5 Jos Silva	Fourth Mate	150	00		1/50	one fiftieth
" 28	"	6 Fr Fuller	Fifth Mate	125	00		1/150	one fiftieth
Dec. 4	"	7 J Robinson	Boatsteerer	100	00		1/175	one seventy fifth
" "	"	8 Chas Bryan	"	100	00		1/175	one seventy fifth
" "	"	9 Edmund White	"	100	00		1/175	one seventy fifth
" "	"	10 Jas. Hara	"	100	00		1/175	one seventy fifth
" 13	"	11 Alfred Miller	"	100	00		1/175	one seventy fifth
" 29	"	12 Louis Samuels	Steward	100	00		1/80	one eightieth
" "	"	13 John D. Stephens	Cook	100	00		1/80	one eightieth
Jan 24	1900	14 John D. Handy.	Steerage Boy	20	00		1/200	one one hundred and ninetieth
" 26	"	15 Antonio Siqueira	Cabin Boy	20	00		1/200	one one hundred and ninetieth
Dec. 18	99	16 W. A. Barkhar	Cooper & Carpenter	90	00		1/90	one ninetieth
" 2	"	17 Charles Edwards	Engineer & Blacksmith	80	00		1/160	one eightieth
" 23	"	18 John. H. Brady	Shoemaker & Boatbuilder	100	00		1/80	one eightieth
Jan 29	1900	19 Ben Torres	Seaman	35	00		1/175	one one hundred and seventy fifth
" 26	"	20 Frank Rosa	"	35	00		1/175	one one hundred and seventy fifth
" "	"	21 Jim Gomes	"	35	00		1/175	one one hundred and seventy fifth
" "	"	22 Joseph Santos	"	35	00		1/175	one one hundred and seventy fifth
" "	"	23 Joaquin Enos	"	35	00		1/175	one one hundred and seventy fifth
" "	"	24 Chas. Brown	"	35	00		1/175	one one hundred and seventy fifth
" "	"	25 Jack Boyle	"	35	00		1/175	one one hundred and seventy fifth
" "	"	26 Ted Davis	Greenhand	35	00		1/160	one one hundred and eightieth
" "	"	27 W. Kirkpatrick	"	35	00		1/160	one one hundred and eightieth
" "	"	28 Peter Perry	Seaman Brazil 52	35	00		1/140	one one hundred and fortieth
" "	"	29 Harry Martin	Seaman	35	00		1/175	one one hundred and seventy fifth
" "	"	30 W. H. Duncan	"	35	00		1/175	one one hundred and seventy fifth
" "	"	31 J. C. Gardiner	"	35	00		1/175	one one hundred and seventy fifth
" "	"	32 Ed Teague	"	35	00		1/175	one one hundred and seventy fifth
" "	"	33 A. Woodward	"	35	00		1/175	one one hundred and seventy fifth
" "	"	34 J. Johnson	"	35	00		1/175	one one hundred and seventy fifth
" "	"	35 John C. Pearce	"	35	00		1/175	one one hundred and seventy fifth
" "	"	36 Wm. Laister	Greenhand	35	00		1/160	one one hundred and eightieth
" "	"	37 Chas Simmons	Seaman	35	00		1/175	one one hundred and seventy fifth
" "	"	38 Manuel Martin	"	35	00		1/175	one one hundred and seventy fifth
" "	"	39 Wm. Lee	Greenhand	35	00		1/160	one one hundred and eightieth
" "	"	40 Joe Duarte	Boatsteerer	100	00		1/125	one twenty fifth
" "	"	41 Ben Santos	Seaman	35	00	C. J. Laffin	1/175	one one hundred and seventy fifth
		42						
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CUSTOM HOUSE San Francisco.



Even after slavery in the West Indies had been abolished, there were not many opportunities for young black men and many chose to ship out on vessels to the United States.[3] The oldest of eight children and apprenticed as a plumber, William decided, not surprisingly, to go to sea.

Shorey shipped out as a cabin boy and reached Boston, Massachusetts shortly after the Civil War. Mirroring American society, American maritime culture was characterized by both racism and violence, but it also "provided a workplace where his color might be less a determinance of daily life."[4] During William's first voyage he took advantage of both the opportunities open to blacks and minorities at sea, and his intelligence and drive. Aboard ship, he impressed the captain who taught the inquisitive cabin boy the basics of navigation. Once he landed in Massachusetts, William continued his studies with another Captain, Whiffer D. Leach, of Provincetown.[5] On one level, his was a simple story of an able student and willing teachers. In the context of post-Civil War United States, William's education became a political statement of empowerment.

William first shipped out on a whaler in 1876. At this time, whaling was in a transitional period. Many whaling ships had been destroyed or damaged during Civil War naval campaigns. Characterized by worsening conditions and decreasing wages, whaling attracted Americans of lower socioeconomic status, especially new immigrants and blacks. According to Bolster, "whaling ships offered the best chances for promotion and responsibility to blacks." Only one third of

"Darting at Broaching Whale" by Percy Dalton. On one of his early cruises Shorey almost lost his life while pursuing a sperm whale. "Evidently enraged," he related years later, "the whale attacked first one boat, smashing it, then a second one, and then attacked the one I was in. By good fortune we were able to fire a bomb into him, which, exploding, killed him and saved us." *(SDMM collection.)*

whaling crews at this time were American born. Aboard whaling ships, William Shorey was a minority among captains and officers, but not among the crew.[6]

The following description of the crew of the whaling bark ANDREW HICKS, written by a contemporary observer, reflected the diversity of the crew and revealed the racial and ethnic biases of the day. "Captain Shorey, one of the few colored master mariners on the coast, is in command, and the crew is the most heterogeneous that has made port in many a day. Bright active Americans are in the forecastle, with rugged Northmen, yellow-skinned Chinese, brown Esquimaux and kinky-haired sailors as black as ever walked a river packet. With all the dissimilarity, however, all hands were friendly throughout the long and tedious cruise."[7] The complexity of racial and social relations aboard whalers also found its way into the writings of Walter Noble Burns, a young white man who wrote about his yearlong experience aboard the whaler ALEXANDER, which was captained by Shorey. From the beginning of his book, *A Year with a Whaler*, Burns' descriptions of the crew, both white and black, focused on racial and ethnic characteristics.

We do not meet Shorey, through Burns' eyes, until midway through the book when Shorey joined the whaler at Honolulu. In Shorey's absence, the officers were promoted up the ranks. The captain and mate were New Englanders, the second mate, Gabriel, was "a negro from Cape Verde Islands...and though he was almost as dark skinned as any Ethiopian, he had hair and a full beard as finely spun and free from kinkiness as a Caucausian."[8] The third mate, Mendez, was also from Cape Verde. As a white greenhorn in a diverse crew, Burns was shocked to see white whalers take orders from a black man. His relationship with the third mate, Mendez, revealed the racial tensions in this diverse crew. "Captain Winchester announced from the break of the poop that "Mr. Mendez" would head the port watch... While the Captain was speaking, "Mr." Mendez stood like a black Napoleon. Then suddenly he snapped out a decisive order and the white men jumped to obey." Burns' use of quotes around "Mr." suggest his bias that Mr. Mendez was undeserving of this rank and formal address. Burns later writes of Mr. Mendez, "It may seem petty now that it's all past, but I raged impotently in the bitterness and outraged pride at being ordered about by this black overlord of the quarterdeck."[9]

Rank, experience and skill also complicated Burns' black and white picture of the whaler. He chafed at the orders of Mr. Mendez, but thought very highly of Gabriel, also from Cape Verde, who was knowledgeable, helpful and most importantly not his direct superior. After Mr. Mendez died in a whaling accident, Burns revised his opinion of this "hero in the hour of death."[10] Interestingly when Burns met Captain Shorey, he made no mention of Shorey's race or background. Perhaps the rank of Captain, at least in Burns' eyes, elevated Shorey above racial characterizations. Moreover, perhaps Shorey, half black and half white, did not look as black as Mendez and other crew members and, therefore, did not pose as much of a threat.

William Shorey's rise through the ranks indicated both the opportunities existing at that time and his drive to succeed. When William first shipped out as a "green hand" in 1876, he returned in the advanced position of boat steerer. Despite a near fatal attack by a whale during an early cruise, Shorey persevered and by 1880 was an officer. His voyages on the EMMA F. HERRIMAN were a turning point in his life. During his first three-year voyage on this whaler, he rose from 3rd mate to first officer. By 1886 he was Captain. The EMMA F. HERRIMAN was also the vessel that first brought William to the Bay Area in 1883, where he eventually met and married Julia Shelton and made his home.[11]

In contrast to William, Julia Ann Shelton was born in San Francisco on June 10, 1865 to a well-off and socially active family. Her father, who made his fortune in the British Columbia Gold Rush and then settled in San Francisco, organized one of the first black Baptist churches in California and even bought the warehouse which they converted into the church building. Her mother was involved in many charitable organizations. Julia and her sister attended a private boarding school in San Jose. After school, she began working in French embroidery, something she continued throughout her life. Like her parents, she was socially active and later in life served as a member of many community groups including the Home for Aged and Infirm Colored People of Oakland, an organization where she served as an officer on the board.[12]

When Julia married William in 1886, she joined an increasing number of whaling wives who, instead of maintaining a household ashore, joined their husbands at sea.[13] For their honeymoon, Julia and William traveled to Hawaii, where there was a colony of whaling wives. Like many of the whaling wives who wrote travel diaries and public journals, Julia was also interested in sharing her experiences at sea with those ashore.[14] While they were in Hawaii, a volcano erupted and Julia was so taken by the effects on the ecology that she wrote a letter to a San Francisco editor describing the event.[15] At the end of the honeymoon, Julia joined her "whaling sisters," and boarded a ship back to the mainland. The Shoreys had five children between 1888 and 1902: Zenobia Pearl, Elvira J., Hazel E., Victoria Grace, and William Thomas Jr. Elvira and Hazel died in infancy. As a captain of whaling vessels, William was often at sea for as much as a year, surely a challenge to any marriage and family.

Throughout his career at sea, William was known as an intelligent and able captain. Walter Burns related a story about the ALEXANDER's pursuit of a whale in the Bering Sea, a tale that revealed Shorey's determination and drive. At one point whales surrounded the ship and William ordered the boats to be lowered. Injured earlier in the cruise by a rogue wave, William, on crutches, cheered on the crew: "Good boy, Long John...That's our fish." But then, when it looked like the whale would escape, Shorey "apparently suffered a temporary aberration. He damned the old man Landers in every picturesque and fervent term of an old whaleman's vocabulary. He shook his fist at him. He waved a crutch wildly. "Catch that Whale! ... For God's sake, catch that whale!" His exhortations inspired the crew, and the whale was caught."[16]

Shorey was also known as a captain who would lead his crews through disaster. On October 13, 1907, Captain Shorey and the whaling bark JOHN AND WINTHROP started their voyage back to San Francisco from the Sea of Okhotsk. Struck by two typhoons, the bark lost its sails and small boats. "Huge seas swept the decks...The [second] storm lasted for forty-eight hours, during which no food could be eaten nor rest obtained by any of those on board. Seamen on board who had many years' experience say that never in their time had they seen such frightful weather." Then came the fog and when it lifted the JOHN AND WINTHROP was only 20 feet from the rocks near Bowsail Channel. According to the crew, "nothing but Captain Shorey's coolness and clever seamanship saved a wreck."[17] The newspaper account in the *San Francisco Chronicle* does not mention whether or not his family was aboard, but this incident reveals the dangers that were at sea, for both crew and family.

Julia often traveled with William, suggesting that the joys of having her family together overpowered the rigors of life aboard a whaling ship. A closing story offers us glimpses into the private life of this family as they faced the challenges and joys of life at sea.

Julia and their daughter, Zenobia, accom-

panied William on his 1908 trip as Captain of the bark GAY HEAD. During this trip Zenobia fell ill with tuberculosis and upon their arrival in Hawaii, Julia decided they needed to return to Oakland where the 20-year-old Zenobia died in November 1908.[18] When they separated in Hawaii, William embarked on a whaling voyage to the Arctic with little chance of learning his daughter's fate. The trip kept these grieving parents apart for close to a year. In a bittersweet fashion, William would later credit the success of this trip to "his happiness in having his wife and daughter accompany him on part of the voyage."[19]

William retired from the sea in 1909 and worked for the Pacific Coast Company. Both Julia and William remained active in Oakland community affairs and society. On April 15, 1919, William Shorey died. Julia died 25 years later at the age of 79. Victoria, "Baby Shorey" of the ANDREW HICKS cruise, received her education at Oakland Polytechnical High School and graduated with a degree in Business and English. She died in 1971, the last of the immediate Shorey family.

As seafarers, as African-Americans, and as a family the Shoreys occupied a special place at the intersection of African-American history, maritime history, and the study of the family at sea. Fortunately they chose to tell stories about their lives at sea.

Journalists of their day, and later historians, recognized that these stories were worth saving and repeating. It is important to remember that these years at sea were but one chapter of their lives. William and Julia led equally rich though not as adventuresome lives in Oakland as active and respected members of their community. But that is yet another chapter in their story to tell.

[Editor's Note: Daphne Lagios, the executive assistant for the National Maritime Museum Association, received her master's degree in American Studies from Boston College. She has done extensive research on women in maritime communities.]

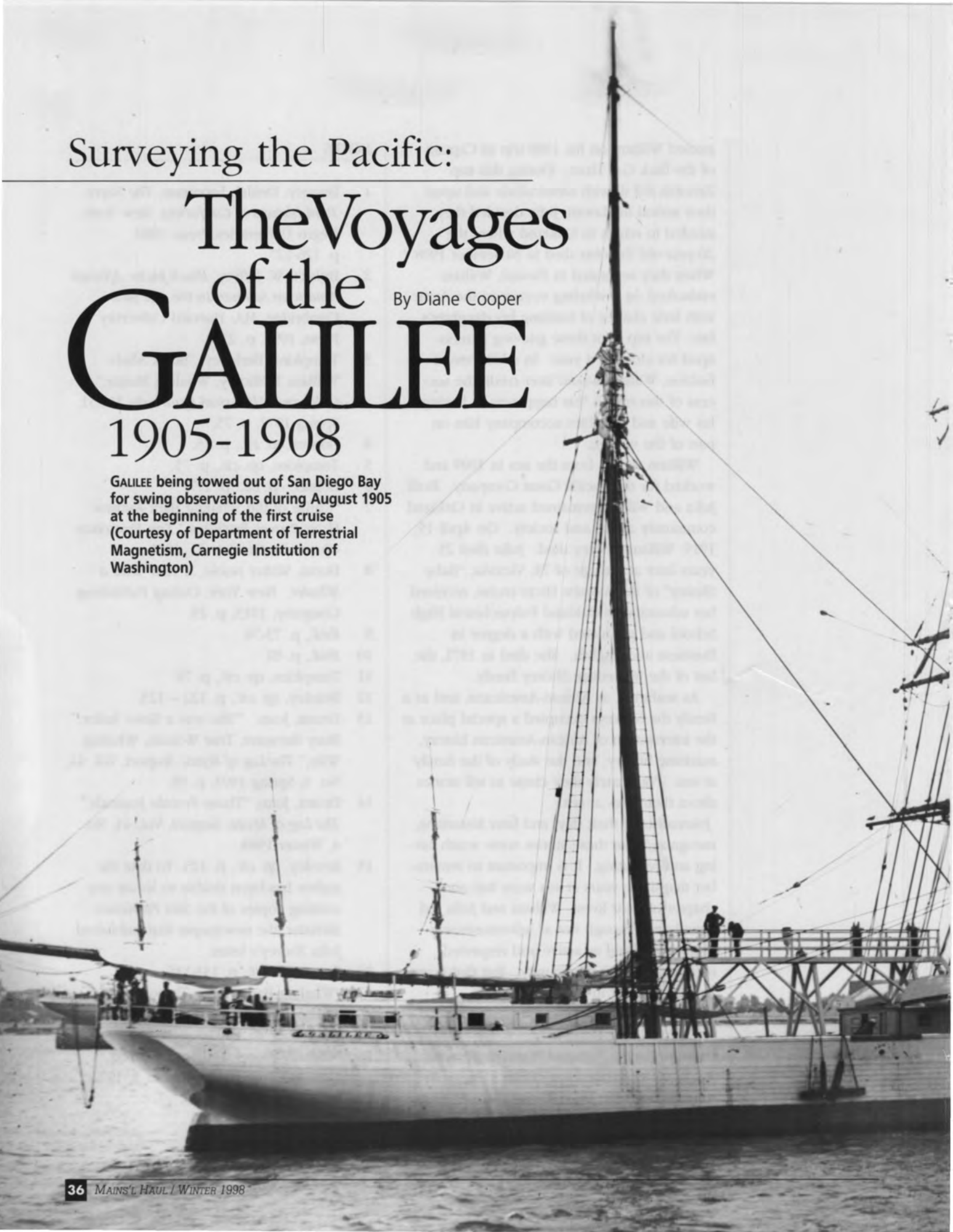
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Surveying the Pacific:

The Voyages of the GALILEE 1905-1908

By Diane Cooper



GALILEE being towed out of San Diego Bay for swing observations during August 1905 at the beginning of the first cruise (Courtesy of Department of Terrestrial Magnetism, Carnegie Institution of Washington)



On December 9, 1905 the brigantine GALILEE returned to San Diego at the completion of a four month, 10,000 nautical mile scientific survey. The *San Diego Union* described her arrival as "one of the prettiest sights ever seen on the bay...she came up under her own sail. As the wind was light she had every piece of canvas drawing, and when off the marine ways had her studding sails up with the rest of them."[1] The GALILEE dropped anchor in the stream and remained there until after dark when she made her way to a berth alongside Commercial Wharf.

The GALILEE first sailed into San Diego Bay on August 12, 1905 when she completed the shakedown portion of her first cruise as the official survey vessel for the Department of Terrestrial Magnetism of the Carnegie Institution of Washington. For the next three years scientists conducted a magnetic survey of the Pacific Ocean from the decks of Matthew Turner's small wooden ship GALILEE. The objective of this survey was to gather precise data on the distribution of the magnetic forces throughout the Pacific Ocean. The magnetic charts used by navigators at this time depended heavily upon observations from island and coastal magnetic stations supplemented by fragmentary data collected on previous expeditions. The accuracy of these existing charts was impossible to determine since observations from land-based stations were not capable of reporting or anticipating anomalies caused by prevalent local disturbances at sea.

At its February 1904 meeting the Executive Committee of the Carnegie Institution appointed L. A. Bauer to head the newly organized Department of Terrestrial Magnetism. This department was designed "to investigate such problems of world-wide interest as related to the magnetic and electric conditions of the Earth and its atmosphere, not specifically the subject of inquiry of any one country, but of international concern and benefit."[2] Although various organizations throughout the world actively conducted this kind of research, the existing information lacked correlation and widespread publication. The Department, therefore, existed, first and foremost, to supplement, not supplant, any and all organizations involved in this field.

Magnetic Survey Terminology

On October 3, 1904 L. A. Bauer and G. W. Littlehales submitted a plan to undertake a magnetic survey of the Pacific Ocean under the direction and auspices of Carnegie Institution's Department of Terrestrial Magnetism. In the introduction to their proposal, Bauer and Littlehales outlined the urgent need for such an undertaking.

> While the state of our knowledge of the distribution of the Earth's magnetic forces over oceanic areas, owing to the paucity of precise data, is in general exceedingly unsatisfactory, this is especially true for that great body of water – the Pacific Ocean – rapidly developing in great commercial importance. Except for data from occasional expeditions and such as were acquired in wooden vessels a long time ago, the present magnetic charts used by the navigator

Bauer explained that the *magnetic elements* would be "determined as follows: declination by two compasses (a liquid one and a dry one) using various azimuth devices, horizontal intensity by a new method being devised which by some trials already made appears promising, [and] total intensity and dip with an L.C. dip circle."

Azimuth Circle is a navigational instrument used in conjunction with a compass for taking bearings of celestial objects (*azimuths*). Also called a bearing finder, it consists of a graduated circle that fits accurately over the compass bowl and is provided with sight vanes and a reflecting prism.

Deviation refers to the amount by which a ship's magnetic compass needle points to one side or the other of magnetic north. It is east, (+) if the compass points east of magnetic north and west (-), if it points west of magnetic north. Deviation results from a ship's own residual magnetism, which varies according to the vessel's heading since the metal in her changes position in relation to the compass as the ship swings around to a new heading. By removing as much ferrous metal as possible from the GALILEE, the vessel's deviation was reduced to nearly nothing so the scientists could observe and determine the deviation caused by the earth's magnetism.

Dip refers to the correction applied to the observed altitude of a celestial body owing to the depression of the observer's horizon and due to the curvature of the earth's surface. Also called depression. The apparent dip is the angle between the observer's visible and sensible horizons, but the element of refraction has to be taken into consideration in order to arrive at the true dip.

Dipping Compass. An instrument that consists of a magnetic needle suspended between centers, a vertical graduated circle whose center coincides with the axis of the needle, and a graduated horizontal circle. It is used to measure the angle of the dip or inclination of the magnetic needle. Also called *dip compass, inclination compass, dip circle*.

The *Kelvin Compass* card, regarded as the standard *dry compass*, consists of a strong paper card with the central parts cut away and the



J.P. Ault using the Negus compass with the deflector mounted to observe the horizontal force during the shakedown cruise (San Francisco to San Diego), August 1905. The instrument behind him is a Kelvin compass. (Courtesy of Department of Terrestrial Magnetism, Carnegie Institution of Washington)



The GALILEE sailing out of San Diego for the last time at the beginning of the third cruise, December 22, 1907 (Courtesy of Department of Terrestrial Magnetism, Carnegie Institution of Washington)

over this region depend largely upon the observations on islands and along the coasts. Such land observations, however, are rarely representative of the true values because of prevalent local disturbances. It is therefore impossible to make any statement as to the correctness of the present charts. The demands of science, as well as those of commerce and navigation require a systematic magnetic survey of this region under the most favorable conditions possible and that the work be done under the auspices of some recognized research institution in order to insure that the scientific aspects of the work receive their adequate recognition.[3]

Their proposal cited a letter from Professor Arthur Schuster dated January 26, 1902, supporting such a survey. Professor Schuster expressed his belief that until scientists determined the magnetic constants of the ocean basins they would not make any material progress in the study of the earth's magnetism. He suggested the magnetic constants assigned to the oceans, especially the Pacific, appeared to be affected by "considerable systematic errors. It is possible these errors have crept in by paying too much attention to measurements made on islands and

outer edges stiffened by a thin aluminum ring. Radiating from the central cap and pivot suspension system are 32 silk threads whose outer ends are attached to the inner edge of the card. These threads sustain the weight of the suspended card and their elasticity tends to decrease the shocks due to a ship's movement. Eight small magnetic needles are secured to two parallel silk threads and are slung from the aluminum rim of the card. The lightweight Kelvin card exerts less friction on the pivot and cap increasing the life of both.

The *Liquid Compass* card, immersed in liquid, is provided with a flotation chamber that makes the buoyancy of the card and needle system only slightly less than their combined weight. The liquid in the compass bowl also dampens down the swing of the card providing a greater steadiness. Ships and airplanes generally use liquid compasses.

Magnetic Declination, also known as *variation*, is the difference in direction between true north as determined by the earth's axis of rotation and magnetic north as determined by the earth's magnetism. The variation is designated as east or positive when the magnetic needle is deflected to the east of true north, and as west or negative when the deflection is to the west of true north.

Magnetic Dip describes the angle between the direction of a freely suspended magnetic needle resting in the line of total force and the horizontal plane passing through its center, or the angle that the magnetic needle freely poised on its center of gravity makes with the plane of the horizon.

Swinging Ship was the procedure the GALILEE crew followed in order to ascertain the amount of local deviation or compass error on each heading. The procedure entailed setting a watch to local apparent time, heading the ship north, and taking an azimuth of the sun. The deviation was obtained by comparing the compass and true bearings of some distant object ashore (if in port or near shore), or the sun. The crew then swung the ship to the right, steadying on successive headings varying 15, 30, or 45 degrees according to conditions, and, after remaining on the new course for a few minutes, observed the deviations on each heading. After completing a set of observations made with the right rudder, another similar set was obtained with the left rudder. Intervals of 15 degrees provided the most accurate data for mathematically determining the deviation for the intermediate points.

[The above definitions come from the following sources: Rene de Kerchove, *International Maritime Dictionary*, NY: Van Nostrand Reinhold Co., 1961; and Peter Kemp, editor, *The Oxford Companion to Ships and the Sea*, London: Oxford University Press, 1976.]

along the seacoast. What is wanted are more numerous and more accurate observations on the sea itself."[4]

Bauer and Littlehales's proposal called for the chartering of a "wood-built, non-magnetic, sailing vessel about six hundred tons, which starting out in summer from San Francisco, shall pursue a clockwise spiral course embracing the entire North Pacific Ocean."[5] They argued that by pursuing such a course, the expedition gained the "continuous advantage throughout the survey of the dynamical agencies of the atmosphere and the ocean [tradewinds and currents], in passing in succession into each of the five quadrangles into which the chart is divided and in which observed values of the three magnetic elements need to be obtained."[6] The proposal charted a course that basically ran south along the west coast of the Americas to the vicinity of the Galapagos Islands. At that point it cut across the Pacific to the eastern side of the Philippine Archipeligo and the Empire of Japan, then veered north to the approximate latitude of San Francisco and crisscrossed its way back to the coast of California. The projected length of the plotted course totaled 70,000 nautical miles. Magnetic observatories located at Sitka, Mexico, Honolulu, Apia (Samoan Islands), Manila, Shanghai, and Tokyo offered technical support and the promise of additional magnetic data and instruments control.

The scientific community embraced and lauded their proposal. Letters of support arrived from a variety of sources. Ettrick W. Creak, former superintendent, Compass Department of the British Admiralty, pointed out that except in the case of the CHALLENGER expedition (1872-1876),[7] no magnetic knowledge of the North Pacific Ocean existed. O.H. Tittman, superintendent, United States Coast and Geodetic Survey, felt "valuable results are sure to be obtained in even a partial circuit, and, therefore, there is no danger of waste of funds through failure."[8]

In an attempt to provide the "more numerous and more accurate observations" called for by Professor Schuster, the Department of Terrestrial Magnetism authorized G.W. Littlehales to conduct an extensive search for a vessel suitable for the proposed magnetic survey of the Pacific Ocean.[9] Eventually he selected the GALILEE of San Francisco. Built in 1891 by Matthew Turner at his Benicia, California shipyard, the GALILEE quickly proved herself a swift and reliable vessel. While employed by the Tahiti Packet Lines, the



Measuring inclination mirror surface to "line of sight" during the third cruise, 1907. This measurement was taken from the deck below the observation bridge. The ladder visible on the right side of the photograph leads to the observation bridge. (Courtesy of Department of Terrestrial Magnetism, Carnegie Institution of Washington)



J.C. Pearson (observer), H.E. Martyn (surgeon and recorder), and J.P. Ault (observer) on the observation bridge, second cruise, 1906. The instruments, from left to right, are standard compass and Negus compass with deflector. J. P. Ault is standing in front of the Kelvin compass. (Courtesy of Department of Terrestrial Magnetism, Carnegie Institution of Washington)

GALILEE averaged 28 days and 12 hours per voyage over 21 consecutive trips between Tahiti and San Francisco. On her maiden voyage she established a speed record of 22 days and 12 hours, a record that still stands unmatched. In her best single day's effort, she covered 308 miles with a full cargo.[10]

The GALILEE measured 132.5 feet in length, 35.5 feet in breadth, and 12.7 feet in depth. Her gross burden equaled 354.07 tons with a net burden of 336.37 tons and a displacement of approximately 600 tons.[11] The special purposes of the magnetic expedition required a number of modifications to the vessel, the most vital of which replaced the steel rigging with hemp and removed, as far as practical, all iron parts in the vicinity of the observation equipment. The contract drawn up between Matthew Turner, principal owner of the GALILEE, and the Carnegie Institution specified the terms of charter. These included Turner's obligations such as the necessary non-magnetic outfitting and re-rigging of the ship, carpentry modifications required by the scientific team, and providing the ship's crew, and named the Institution as the party responsible for vessel repairs and maintenance during the voyage.[12]

In order to accommodate the scientific team, Turner enlarged the cabin space by constructing a matching deckhouse of the same width and length forward of and against the bulkhead of the existing one. Approximately 20 by 22 feet, this new addition contained a "combined working, dining and living room, with 3 staterooms opening off on the starboard side, and a transom and small pantry on the port."[13] Linoleum covered the entire deck space of these new quarters and each stateroom boasted a small floor rug and

two blankets for each occupant.

Turner also installed a special observation bridge, which ran fore and aft between the masts approximately 12 feet above the deck. Constructed entirely of wood with brass and copper fastenings, the deck of this elevated bridge measured 6 feet 1 inch by 31 feet 8 inches. Three sets of trestles, two bolted with brass directly to the main deck and the third bolted in the same fashion to the top of the forward house, supported this flying bridge. The trestle tops matched the width of the bridge and then spread down and out to a base width of 10 feet 8 inches. One companion ladder led up through a trap-door in the observation bridge's after end and a second one led from the forward end to the roof of the forward house providing adequate accessibility to the bridge and the scientific equipment mounted on it. The instruments, mounted on their respective stands and binnacles, stood an average height of 15 feet 6 inches above the deck and a minimum of 25 feet from the remaining masses of iron – chiefly iron bolts – located in the vessel's sides.[14]

The GALILEE, constructed as a composition-fastened vessel of Pacific Douglas fir, relied on composition spikes made from a grade of brass to fasten the outside planks to the frames. Iron fastenings used in the GALILEE's construction varied in size from three-fourths inch in the bulwark caps to one and one half inches in the keelson and sister keelsons.[15] Although it proved impossible to completely convert the GALILEE into a non-magnetic vessel, the modifications succeeded in reducing the deviation corrections to the extent that the magnetic constants for the GALILEE turned out to be smaller than those of any vessel previously employed in oceanic magnetic observations.

During the magnetic survey the GALILEE's sail plan consisted of a fore-sail, lower topsail, upper foretopsail, fore topgallant, fore royal, jib, flying jib, outer jib, middle mainstaysail, leg-of-mutton main-sail, ringtail main topsail, and fore balloon studding sails. The combined area of the foregoing sails equaled approximately 10,952 square feet of canvas.[16] The length of her masts nearly equaled her waterline length; her foreyard running 25 feet while her stuns'l booms, from end to end, stretched 120 feet.[17]

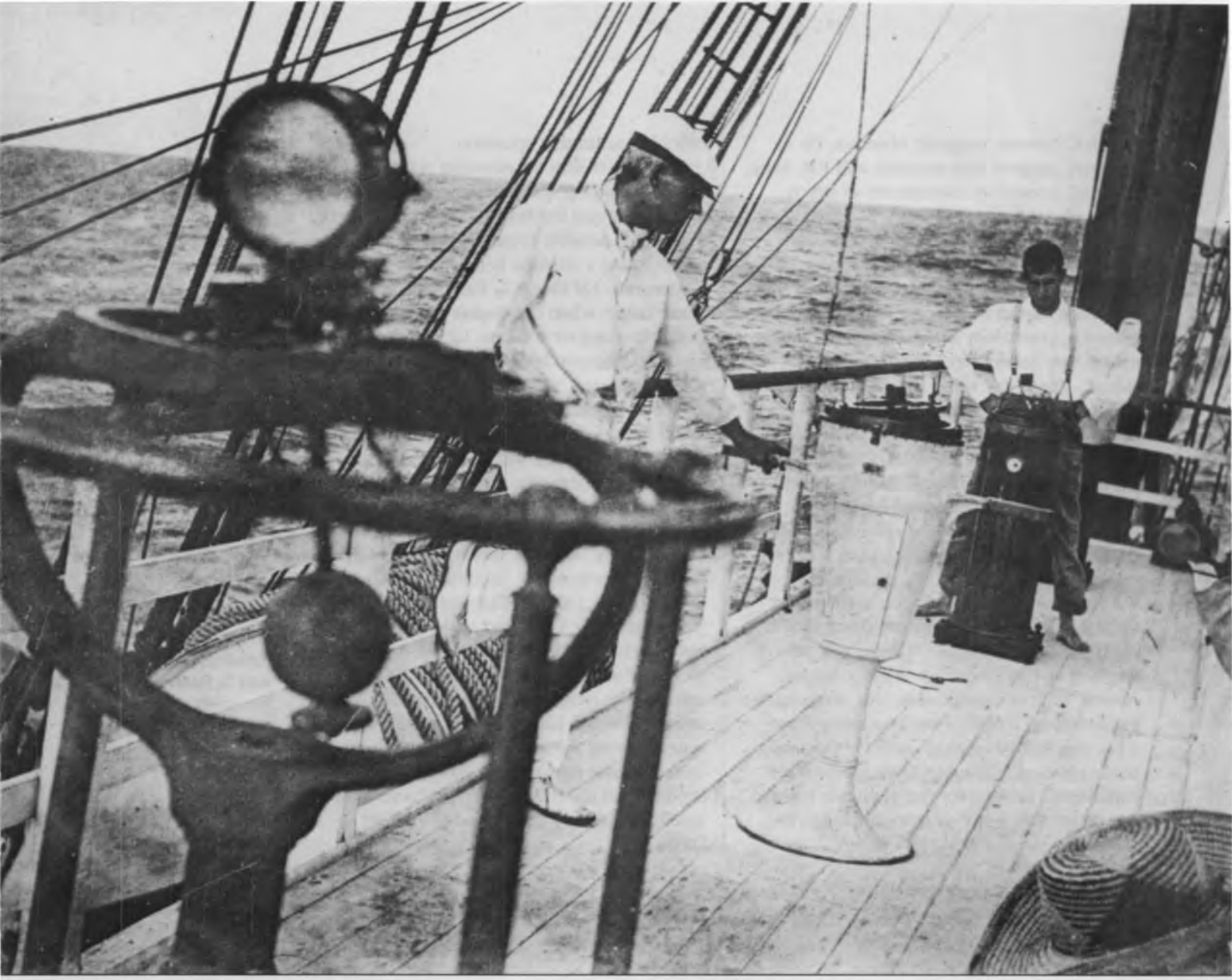
J. F. Pratt, the expedition's commander, summed up the abilities and performance of the GALILEE when he noted:

> "This vessel has the reputation of being one out of three of the smartest small sailing vessels on the Pacific Coast of the United States...Owing to the great proportionate beam, 1 to about 4, and large, very flat floors, she is unusually stiff; her lines are not particularly easy, her speed and capacity to carry sail being greatly due to the large dead rise, 1 to about 3, combined with great stability and comparatively light draft."[18]

In an attempt to determine the necessary deviation corrections, the scientists made special observations while "swinging ship" both in port and at sea as often as circumstances permitted.[19] The experience of swinging ship repeatedly demonstrated that corrections based on a mathematical analysis of the deviations were not sufficient for preventing error. Since the corrections rose "chiefly from magnetic induction in the soft-iron parts of the vessel, they are subject to various accidental conditions, such as the length of time the vessel follows any one course, or the amount of buffeting the vessel has been exposed to from the waves, etc."[20] Swinging ship, though necessary, proved time consuming, causing delays in both field and office work.

When the GALILEE left San Francisco, her crew, supplied by Turner per conditions of the charter, included the ship's captain, two mates, six seamen, a cook, and a steward. The scientific team on board consisted of J. F. Pratt, commander, Dr. Hobart Egbert, surgeon and observer, J. P. Ault, observer, and P. C. Whitney, observer and watch officer. Dr. L. A. Bauer, director of the Department of Terrestrial Magnetism, accompanied the vessel on the shakedown cruise from San Francisco to San Diego. During this six day voyage Bauer supervised the arrangements for the scientific work and finished training the observers in magnetic work. He also oversaw the determination of the magnetic elements at the San Francisco locality selected for swinging ship, and participated in ascertaining the magnetic constants for the various instruments and the vessel GALILEE.[21]

Bauer steadfastly insisted that the ocean magnetic work on board the GALILEE adhere to two general principles: "a. To get useful work done and make the results promptly known



View of the magnetic instruments (l. to r. dip circle, standard compass, and Negus compass with deflector) on the observation bridge while under sail. Observers were not identified and the date was not stated. (Courtesy of Department of Terrestrial Magnetism, Carnegie Institution of Washington)

[and] b. to strive for the highest accuracy attainable in all magnetic elements." The basic magnetic work consisted of sea swings, harbor swings, and shore observations, the latter two taken with both the set of absolute land magnetic instruments (magnetometer and dip-circle or earth indicator) and with the ship magnetic instruments (standard compass, sea dip-circle, and sea deflector). Comparisons made with the observatory standards located in New Zealand, Honolulu, Tokyo, Sitka, and Apia provided the required control for instrumental constants. Strict adherence to these general principles helped "secure complete control of each instrumental constant in every available manner, and to obtain independent checks upon the observed values of the magnetic elements by securing simultaneously two independent determinations of each element, under conditions as widely different as possible."[22]

The Carnegie Institution made an initial allotment of $20,000 to cover the expenses for 1905. The projected budget allotted $1,500 per month for eight continuous months per year, or a total annual outlay of $12,000. This amount covered the cost of the vessel's charter and the expense of the scientific crew. The scientific members of the GALILEE's crew during the first cruise included three officers on loan from the Coast and Geodetic Survey and trained in astronomical, geodetic, hydrographic, and magnetic work. At the completion of the first cruise, these men were reassigned. Mr. W.J. Peters took over as the expedition commander, Mr. J.P. Ault remained as a magnetic observer, Mr. J.C. Pearson joined the crew as magnetic observer, and Dr. E.C. Martyn took over the duties of surgeon and recorder. Peters and Pearson remained aboard for the third cruise and were joined by

Mr. D. C. Sowers, magnetic observer; Dr. G. Peterson, surgeon and recorder; and P.H. Dike, assigned to conduct experiments in atmospheric electricity.

At noon on September 1, 1905 the GALILEE finally got underway on her first magnetic cruise. Unfortunately the cruise started with "some exciting episodes, particularly one in which the sailing master was having some trouble with his sailors. There was some shooting on the wharf on account of the troble [sic], and most of the crew was discharged and others took their places."[23] Once the GALILEE cleared San Diego Bay she set sail for Honolulu, and 14 days and numerous observations later the expedition made port. From Honolulu their course took them to Fanning Island, a British possession almost under the equator, back to the Hawaiian Islands, and then north to the Columbia River where they ran down the coast back to San Diego. "During this period [September 1 to December 9] two complete circuits, each of considerable area, were made, the combined length of the two being somewhat over 10,000 nautical miles."[24] Originally Bauer planned to use San Francisco as the expedition's homeport. San Francisco fog and San Diego sun, however, persuaded him to change his mind and use San Diego as the official base for this operation.

Between cruises the scientists remained busy overhauling and repairing instruments and resupplying the vessel. In order to make sea swings possible in calm weather, the institution added a naphtha launch to the ship's equipment. On March 2, 1906 the second cruise began when the GALILEE departed San Diego Bay and set a course for Fanning Island and Apia, Samoan Islands. After comparing ship instruments and readings with those at the Samoan Magnetic Observatory, the vessel sailed for Yokohama by way of the Fiji Islands, the Marshall Islands, and Guam. From Yokohama the expedition's course originally followed a route up to Kiska, Aleutian Islands and Sitka before turning south for San Diego. Unfortunately, while in Yokohama disaster, in the form of a typhoon, struck the GALILEE. On August 24,1906 she dragged her anchors, "was dashed by a typhoon against the breakwater at Yokohama...and was sunk in about 14 feet of water."[25] All members of the crew survived the storm relatively unharmed. The vessel, however, listed severely to port and water covered the windows of the after cabin. Ten days later repairs were completed and on September 6 the GALILEE left Yokohama and, instead of heading north, set sail for San Diego.



The scientific party during the third cruise (1907) enjoying dinner on the GALILEE. Seated from left to right: P.H. Dike, D.C. Sowers, W.J. Peters (commander), and G. Peterson (surgeon). (Courtesy of Department of Terrestrial Magnetism, Carnegie Institution of Washington)



View of the GALILEE lying in the Yokohama harbor after being sunk by a typhoon in August 1906 (second cruise). Members of the crew appear to be inspecting the vessel and the scientific instruments in preparation for salvage efforts. (Courtesy of Department of Terrestrial Magnetism, Carnegie Institution of Washington)

On December 22, 1906 the third and final cruise got underway as the GALILEE left San Diego for the last time. This voyage called at numerous South Sea island ports including the Marquesas Islands in eastern Polynesia, Tahiti, Samoa, and Yap in the Caroline Islands. Next they visited Shanghai and then turned north to Sitka. From there the GALILEE followed a southern course that took her to Honolulu, Midway, and New Zealand. Callao was their last stop before their long voyage back to San Francisco. On the evening of May 21, 1908 the GALILEE sailed through the Golden Gate bringing an end to the 17 month long third cruise and her years as a magnetic survey vessel.[26] This last cruise covered approximately 35,000 nautical miles. During her three years of survey work the GALILEE had "cruised over the greater part of the Pacific Ocean and especially those regions where magnetic data...were scarce [creating] a general, or preliminary, magnetic survey of these regions."[27]

The magnetic surveys undertaken by the GALILEE between 1905 and 1908 had positive and far-reaching results. Rigorous scientific methods produced observational errors considerably less than current chart errors and ran a little less than, or equal to the errors of the deviation-corrections. As a consequence of this fact the survey results saw quick publication. For example, an article appearing in the June 1906 issue of *Terrestrial Magnetism and Atmospheric Electricity* called attention to large systematic errors in the magnetic declination, inclination, and intensity of field as recorded on the Pacific Ocean charts. These errors were discovered during the GALILEE's first cruise.

Observations taken on board the ship, both at sea and in port, immediately underwent initial field reductions. The observers promptly forwarded observations and preliminary computations from the first available mailing port to the office in Washington. Once the observations arrived in the East, Dr. Bauer subjected

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them to a careful examination and produced the final reduction as quickly as possible. Shipboard observers retained abstracts of the chief results for future guidance. These practices helped keep the ship in close, effective contact with Dr. Bauer throughout the survey, making changes and improvements possible.

The observers closely followed two principles in an attempt to accomplish prompt and accurate reductions. First, they treated the instruments, methods of observation, and methods of computation as an integrated package. Secondly, they adopted a program fit to the purposes, the instruments, and the form of computation. Bauer's observation scheme took "advantage of the capabilities of an instrument in the briefest possible time and is so arranged that independent computers can get but one result, if no computation errors have been made."[28] By following these two principles and using properly constructed and tested instruments, the results obtained met accuracy standards sufficient for scientific as well as practical purposes.

The GALILEE's brief career as a magnetic survey vessel during three cruises between August 1905 and June 1908, produced invaluable data. The magnetic information collected still served as a basis for the new and considerably more accurate maps and charts of the Pacific produced after 1908. From the voyages of the GALILEE, Bauer accumulated the experience needed to determine the requirements for the design and construction of a non-magnetic survey vessel. Shortly after the Institution discharged the GALILEE, it launched the CARNEGIE, a custom-made research vessel patterned after Matthew Turner's brigantine.[29]

NOTES

1 *San Diego Union*, December 10, 1905, p. 6.
2 L. A. Bauer, "Department of International Research in Terrestrial Magnetism of the Carnegie Institution," *Terrestrial Magnetism and Atmospheric Electricity*, Vol. 9, No. 1, March 1904, p. 2.
3 L. A. Bauer, "Proposed Magnetic Survey of the North Pacific Ocean by the Carnegie Institution," *Terrestrial Magnetism and Atmospheric Electricity*, Vol. 9, No. 4, December 1904, p. 163.
4 *Ibid.*, p. 164.
5 *Ibid.*, p. 163-164.
6 *Ibid.*, p. 164.
7 For information concerning the voyage of the CHALLENGER, see Eric Linklater, *The Voyage of the CHALLENGER*, (Garden City, N.Y.: Doubleday and Company, Inc., 1972) and Muriel L. Guberlet, *Explorers of the Sea, Famous Oceanographic Expeditions*, (New York: The Ronald Press Company, 1964).
8 Bauer, "Proposed Magnetic Survey...," p. 166.
9 The newness of ocean magnetic research conducted at

this desired level of accuracy lead to the decision by the Department to charter a vessel for the initial expeditions in hopes of gaining the necessary experience and knowledge to eventually justify commissioning the construction of their own non-magnetic vessel.

10 Thomas Fleming Day, "GALILEE," *The Rudder*, Vol. 10, New York: The Rudder Publishing Company, 1899, n. p.

11 *United States Customs House, San Francisco, Master Carpenters Certificates: 9/19/1870-4/29/1899*, p. 225; *Twenty-fourth Annual List of Merchant Vessels of the United States*, (Washington, DC: Government Printing Office, 1917), p. 125; L. A. Bauer, *Ocean Magnetic Observation, 1905-1916*, and *Reports on Special Researches*, (Washington, DC: Government Printing Office, 1917), p. 6.

12 Bauer, *Ocean Magnetic Observation*, p. 8.

13 *Ibid.*, p. 130.

14 *Ibid.*

15 *Ibid.*, p. 129.

16 *Ibid.*, p. 128.

17 Day, *op. cit.*, n. p.

18 Bauer, *Ocean Magnetic Observation*, p. 129.

19 The GALILEE conducted special harbor swings with the aid of a tug. Swings at sea while under sail were executed as often as sea and weather conditions permitted. During the second cruise a naphtha launch was added to the GALILEE's equipment in order to facilitate swings at sea. While swinging ship at sea, usually one or two of the eight equidistant points were missed.

20 Bauer, *Ocean Magnetic Observation*, p. 7.

21 *Ibid.*, pp. 128 and 130.

22 *Ibid.*, p. 14.

23 "The Brig GALILEE Once More in Port," *San Diego Union*, December 10, 1905, p. 6.

24 L. A. Bauer, "The Magnetic Survey of the North Pacific Ocean: Instruments, Methods, and Preliminary Results," *Terrestrial Magnetism and Atmospheric Electricity*, Vol. 11, June 1906, p. 73.

25 L. A. Bauer, "Return of the GALILEE and Construction of a Special Vessel," *Terrestrial Magnetism and Atmospheric Electricity*, Vol. 13, No. 2, June 1908, p. 63.

26 "Scientists Home After Long Trip," *San Francisco Chronicle*, May 22, 1908, p. 12.

27 *Ibid.*

28 Bauer, *Ocean Magnetic Observation*, p. 16.

29 L. A. Bauer, "Return of the GALILEE and Construction of a Special Vessel," p. 64. The GALILEE returned to commercial use and spent at least the last ten years of her career in the cod fishing industry. She was abandoned in 1935 and eventually ended up on the Sausalito mudflats where she was converted into a residence. In the 1970s the GALILEE's stern was taken to lower Fort Mason and, a short time later, her bow returned to Benicia where it now is displayed at the Camel Barn Museum.



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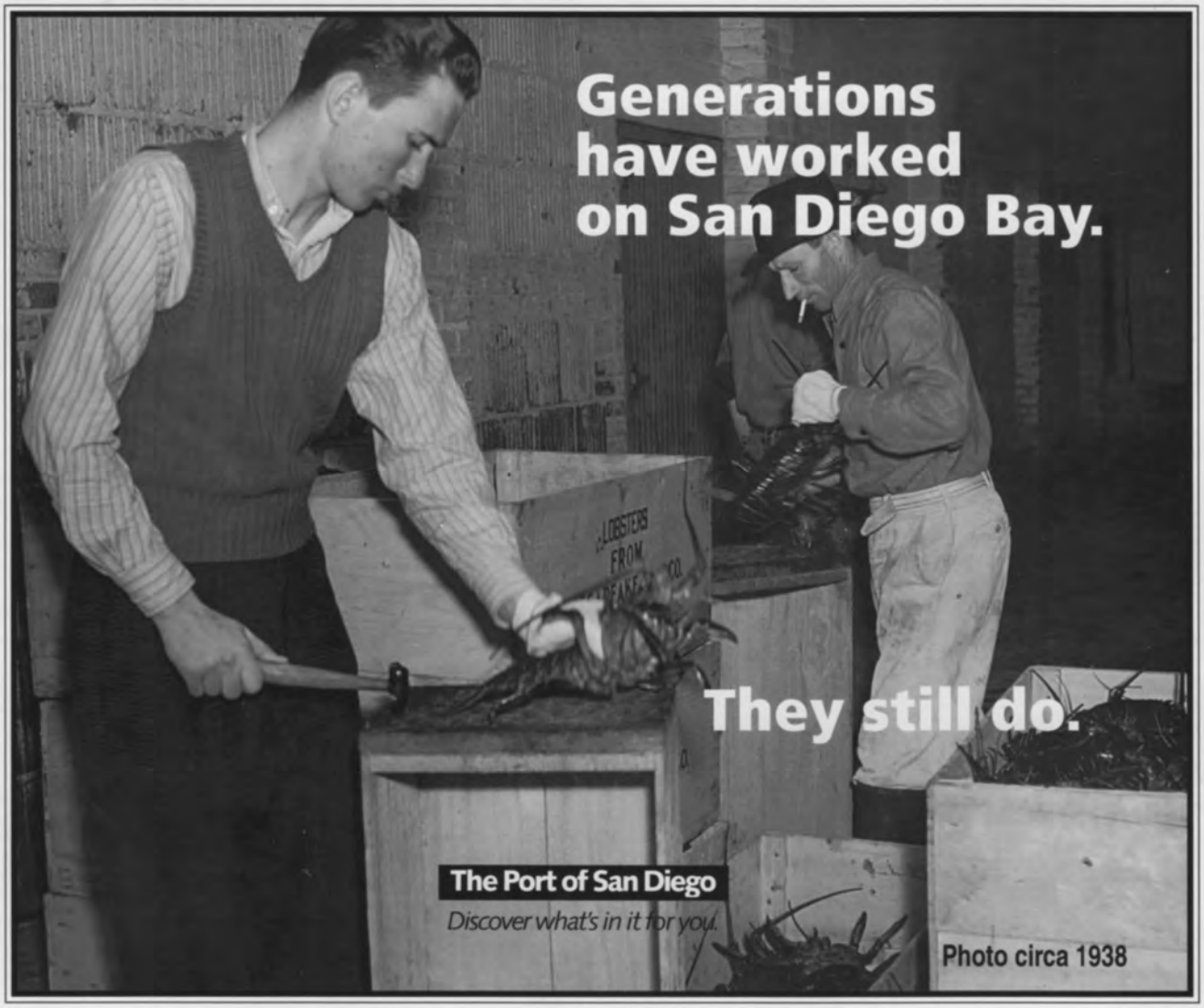
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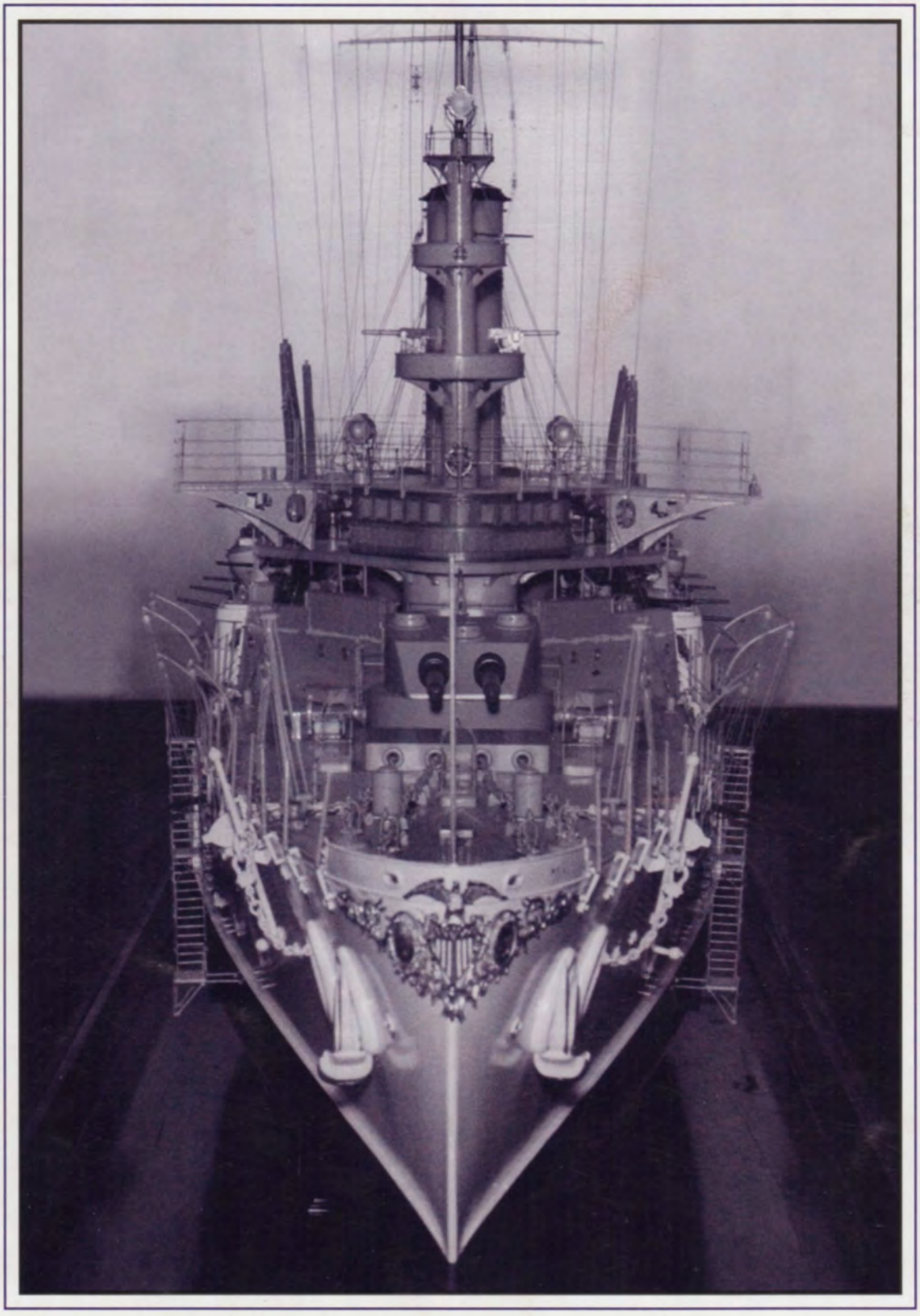
VOL. 34, NO. 2 & 3 SPRING/SUMMER 1998

MAINS'L HAUL



$2.50

A JOURNAL OF MARITIME HISTORY



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THE LOG

California's Boating Newspaper Since 1971



(The crew climbs aloft to make sail, during STAR OF INDIA's 1993 sailing. Courtesy of Barbara Sarda)

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MAINS'L HAUL

A JOURNAL OF MARITIME HISTORY


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On the cover . . .

The highly detailed model of the USS CALIFORNIA/SAN DIEGO, built by Horace E. Boucher for the U.S. Navy, is 127 inches wide, and 40 inches high. The only major piece of restoration on this model occurred in 1993 when local master modeller Phil Mattson created a lost wax silver casting of the bow ornament and gold plated it to replace the deteriorated lead orignal. *(Courtesy John Wright)*



Mains'l Haul is the quarterly historical journal of the Maritime Museum Association of San Diego. Its mission is to engage our members and the public in the study of maritime history, expanding their knowledge and appreciation of this field. The journal is also a benefit of membership in the Maritime Museum Association of San Diego.
Articles on West Coast and Pacific Ocean maritime history subjects are welcome. Send all submissions and inquiries to Editor, *Mains'l Haul*, at 1306 N. Harbor Drive, San Diego, CA 92101. Contributors' guidelines are available on request. For advertising rates and information, please contact the Advertising Sales Manager at (619) 234-9153. No portion of this journal may be reproduced or stored in any electronic retrieval system without the written permission of the Editor.

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"*Mains'l Haul*—An order in tacking ship bidding 'Swing the main yards.' To loot, steal, or 'acquire'."
—John Masefield



FROM THE HELM

A TITANIC Dilemma

At the end of April we opened our new exhibit devoted to the TITANIC, "History to Hollywood," and since that time our attendance has jumped 46%. Around the world this experience has been repeated as curators and exhibit designers made frantic pierhead leaps to catch the TITANIC before the current wave of public fascination with the James Cameron film begins to ebb.

For maritime museums opportunities like this bring considerable angst with them. As seafaring continues to recede from common experience to a dim public memory, maritime museums have tended to armor themselves against what they see as a slow erosion of their natural constituency. They see themselves not as purveyors of popular culture but as preservers of the past who have adopted the mantel of stewardship, education, and research. Then along comes "AMISTAD" and "TITANIC" and suddenly millions of people are spending their way to the creation of an industry designed to take them to sea on fantastic imaginary voyages, something most maritime museums claim that they should be able to do.

To complicate things, TITANIC herself continues to pose divisive philosophical problems as her story unfolds. Soon after the International Congress of Maritime Museums established a comprehensive set of protocols designed to discourage the looting of underwater cultural sites, The British National Maritime Museum at Greenwich, arguably the greatest maritime museum of them all, broke ranks for a profitable exhibition of artifacts recovered from the TITANIC without proper archeological supervision and documentation. Subsequent exhibitions of these artifacts, which most legitimate maritime museums continue to regard as the products of high tech grave robbing, in Memphis and in Long Beach on board the QUEEN MARY (and now possibly in San Diego as well) continue to draw large crowds. While the public remains oblivious to the philosophical niceties of this question, these exhibits of wreck site artifacts provoke consternation within the world of historians and curators. Arguments stimulated by the TITANIC exhibitions and the popular response to them dominated the proceedings of the 1996 International Congress of Maritime Museums at Greenwich and the 1997 Council of American Maritime Museums conference in Boston. Then the film came out.

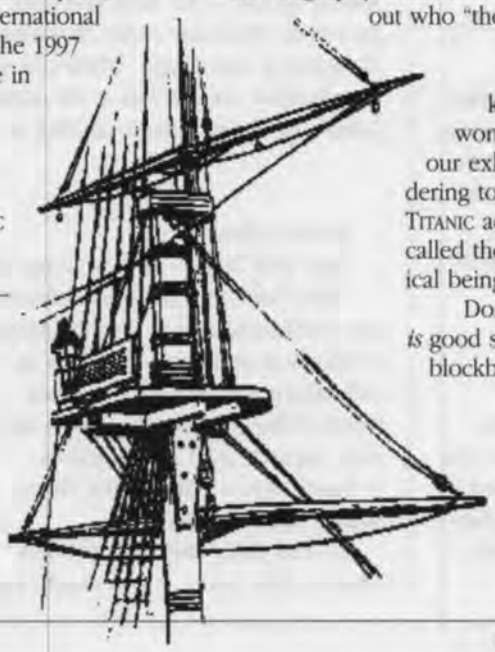
Close in the wake of TITANIC's film debut, the Mariners' Museum, one of America's greatest maritime museums, lead our own museum by a few months in its production of an ethically safe TITANIC exhibit. The few TITANIC artifacts in the display left the sinking ship with the survivors in their lifeboats. None of the artifacts were removed from the wreck site by sophisticated looting. The exhibit narrative woven by the Mariners' curators is highly engaging. Adherence to principals of historical exhibition is sustained through high production values and the presence of original artifacts, however few. The rally cry of the museum curator, "People yearn to be connected to the past by actual artifacts," was the narrow keel upon which this exhibit was built. The Mariners' highly successful TITANIC exhibit produced record attendance and set the standard for our own.

While these debates rage, the tone within maritime museums seems to be shifting in response to a growing awareness of their audience. This year, the Council of American Maritime Museums presented a panel at the Vancouver conference entitled "Is There Life After Pirates?" The discussion turned on how maritime museums can make themselves comfortable with the newfound realization that their subject matter, some of it anyway, is immensely popular. As with the plundered TITANIC artifacts, dilemmas ensue. Since most maritime museums struggle financially, how far can they go or should they go to cater to popular demand, yet stay true to their mission? "It can't all be TITANIC, Pirates and Clipper Ships." "Do we have to stop doing the good [historically relevant] stuff?" Or the other ominous question: "How many blockbusters are out there? What do we do after we've used them up?"

One answer may surely lie in the quiet contemplation of the people who constantly fill the BERKELEY hallway where our TITANIC exhibit resides. There are artifacts to be sure, but they come from the Cameron film rather than the actual TITANIC. None the less, people are connected to that ill-fated ship in an essential way. They stand beneath BERKELEY'S massive boilers and turning engine (which began turning fourteen years before TITANIC sailed) and extrapolate to those of the great doomed ship. They put their hands in the ice water tub and imagine themselves abandoning ship. They search the exhibit obsessively for the biography attached to the name on their ticket, to find out who "their TITANIC person" was, and whether they lived or died. And they tap the Marconi wireless key, sending messages for help that won't come in time. Whether viewing our exhibit or Cameron's film, by surrendering to a moment apart from time, the TITANIC acquires what Joseph Campbell called the essential attributes of a mythological being.

Done properly and with heart, this *is* good stuff. And we will never run out of blockbusters.

Raymond Ashley
Executive Director



Museum patrons appear lost in their private thoughts as they contemplate a lifeboat display and other mementos of one of history's most mesmerizing events, the sinking of the RMS TITANIC. The exhibit can be seen for most of 1998 aboard the San Diego Maritime Museum's ferryboat BERKELEY. *(Courtesy of Ted Walton)*

LETTERS TO THE EDITOR



Winter 1998, Volume 34, Number 1

Dear Editor:

CONGRATULATIONS. The Winter copy of *Mains'l Haul,* Vol. 34 No.1 is excellent and seems to be a little more readable than the past issues of about ten years or so. Colored illustrations, good articles, etc. are a great step forward. Please keep it up, especially the color-illustrated articles.

Jack R. Lewis Ph.D.
(Marine Researcher)

⚓

Dear Editor:

I got the copy of *Mains'l Haul.* Most impressive. Certainly much more so than other journals of maritime museums that I have seen.

William N. Still, Jr., Ph.D.

We appreciate all positive comments about the Winter 1998 issue of the Mains'l Haul. *Despite our best efforts, however, errors still find their way into print.*

"Keeping the Lights" (Winter 1998)

An editorial case of mistaken identity occurred in this article. The young woman seen with the sea lion pup in the photo on page 12 of "Keeping the Lights" is not Marie Franke. She is Marie's sister, Ruth. Our sincere apologies for this mistake.

⚓

Dear Editor:

On page 21 of the Winter 1998 *Mains'l Haul* in footnote number 4 the term "weighed" should not be used in regards to registered tonnage. I also find the 450 ton figure questionable.

Mr. Lawrence Davis

Mr. Davis is absolutely correct regarding our misuse of the term "weighed" when reporting registered tonnage. It is difficult to believe such an obvious error could get past so many proof readings, but it did and we stand corrected and a bit chagrined. As to the accuracy of the 450 ton figure, these specifications came from Lightships of the United States Government, Reference Notes, *by Willard Flint (Washington, D.C.: Coast Guard Historian's Office, 1989).*

⚓

"Restoration of an Iron Star" (Fall 1997)

Dear Editor:

We are incredibly impressed with the Museum's publication *Mains'l Haul.* It not only looks so good but the articles are quite fascinating. Shane – our rigger – came in today and said that the article "Restoration of an Iron Star" by Captain Kenneth D. Reynard in Volume 33 Number 4 has answered most of the restoration questions he has been pondering on.

Ann Gibson
Public Programs
Polly Woodside Melbourne
Maritime Museum
Lorimer Street East,
Southbank, Victoria 3006
Australia

In 1983 we received the following from Bob Wright, a ticket booth man, model builder, oral historian and part-time volunteer at the Maritime Museum of San Diego. While not a recent letter, we feel this is the appropriate place and time to publish it.

⚓

[Dear Editor:]

The Old Days – Not So Long Ago

'Way back in 1962 I volunteered my weekends during the restoration of the STAR OF INDIA. This was in self-defense on my part because three of the men in the family were ship captains and harbor pilots. A fourth was a chief in the Navy, which didn't count.

At that time, the ship was not open to the public. You could walk from one point to another without walking around someone. The decks were rotten and rippled along the length from rust on the crossbeams. Everywhere was old and new lumber, tools, cables, lines and gaping holes to catch the unwary.

The ship had a pleasant smell of old wood, new timbers, pine tar and fresh paint. Fresh paint meant progress.

Each task we did in itself may have been simple or tough but the sum total added up to the finished restoration. A number of people who volunteered were not worth the effort to keep busy. The few who could be left to work on their own meant a cost savings. I spent about seven years working and observing the progress of restoration and the people who came and went during that time.

One of the first interesting tasks I was involved in was cutting back the aft end of the deckhouse about three feet. It was rotted at the deck and much too close to the cargo hold. With Captain Reynard directing and doing much of the work, about six of us used saws, crowbars and hammers to make the cut across the deckhouse and down to the decking. The deck planking was so rotted you could tear it out with your bare hands.

Another task we had a few years later was repairing the damage caused by a motor ship prop wash pushing the STAR away from the dock. Mooring lines snapped, gangway fell, and bollards pulled right out of the deck – smashing the bulkheads.

During those early years the STAR had many strong supporters. One of these was Charley Hansen. He was an old Danish sailor (I have [his] history on tape) who had a catering business for years. He was well known and liked by many of the leading citizens of San Diego. He not only gave money to the restoration, he also kept the saloon well supplied with sandwiches. The galley was in what is now the night watchman's cabin. On weekends Charlie might bring down a stew or crab casserole. The coffeepot would sit all day keeping nice and hot until it was so strong

it would be undrinkable and fit for tarring the standing rigging. His birthday was 14 February and he would fund a party during the whole day. I am sure that Charlie was along in spirit when the STAR sailed 4 July 1976.

For me, history is divided into eras – periods of time in one's life, or what you read and hear about. There is no way to recapture the flavor of that time or experience. This is true of the STAR OF INDIA. She made her early voyages and later the Alaska Packer days. Her time of sitting idle during the '30's and '40's did not help her condition. During the late '50's and early '60's the restoration was a lively time for the STAR. After she was opened to the public she entered another era.

History is being made as each day passes. The STAR is still making her own history. I'm thankful I was part of it.

[Robert Wright]

⚓

"Memoir of a Young Sternwheel Pilot on the Sacramento" (Fall 1997)

Dear Editor:

I believe your photo of the DELTA QUEEN [pages 24 and 25] shows her steaming up the Ohio under the Suspension Bridge at Cincinnati (viewed toward Covington on the Kentucky side) obviously prior to my first visit in '53. The levees were raised after the '37 flood so the photo probably was taken after '39.

I was reminded in my reading last weekend there is a later bridge by the same firm (Roebling) at Wheeling, which is long. The Cincinnati bridge was begun before the Civil War, left unfinished, and completed later. The firm later on built the Wheeling bridge and then the Brooklyn bridge.

Tim Prince

"Surveying the Pacific: the Voyages of the GALILEE 1905-1908" (Winter 1998)

Dear Editor:

Congratulations for the well-written article "The Voyages of the GALILEE 1905-1908." . . . On our first trip to the Bay area I visited what was left of GALILEE. She was lying bow to shore and her after quarters were fronted by flower pots and other items of her live-in occupants. . . . I am a bit wiser, too, after having read [this] article. Compass deviation, "swinging ship," etc. are among the rather elusive segments of nautical lore.

Gordon Jones

⚓

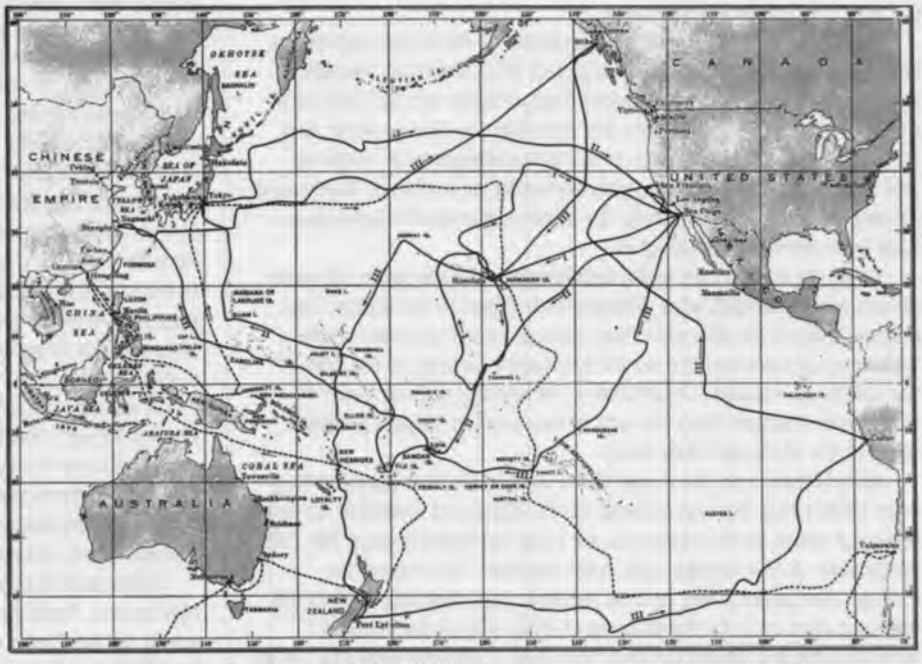
Dear Editor:

Many thanks for the copies of *Mains'l Haul*, containing your fine article on the GALILEE. The issues have been circulating through many hands in our Department, all interested in learning more about this nearly-forgotten episode in our history. You've succeeded in capturing not only the essential facts of the GALILEE's work, but also the scientific significance of magnetic surveys at sea. I enjoyed some of the "local color" as well, such as the dockside shooting reported in the local press – incidents that don't make it into the scientific journals! I actually had not realized that the GALILEE was at all remarkable as a sailing vessel, but your quotation from Pratt on page 42 attests to [her] reputation. The layout and photo reproduction, by the way, are superb; for that matter, so is the whole magazine. Whoever does your graphic work did a beautiful job. Some of the photos really do look better than the originals.

It had occurred to me that a map might have been nice. For your future reference, I've enclosed a photocopy of one showing the route of the three cruises, taken from Bauer's *Ocean Magnetic Observations, 1905-1916...*

Shaun J. Hardy
Librarian
Carnegie Institution of Washington
Department of Terrestrial Magnetism

Prior to publication, it also occurred to us that a map would be helpful. Unfortunately we were unable to secure a usable map of these voyages before we went to press. We appreciate Mr. Hardy's assistance with the photographs and now the map. The three voyages - Voyage I (September 1905-December 1905), Voyage II (March 1906-Fall 1906), and Voyage III (December 1906-May 1908) - are identified by their corresponding roman numerals. The map also shows the voyage of the CHALLENGER (1872-1876).



Map Showing the Three Cruises of the Galilee, 1905-1908. (Broken lines show the tracks of the Challenger expedition, 1872-1876.)

The CABIN BOOKSHELF



A LITTLE LIGHTHOUSE KEEEPING

Mary Louise Clifford and J. Candace Clifford, *Women Who Kept the Lights: An Illustrated History of Female Lighthouse Keepers.* (Williamsburg, VA: Cypress Communications, 1993); 183 pages, 78 illustrations, appendix, index, bibliography. ISBN 0-9636412-0-4. $19.95.

Norma Engel, *Three Beams of Light: Chronicles of a Lighthouse Keeper's Family.* (San Diego, CA: Tecolote Publications, 1986); 276 pages, 60 illustrations, bibliography, appendix. ISBN 0-938711-00-8.

Book Reviews by Laura Wilhite

These two books tell the stories of women who lived in lighthouses. Mary Louise Clifford and J.Candace Clifford's book covers a wide selection of lighthouses and their keepers, starting with Hannah Thomas at Gurnet Point Light, Massachusetts (1776-1786) and ending with Fannie Salter at Turkey Point Light, Maryland (1925-1947). Norma Engel's book, on the other hand, focuses on a single lighthouse family.

Women Who Kept the Lights traces the lives of women lighthouse keepers and their battles against weather, solitude, hardships, and opposition. Many of these women obtained the position of light keeper by taking over the duties of their deceased fathers or husbands. Some performed these duties alongside the men, acting as assistants, and then, eventually, became the head keeper. Other women sought out an appointment through family connections or by writing letters to senators, governors, and other officials. The authors gathered information about the 27 women featured in the book and the several other dozen women mentioned in the side bars from a variety of sources including newspaper and magazine interviews and articles, personal letters and journals, and lighthouse log books.

This book not only chronicles the careers of the female lighthouse keepers, it also serves as a good source of information on the lighthouses where these women worked. Each chapter tells the story of a different lighthouse and keeper, and describes the house, tower, and light. Light power evolved over time from candlepower to whale oil and lard oil, then to kerosene, and, eventually, to electricity. Illustrations accompany the chapters to help the reader understand what it must have been like to keep the lights.

While the basic duties of the lighthouses were the same, the experiences of each keeper were different and unique to her station. Fog plagued some stations while others were pounded by severe storms. Technological advances like electricity brought changes to the lives of the lighthouse keepers. Unfortunately, technology did not make the work easier. Excerpts from the logs of two women keepers illustrate some of the challenges they faced.

Juliet Nichols kept the Angel Island Light in the San Francisco Bay from 1904-1914. She was isolated on the island and unable to do anything but watch as the city across the water burned following the 1906 earthquake. A few months later, Juliet watched "the fog rolling through the Golden Gate, as it so regularly does, and listen[ed] to the foghorns start up in the lighthouses on both side of the channel." Minutes after she started her own fog signal it stopped working. "With no time for repairs, she snatched a hammer and began pounding the bell . . . In her report . . . she wrote that she pounded the bell at the prescribed intervals for 20 hours before the fog finally lifted." Throughout her 12 years on Angel Island, Juliet battled the fog with the electric signal and, when that broke down, which happened often, she pounded the bell by hand.

At the Michigan City Light in Indiana, lighthouse keeper Harriet Colfax risked her life many times during her 43 year career. The lighthouse sat on Lake Michigan's shore, with a pier on either side, at the entrance to Michigan City Harbor. In 1871, "a beacon light and elevated walk were installed on the east pier, which extended 1,500 feet" into the lake. Not only did Harriet have to tend the light on the shore, but she also had to light and maintain the beacon at the end of the pier. Even in the worst weather, it was Harriet's duty to light that beacon. A sample of entries from her journal record times when the weather almost killed her.

> September 18, 1872: The waves dashing over both piers, very nearly carrying me with them into the lake.
> September 29: Went to the beacon tonight with considerable risk to life.
> October 28, 1873: The waves dashing high over both piers, and over my head when on my way down to the light beacon.

Three Beams of Light is a journal of the Engels, a lighthouse family. Hermann and Freda Engel began their life together at the turn of the century. Hermann was assigned to the Oakland Harbor Light Station in the middle of the San Francisco Bay on November 4, 1900. A few days later, going against lighthouse regulations, Hermann brought his bride to her new home. A year later, Hermann Engel transferred to Point Bonita Light Station, located on dry land. The story really begins here, where all three Engel children were born.

Norma Engel, the youngest of three children, tells of her family's adventures, misadventures, hardships, and incredible strength. This is a charming story about how, despite being short of money and big on mischief, the Engel family managed to stick together, keep their spirits up, and make it through any situation.

The light station was located at the southern tip of Point Bonita on the north side of the entrance to the San Francisco Bay. To reach the nearest town, Sausalito, the Engels had to walk three miles. A narrow trail, cut into the "rugged hills" of the Point, led from the keepers' quarters to the light. These quarters were "an ancient, weathered structure, sadly in need of a coat of paint." Mrs. Engel's loving hand transformed the one room dwelling that the family lived in for seven years into a beautiful home.

From 1901-1914 the Engels lived on the San Francisco Bay. While there Freda "learned to expect the unexpected from her impulsive spouse." Hermann would get an idea into his head, and the next thing his wife knew, he'd be leading a cow or a horse behind him on his way home from the city. Despite the family's money problems, the rambunctious nature of her children, and Hermann's impulsive behavior, Freda once told her daughter "those years at Point Bonita were the happiest in [her] life."

In January 1914, the Lighthouse Service once again transferred Hermann Engel, this time to Ballast Point in San Diego. For the next 17 years the Engel family lived at the entrance to San Diego Bay. Throughout these years the family had many adventures and misadventures, from the pet seal, Furry, to rabbit breeding, to the numerous moneymaking schemes hatched by Ray and El, the Engel boys.

While both books offer an historical and biographical look at life in lighthouses, *Three Beams of Light* was written through the eyes of a young girl and has a more intimate feeling to it. Anyone interested in learning more about lighthouses in general and female light keepers in

particular will find a wealth of information in *Women Who Kept the Lights*. Even though these two books are different in their approach to this topic, they both do an excellent job presenting the life and work of a lighthouse keeper. Readers will gain a variety of previously unimagined insights into the lives of some remarkable women.

Laura Wilhite is studying history at the University of California, Santa Barbara.

GOLDEN FISH TALES

Ed Ries, *Tales of the Golden Years of California Ocean Fishing 1900-1950*, (Friends of the Los Angeles Maritime Museum and the Los Angeles Maritime Museum Research Society, 1997); 126 pages, illustrated, appendix, glossary, bibliography. ISBN 0-9657547-1-5 (Softcover). $14.95.

Book Review by Steve Lawson

Back in the good ol' days, Southern California fishermen regularly pulled out giant sea bass, barn door halibut, log barracuda and hard-fighting yellowtail. Only the El Nino-created bonanza conditions of last year compare to the fabulous fishing off Southern California at the turn of the century.

Those that first threw out a hook into the Pacific had little more than vegetable fiber line tied to a cane pole. Yet in the years to come, new poles, lines, and a myriad of techniques and lures were developed. In 1930, a lad of eleven years dangled his line from the Santa Monica Pier in search of perch, tomcod, and halibut, thus beginning a life-long preoccupation with fishing. Now, some sixty-eight years later, the former perch picker, Captain Ed Ries, shares his *Tales of the Golden Years of California Ocean Fishing 1900-1950.*

Tales of the Golden Years of California Ocean Fishing 1900-1950 captures the forgotten history of sport and commercial fishing, including tackle, boats and personalities. Pioneering fishermen-authors Charles F. Holder and Zane Grey, and characters such as "Santa Monica Olsen," the model for Bob Segar's Popeye, are featured. The book chronicles early fishing styles and techniques, both sport and commercial, many of which are told from Ries's own experience dating back to the Depression days. Ries also takes us into the fascinating industry where entrepreneurs seized an opportunity to make available sport for the masses by utilizing for fishing barges the hulks of at least 37 former sailing vessels, which averaged in excess of 1,000 tons in size. The History of the emerging commercial fishing industry, the discovery of new banks and adventures and perils encountered in the pursuit of tuna are related. Of special interest to San Diegans are the stories of the businessmen operating their fishing boats from landings at the foot of Broadway.

Ries, the author of over 100 articles on the history of California ocean fishing, lends his knowledge and artistic talents to this book by complementing his written descriptions with his drawings and paintings depicting early fishing methods. Anyone who has ever dropped a hook in the Pacific or ever dreamed of catching the "big one" will find *Tales of the Golden Years of California Ocean Fishing 1900-1950* fascinating reading.

Retail priced at only $14.95, the book's 256 historical photos and illustrations alone make it a bargain. *Tales of the Golden Years of California Ocean Fishing 1900-1950* is a publication of the Friends of the Los Angeles Maritime Museum in association with the Los Angeles Maritime Museum Research Society and is available at maritime museums and fishing tackle shops throughout southern California.

Steve Lawson is a maritime history researcher and author.

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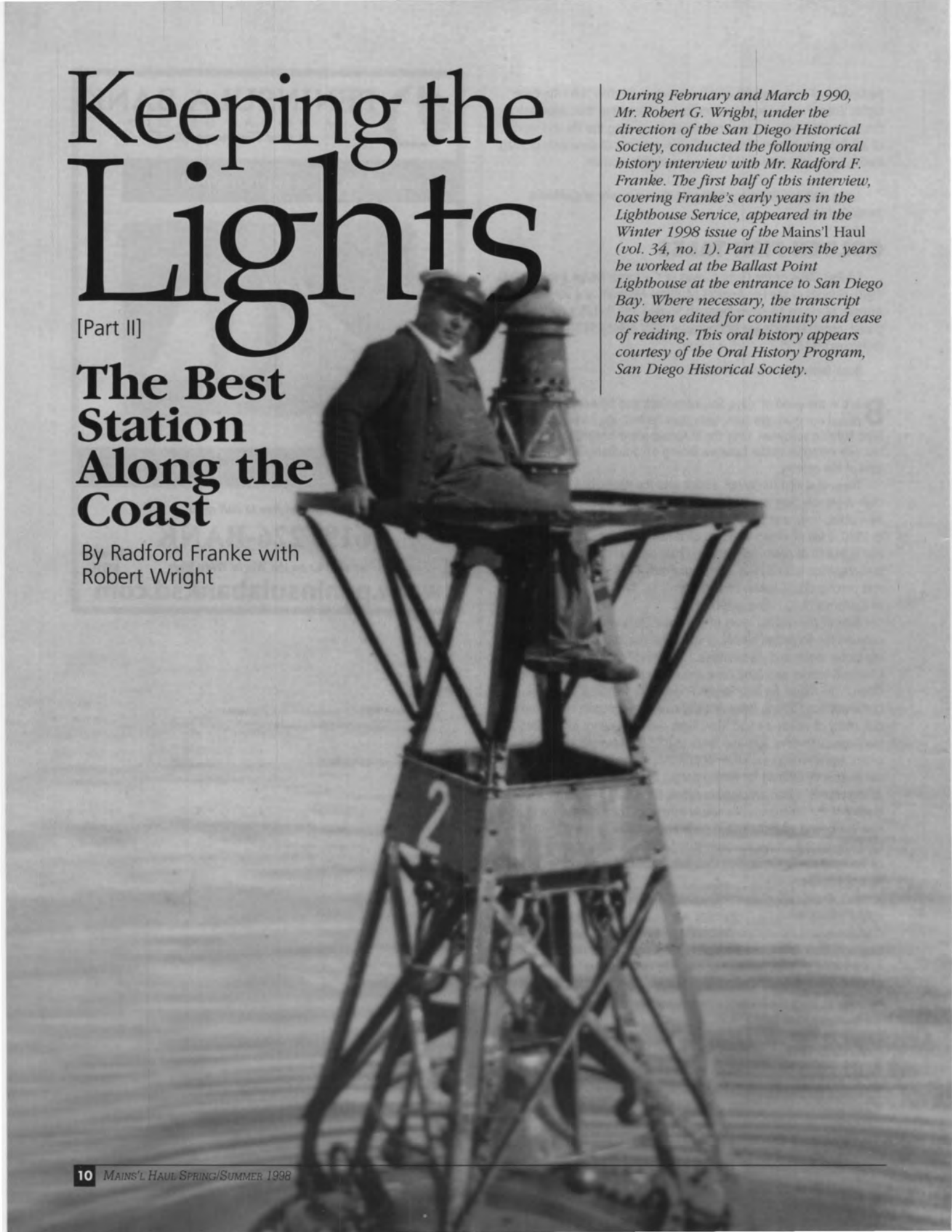
Keeping the Lights

[Part II]

The Best Station Along the Coast

By Radford Franke with Robert Wright

During February and March 1990, Mr. Robert G. Wright, under the direction of the San Diego Historical Society, conducted the following oral history interview with Mr. Radford F. Franke. The first half of this interview, covering Franke's early years in the Lighthouse Service, appeared in the Winter 1998 issue of the Mains'l Haul *(vol. 34, no. 1). Part II covers the years he worked at the Ballast Point Lighthouse at the entrance to San Diego Bay. Where necessary, the transcript has been edited for continuity and ease of reading. This oral history appears courtesy of the Oral History Program, San Diego Historical Society.*



RF: [In 1930], I got a phone call from the main office and [they] wanted to know if I would [leave Año Nuevo Lighthouse and] accept a transfer to San Diego to the Ballast Point Light Station. [I] asked them if I could call them back. I wanted to talk to the keeper about it. So I asked [Jack] Chambers and told him they wanted me to go down to Ballast Point Light Station, and what he thought about it. He said, "For (blank, blank) sakes, go back there and tell them you'll go. It is the best station along the coast." So I accepted the station.

While we were on the island though, we managed to save enough money to go out and buy ourselves a Model A Ford coupe. We paid $600 for it. It was a good thing we had transportation. So when we got ready to go down to San Diego we . . . loaded things in the trunk of the car [that] we thought we might need when we got down here . . . until the tender would arrive with our furniture, etc. Our mattress was tied on top and away we went for San Diego. When we got to San Luis Obispo, it started to rain so we unloaded what we had on top and sent it the rest of the way by Railway Express. We took a couple of days to get to San Diego [and] arrived at Ballast Point on Thanksgiving Day, 1930 . . . Marie and I walked into the house to see what it was like and here was an electric light hanging down on a single cord in the living room. And I thought, "Holy smoke, this is really great! We are finally having electricity." We had kerosene lamps on the island, so we were getting into modern territory. The first thing we did while we were there in San Diego, [was] we went down to Holzwasser's and [bought] ourselves a nice radio. That was the first piece of modern equipment we had during our married life . . .

RW: After [Año Nuevo] lighthouse[1] and living off the shore like that, Ballast Point must have been luxurious to you. You had electricity and you were on shore.

RF: That is correct. And the milkman would bring the milk to the door and we had a paper that was delivered to us. It was a wonderful life and I was very fortunate in being selected to come down here. The man who was in charge at that time, Mr. [Hermann] Engel, was getting ready to retire.[2] His assistant keeper had quit the lighthouse service, so they needed a young man down on the station because there was a lot of boat work to do.

This Ballast Point was a light attendant station rather than a [standard] lighthouse. We were in charge of all the buoys and beacons in the harbor [and out at sea]. We even had a light, which was built on later, up at Oceanside at the marine harbor there. At the Ocean Beach breakwater there was a light and fog signal out there. This all had to be taken care of. I was the youngest man who knew how to operate a boat. I was fortunate enough to be selected to come down here . . .

We had a little launch . . . to get out to attend those things. This little launch was a two-cylinder gasoline engine and was getting pretty obsolete. They sent us a new boat. It was a 40-foot motor launch that had been used by the Navy for many years as a liberty boat. When they weren't using them, they left them tied between the old destroyers. They used them sort of like fenders between the ships so all of the ribs in the boat were broken. The lighthouse service got ahold of this boat and replaced all of

Left: Head lightkeeper Bill Mollering working on buoy #2 in the San Diego Bay channel off Ballast Point. Mollering replaced Hermann Engel in 1931. (*Courtesy of Radford Franke*)



Rad Franke at the oars of the Ballast Point Lighthouse dory. He was probably on his way to service the kerosene light on the channel side of North Island. (*Courtesy of Radford Franke*)

Ballast Point, A Woman's View

[Editor's Note: On March 7, 1990, Mr. Robert Wright conducted a short interview with Marie Franke, Radford Franke's wife, and obtained the following description of her life and times at Ballast Point.]

RW: What was it like from your point of view, Mrs. Franke?

MF: I just took [life at Ballast Point] for granted. For me it was civilized living. [Año Nuevo,] the station we were on first, was a real lighthouse and Ballast Point was just like city living. We were about two and a half miles from the bus. I didn't drive, so I hiked it many a time. Outside of that, we had milk delivered and everything, so it was fine.

RW: Did you have groceries delivered too?

MF: There was a little commissary up at the Army base that I would hike up to during the War. [Normally] it wasn't open year around, but during the War it was.

RW: Your son [Ken] was born there?

MF: [Yes,] at the [Ballast Point] lighthouse. I [took] care of him and he was a live wire. We were thankful that he had a nice yard to play in. But in 18 months he discovered how he could climb over the fence at the corner, so we had to put up "cowcatchers." So when he came up he bumped his head and he couldn't get out of the yard anymore.

RW: He was born in 1936?

MF: Friday the 13th.

RW: So that really kept you busy?

MF: That really kept me going. I spent an awful lot of time with him.

RW: Did you read, listen to the radio?

MF: Oh yes. He sat on my lap and I read to him for years until he got into school. Then he was able to do it for himself.

RW: [You arrived at Ballast Point in 1930.] Those were Depression years. What was it like then?

MF: It went on just the same as we had always been going because we didn't have any extra money. Living on the ocean we could always go out and catch fish.

RW: And abalone?

MF: We had abalone at the other lighthouse, but down here the fishermen would bring us lobsters. [At Año Nuevo] even I could go out and catch fish. It was no problem even though I never had had a fishing rod in my hand in my life. I had a big long string on a stick and threw it out and I could always bring in something to eat. We never worried about that.

RW: I understand you weren't so great on swimming.

MF: I can't swim a stroke to this day. I am deathly afraid of water and yet [I've] lived on it practically all my life.

RW: Do you have any reason for being afraid of it?

MF: When I was about two years old out at the beach at San Francisco, I was running along on the



Radford Franke is seen here in his Lighthouse Service uniform during the San Diego California Pacific International Exposition, which ran from 29 May 1935 to 9 September 1936. The Lighthouse Service manned a booth at the Expo and Rad dutifully took his turn answering questions and explaining the Service's work. (*Courtesy of Radford Franke*)

the broken ribs with new oak ribs and put a crane on it - [an] A-frame - with a hoisting engine and everything. They sent that down to us. It was a CG-37003D, which was designated as a derrick boat. This way we could do more work than we did before. We could actually recharge some of the buoys that used acetylene gas. We could remove old acetylene tanks out of the buoys and install new ones. The boat had been used for a long time by the Navy.

After being reserviced and rebuilt, the Lighthouse Service had it until the Coast Guard took us over [in 1939]. Then when the Coast Guard took us over, we still continued to use [that boat] all during my time in the Lighthouse Service.

After I left, they finally retired it. I saw it operating in the yacht harbor for a while. Some civilian must have purchased it and



Rad's son, Ken Franke, posed with the U.S. Coast Guard, Ballast Point life ring. In 1939 the Coast Guard assumed responsibility for lighthouses and all other aids to navigation in the United States. (*Courtesy of Radford Franke*)

used it for working the yacht buoys for a small charge. It probably has been destroyed by this time . . .

RW: So you really didn't spend your time at Ballast Point Lighthouse itself . . . in the early days? You had to sort of roam around.

RF: That is correct. There were only two men at Ballast Point - there was myself and the keeper, Mr. Engel. His wife [Freda] stood the first watch from six till ten every night. She would answer the phone. The fog signal was run by electric motor, so all they had to do was go out and throw the switch. She was able to do that. Mr. Engel and I would switch over from ten o'clock at night to two o'clock in the morning, and then from two o'clock in the morning until eight o'clock, standing the rest of the watches.

Then during the day, rather than being just on the station, we would have to go out

edge and a big wave came in. I went into the wave instead of running away from it. They had to get somebody to bring me out. I don't know whether that affected me or not. But I never could learn [to swim]. I tried and I tried and there was just that fear in there.

RW: What kind of social life did you have?

MF: We had friends that came out. With the few hours we had off, we visited. I didn't drive until Ken was ready to go to high school. So I went and took lessons, as I had to take him to the bus in the morning. He went to St. Augustine High School. Then I got to go around a little bit after I learned to drive. But I was happy with the kind of life we had. There was never any going out at night or anything like that because we worked nights. Then after he [Rad] retired, he worked nights again. I was just content to stay at home and read.

RW: I understand you had a coal stove at first.

MF: I cooked on coal up until 1947. It was maddening at times because if the draft wasn't right, the stove was as stubborn as could be. I was 41 years old when the War started. We had rainy, stormy nights and I couldn't get the Christmas bird cooked for love or money. It seemed to go with the times, you know. They were hectic times then.

RW: Did the war years change your lifestyle out there?

MF: Coming into the Army Fort [Rosecrans] we had to stop at this guard and that guard. We didn't have the password all the time because we were separate from them. When they changed guard they were told to check everyone. Sometimes they would have to phone to see if we were able to come in or not. We could see our backdoor right at the side of the garage.

RW: . . . I know that when I was growing up here at that time you thought that there were Japanese behind every bush.

MF: It was pretty hectic when the War started December 7th. It was panicky. As I say, I didn't drive and we had Ken. Dad just had come down that year to live with us, as a semi-invalid, and whether I was going to be sent off of Ballast Point or not, and how we would ever manage to pay rent and everything [we] didn't know. It was terrible. But we survived. When Ken was a little older then [he was] in 1941, playing with the Army was not the best place for a youngster, you know, to be around soldiers all the time . . .

RW: Any different than sailors?

MF: We didn't know much about sailors either. There were so few of them out there. But it was the language they used. [When Ken heard a new word] he would always come in and ask me, was it a pepper word? [I'd say,] "You tell me what the word was and I'll tell you whether it is a pepper word." When he was tiny our neighbors [the soldiers] taught him to swear.

RW: So these "pepper" words were naughty words?

MF: They were naughty words, but he would tell me . . . And I would explain what it was. [His father and I told him,] "If it is a pepper word we will never hear it again from you, or there will be more pepper."

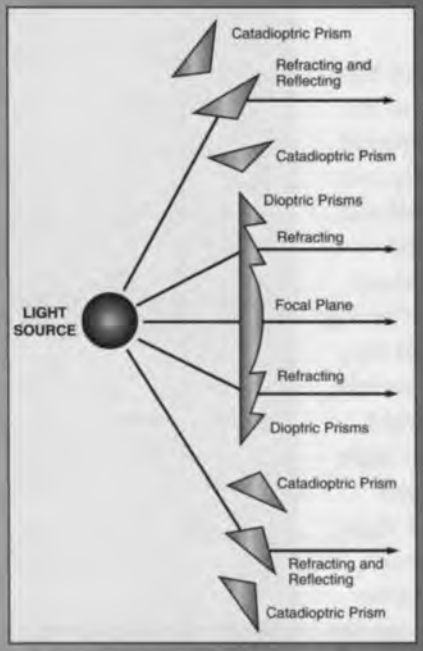
The Fresnel Lens

When Augustine Fresnel (fra NEL) invented the lenticular system of lenses in 1822 he revolutionized lighthouses around the world. Prior to his innovations lighthouse keepers tended either a wood or coal brazier or numerous tapered tallow candles, each with its own parabolic reflector. Fresnel's system required only one light source placed in the center (at the focal plane) of the lens. The lens looked like a large beehive of glass prisms set in brass frames. By mathematically arranging the prisms to capture 65-70% of the light emitted by the lamp, the prisms could bend the light rays into one horizontal sheet of light. This meant lighthouse beams could be seen at great distances.

Fresnel created two types, fixed and revolving, and six orders of lenses. A fixed lens shows a steady light all around the horizon while a revolving lens produces a characteristic flash unique to its geographic location. Lighthouses also use colored lenses (red or green) to denote their location at a harbor entrance. Unfortunately, colored lenses drastically cut the candlepower of the optic to less than half of that produced by clear glass. A first order lens, the largest order, stands over eight feet tall and emits a ray that is visible up to 22 miles out at sea. The sixth order lens, the smallest lens, stands about a foot and a half tall and is visible up to 10 miles out at sea. The first order lenses serve in lighthouses located on major landfalls, while second, third, and fourth order lenses are employed in coastal navigation and fifth and sixth order lenses mark harbor entrances.

The Ballast Point light used a fifth order fixed green lens. This denoted the lighthouse's location on the left side of the harbor entrance as you enter the channel. A fixed lens produces its steady beam of light by refocusing all the light rays through a smooth central barrel of convex glass located around the waist of the lens. Above and below this barrel of glass dioptric prisms refract the light rays emitted from the lamp into a horizontal sheet of light. Above and below the dioptric prisms are catadioptric prisms. Any light rays reaching these prisms are first refracted within the prism to the top face then interiorly reflected to the front face of the prism where they are bent horizontally. (See diagram.)

A revolving light, in comparison, employs a series of convex bulls-eye lenses around the waist of the lens, with curved dioptric and catadioptric prisms above and below it. Each bullseye with its corresponding dioptric and catadioptric prisms creates a "flash panel." The bullseyes and curved prisms bend the light rays to the horizontal and then funnel them into vertical segments or beams that create the "flash" seen by mariners at sea. By rotating the lens each lighthouse can create its own unique signature based upon the frequency of the flashes.



and service the buoys that were operated by acetylene gas. The gas cylinders had to be replaced occasionally. We had a couple of range lights - one was on North Island - that burned a kerosene lamp. It was a five-day lamp. It had a reservoir on it and that had to be refilled continually, and [we had to] keep the wicks trimmed so that they would give a good light.

The fog signal had to be taken care of [as well]. There was a bell on the number six beacon and a bell on number eight beacon. So there was a lot of boat work to be taken care of [and] there were only two men. We only got 30 days' leave there at Ballast Point after a year, but we couldn't leave the station except for going for groceries. If we left the station we had to log it in the book - the time we left and the time we returned. If we took more than two hours, that extra time was taken off of our annual leave. [It was] the same way on Sundays. We were allowed six hours off of the station and that was to be specified as church time, so it was pretty confining. But we were lucky to have the job. We were making $100 a month now, and this was really great. We had our house furnished for us so we didn't have to worry about renting a home.

RW: But you had to buy your own food?

RF: We had to buy our own food. We went to a store just a short distance outside of the reservation. Ballast Point was on Fort Rosecrans Reservation[3] so we had to pass through Marine sentinels at the main gate to get in and out of the station. The public wasn't really invited to come in there; it was really more or less isolated as far as the public was concerned.

RW: . . . your home looked like a nice building, a large two-story building.

RF: They were very comfortable. There were two houses. We each had a house and they were two stories with three bedrooms upstairs, a living room, a dining room, and a big large kitchen downstairs . . .

RW: From what I understand . . . electrical service came in 1928, but apparently nothing for heating or cooking. Did you continue to use coal?

RF: Electricity had been installed in 1928; however, I didn't come to Ballast Point until 1930. It was already there, but we were still using coal for cooking and heating. While Mr. Mollering[4] was there we finally got permission to . . . No, I guess it was after Mr. Mollering had retired and Pozanac[5] was there. If we would supply the gas line to the lighthouse, they would give us gas ranges and gas heating. I personally dug a ditch from Fort Rosecrans to Ballast Point, which is about four or five hundred yards. I can't remember where I even got the pipe from, but we had enough pipe to bring the gas line clear down to Ballast Point. The Coast Guard bought us



Franke occasionally worked on board the PILOT during World War II. This boat ferried San Diego Bay harbor pilots to and from visiting vessels for over 80 years. She is now moored at the San Diego Maritime Museum. (*Courtesy of Radford Franke*)

the gas ranges and floor furnaces. We installed all of this equipment ourselves. The first night that we turned the gas heaters on was quite an experience because the inside of the house, instead of being plastered, was all tongue and groove. We could hear these boards snapping and cracking because all of the moisture was being dried out of them. But it was quite an improvement.

During the first part of the war we had a barracks built out of a single garage out on the reservation there. The personnel that I had working with us, the enlisted men, had gas before we did. Even though it was in bottles, they were cooking and heating with gas and we were still using coal until the time we installed the gas line in there.

RW: I am sure it was warm and comfortable, but it still took a lot of work getting the pipe in there.

RF: We didn't mind; we enjoyed whatever we did on the station. We handled all of the maintenance work; everything was all done by the keepers. We understood that and we were happy to be able to do that kind of stuff. We had all kinds of knowledge

Bill Mollering, astride donkey, and Rad Franke performed all the maintenance on the navigational aids, the buildings, and the grounds. (*Courtesy of Radford Franke*)



that even helped during our retired time[6]. . .

RW: Did you get along with Mr. Engel pretty well?

RF: Mr. Engel was a very good man to get along with. He had two sons and a daughter. The daughter was a schoolteacher in town. The sons had already been gone on their own; they were older than the daughter. She later became an officer in the Navy during 1939, World War II.

RW: What was her name?

RF: Norma Engel.

RW: Did she write a book on lighthouses?

RF: That is correct, *Three Beams of Light [Chronicles of a Lighthouse Keeper's Family]*.[7]

RW: So she lived out there, too, at the same time that you lived out there?

RF: That is correct. He [Engel] only stayed there a short time. In 1931 he retired and left the station. Then a man by the name of [William] Mollering came from Point Sur Light Station. I would have liked to have [the job], but they told me I was too young yet and that there were some older men that needed better jobs. Mr. Mollering came down. He had two children, a boy and a girl . . .

RW: Some of the technical details I was curious about . . . the lamp, was that [a] French lens?

RF: That's right. They were all made in France; all of these lenses that they used in the lighthouse service were made by them. As I said, it was just a light attendant station so we didn't have a big revolving lens like most of the lighthouses do; this was a fixed light. We had a green shade that fit around the 200-watt bulb. It would show as a green light because it was on the left-hand side of the channel coming in. That is just the regular maritime rules, the red on the right for returning, and the green on the left.[8]

RW: So it was lit by an electric bulb?

RF: That's right, just a 200-watt bulb. The lens was built with the prisms and everything so it intensified the light and concentrated it all through the center part of the lens. We would have a string that we would put across there every night and focus that onto the filament of the light to make sure it was right in the center.

During the day we had window shades that we would pull down . . . to cover the windows up. We had a linen cloth that we put around the lens to keep the sunlight off of it because it would discolor the glass if the sun got on it too long.

RW: Where is the lens now?

RF: It [was] at the Old Spanish Lighthouse up on top of Point Loma.[9] Ours was considered the fifth-order lens because it was such a small light. Our main job was not to take care of the light station, but it was to see that all the buoys and beacons in the harbor were kept operating. A lot of times we would have to go out and work on a buoy that had been extinguished during rough weather.



Ballast Point Lighthouse as seen from the channel prior to Franke's arrival in 1930. The tower on left housed the fog bell, the station's original fog signal. After the station received electricity in 1928 a diaphragm foghorn operated by compressed air was installed. Engel enclosed the lower portion of the tower and placed the automated fog signal equipment inside. The foghorn was secured up on the platform next to the bell. The bell always remained ready for service in case of a power failure or some other emergency. The fifth order Fresnel lens stood in the center tower in front of one of the two keeper's homes. On the far right a miniature version of the keeper's home serves as a doghouse. ***(SDMM collection, P-8523)***

RW: You say the light didn't rotate; it was just on all the time?

RF: It was just a fixed light, yes.[10]

RW: About how high off the water was it?

RF: Oh, about ... It depended upon the tide, of course, but it was about 30 feet above ground . . .

RW: Why was it located there anyway?

RF: Because of the Point. Ballast Point stuck out in the middle of the channel there. It was a natural kind of a... I don't know how you would say it, but it had some effect on the way . . . the currents [came] in and out of the Bay. It kept the Bay scoured out so nicely. When the tide was going out, or ebbing, there was about a six and a half-knot an hour tide that ran down through the Point. In the old days before the lighthouse was even there, that was a whaling station in that corner. They used to come in there to bring the whales in and render them.[11]

RW: On the backside?

RF: On the lee side, yes.

RW: It was called Ballast Point because, as I understand, the rocks were used and acted as ballast for sailing ships leaving here.

RF: That is correct. When the ships came in from the East Coast they brought in a lot of supplies to get the San Diego area organized. They had nothing to take out of here but tallow and hides from the cattle ranches, so they needed ballast for the ships to get back to the East Coast again. So they would stop off of Ballast Point and pick up the cobblestones and put them in the hold of the ship to balance it. Because they were sailing ships, naturally they needed ballast to keep them from capsizing. When they got back to Boston they used the cobblestones for paving some of the streets that are still there.[12]

RW: Do you think this is really a true story?

RF: I have no doubts about it. The fact that it was written in the book, *Two Years Before The Mast* by Richard Henry Dana, evidently that is probably why the point got named Ballast Point. There had to be a reason for it.

RW: Did you see any artifacts or anything in those days that would indicate anything about when they rendered the whales?

RF: Yes. There used to be some debris in the coves there. We found some whale bones, some vertebrae from the whales back



there, but we didn't pay much attention to it.

RW: I understand in Dana's book [that] they would [also] render the hides there. They would have hot pots and so forth to treat the hides.

RF: They had big vats where they used to melt the fat down and that is where they would get the whale oil.

RW: That was one thing, but then also later, according to Dana, they called them hide houses where they would treat the hides before they would store them on the ship.[13]

RF: I didn't know that. I thought the ranchers when they killed their animals they would naturally do that themselves. I don't know. But that is how they would have to get the leather off the skins of the cattle.

RW: Did you ever see any evidence of this Fort Guijarros, the Spanish fort?[14]

RF: I have some knowledge of it, but like I said, I just didn't pay much attention to it. The kids used to go down and play on it all the time. They were digging there for awhile looking for artifacts, but I don't know if they found anything worthwhile.

RW: Ballast Point was strategically located. It was a navigational hazard for one thing, so that is why the light was there?

RF: That is correct.

RW: What's with the bell that they had on there? You had the light and you had the foghorn, but why the bell?

RF: Originally, when Ballast Point was first organized the bell was the fog signal to warn the ships off the Point. It had a clockworks with a weight on it. The weight could be wound up and then it would operate the clockworks and would strike the bell every so many seconds. Later on after electricity was installed on the station, then they put [in] the fog signal and they had a diaphragm foghorn that was operated by compressed air. So they closed the bottom half of the building that the bell was mounted on and put the fog signal equipment inside the building. The horn was put up on the platform alongside of the bell.

So the bell was kept there for all the years that the station was in operation. But it was used only in the case of an emergency if the power should happen to go off during the foggy weather. Then we would strike the bell with a cable every so many seconds to warn the ships until we could get the horn back in operation again. After they tore the station down the bell disappeared. Some man . . . found it on a trash pile over at North Island. He rescued it and mounted it in his yard.[15]. . .

RW: An interesting thing about the foghorn, didn't it kind of drive you up the wall to hear it blasting off?

RF: Surprisingly, the only time it would bother me was when it went off. If I was in bed asleep and the foghorn would stop I would wake up for fear that something had gone wrong with the machinery. But, no, I knew it was necessary and I guess you finally get used to that kind of a noise.

RW: I understand that when you reported on Ballast Point, it was all sand and gravel and cobblestones, but apparently you got some dirt from somewhere and helped. Was this your idea?

RF: The Point was all cobblestones. There was hardly any dirt, just sand and the cobblestones. The Army had a stable down there adjacent to the lighthouse where they kept their mules stabled during the cavalry days. When this was all moved away, the ground was just empty with a few eucalyptus trees planted in there.

We wanted to be able to plant a lawn and make the place a little bit more [presentable]. The keeper [William Mollering] and I bought a [Studebaker] truck for $20. At that time they were building a highway to the Spanish Lighthouse on top of Point Loma so we got permission to get in line with the dump trucks up there and haul the dirt down to Ballast Point.

But first we had borrowed what they call a fresno,[16] which was a scraper that was pulled by a couple of mules. During the day we would go up and borrow the mules and the scraper. We scooped a lot of the rocks and stuff over to the side of the beach so we would have a place to put the dirt in. In other words, instead of cobblestones showing, it was all soil. We were later on



Boatswain's Mate Chief Steve Pozanac, officer-in-charge, working on the buoy dock at Ballast Point Lighthouse circa 1944. Pozanac arrived at the station in 1938 to replace head lighthouse keeper Bill Mollering. In 1946, Franke became head keeper when Pozanac retired. ***(SDMM collection, P-7033)***

able to plant grass. We had a garden where we could raise our vegetables and flowers.

RW: It made it much more livable.

RF: That's correct . . . When I became the officer in charge there we had swapped a sack of lobsters at the training station with a gardener to get some palm trees in one-gallon cans. I removed as many eucalyptus trees off of the station as I thought was safe, because, ordinarily, you would have to have permission from headquarters before you remove anything like that. But I planted enough palm trees around there to make it presentable.

Then my next inspection of the station I presented it to the officer who was inspecting and showed him the change that we had made so that he gave me permission to remove the rest of the eucalyptus trees. Now the palm trees are all over 15 feet high . . .

RW: Getting back to getting the dirt, as you mentioned, I kind of thought you would have gotten the dirt from down below, down by the Army base rather than up there on the road. I always thought there was a road up there, too.

RF: There was an old dirt road, but they were getting ready to pave that road to make it easier for the public to go out and visit the lighthouse. So they had a steam shovel up there that was hauling and lifting the dirt up into the trucks. This made it much easier as we would have had to shovel the dirt up into the truck otherwise. But this way they just dumped a load of that stuff into our truck. One shovelful was enough to fill the truck up.

RW: Was that about in the late 1930s that you did all of this?

RF: Yes, it was around the time that Ken was born, 1935-1936. The keeper [Mr. Mollering] there at that time was the one who relieved Mr. Engel who had retired in 1931. So it was sometime in between 1931 and maybe 1938 . . .

When Mr. Mollering died on the station from a cerebral hemorrhage, I was without a permanent keeper there for quite a while. They sent me a substitute, but I was running the station temporarily until a new keeper came down. I tried to become the officer in charge at that time, but [again] they said I was too young and there were more people who were older than I [was] who had seniority. So Mr. Pozanac came from Table Bluff Lighthouse in Eureka [California]. Shortly after that when the Coast Guard took us over, he made chief and I worked my way up to First Class Boatswain's Mate . . .

RW: You said something about Mr. Mollering coming in as head light keeper after Mr. Engel left. So what happened to him?

RF: He went up to get the light ready at sunset. We had to remove the cover off of the lens and open up the shades on the

windows. He dropped the lens cover and he reached down to pick it up, but as he came up he bumped his head on the table underneath the lens. He complained about a headache. He was a heavyset man and everything he did was very exceeding for him. If he tightened a nut on a bolt he would tighten it up until it almost stripped the threads. I guess when he picked that cover up he just came up with such force that he bumped his head, and it destroyed something in there because he died a couple of days later from a cerebral hemorrhage [while at] the station.[17]

RW: About what year was that?

RF: I don't remember offhand . . . Our son was about two years old and he was born in 1936, so it had to be around 1938.

RW: Then who took over the lighthouse?

RF: I was temporarily in charge with an assistant that came down from Point Hueneme.[18] His father was a lighthouse keeper up at Point Hueneme and he came down to be with me until this fellow from Table Bluff Lighthouse in Eureka came down to take over. It was a fellow by the name of Pozanac. He was in the Army at Point Bonita, and he got acquainted with the lighthouse keeper at Lime Point Lighthouse.[19] He got attracted to his daughter, Minnie, and they eventually got married. His name was Stephen Pozanac . . .

RW: How long did he stay in charge until you took over?

RF: He retired in 1946, I believe . . .

RW: This Steve Pozanac retired from the Coast Guard in 194[6] after an injury falling off a buoy.

RF: I was back in New London, Connecticut going to school learning and getting a designation after my name as a navigation specialist so that they could make me a chief, also.[20] While I was away Pozanac had gone out to work on a buoy one evening. He slipped and injured his back. After that he never felt right, so he finally retired. After he retired I was put in charge of the station.[21]. . .

RW: Before we jump ahead, did any crazy things happen between when you came down here [in] 1930 [and] 1939, like ships hitting on the beach or anything like that?

RF: There were always accidents... I can remember a number of times, and one time in particular, when there were these two fellows who had been out to sea fishing with their lady friends. They were over by the Coronado Hotel, and when they came back after dark, they didn't realize that the Zuniga jetty[22] was out there. Because of its age, a lot of the rocks had been washed off so that at high tide it was partly submerged. They came across the jetty, not knowing it, and they tore the bottom out of their boat.

I had just been relieved from my duty and I was getting ready to go to bed and I heard these people yelling for help. I didn't pay too much attention to it because up at Fort Rosecrans they used to have parties at the clubhouse and there was always a lot of noise and laughter and things going on there. Again, I heard it some more, so I went out to see what was causing it, and it was coming from out at sea. I got my boat and took my son along with me because I couldn't find the man who was supposed to be on watch.

I found the woman first; she was in a life jacket. I picked her up and brought her into the cutter that was lying alongside of the dock. I told them to call the air station because she had told me that there were three more people out there, another couple and her friend. The Coast Guard cutter called the air station and they sent out a helicopter with floodlights.

I had put her on the cutter and went back out again to look for her friend. I found him, but he was already unconscious. He had his wallet in his teeth, which was a good idea so that he wouldn't lose it. Ken took charge of the boat and I reached over the side and grabbed the guy and pulled him onto the boat with me and took him in.

In the meantime a helicopter came down and was flying around, but fortunately these other two people had drifted on into the bay. There was a barge anchored off of the fuel depot there. The Naval Electronics Laboratory had some instruments aboard it.



Boatswain's Mate First Class Radford Franke posing beside the fifth order Fresnel lens in the Ballast Point Lighthouse, circa 1948. The convex focal plane of this lens denotes it as a fixed light. Although this lens, designed for use in a harbor entrance, was only a fourth the size of a first order lens its beam could be seen 12 miles away, more than half the distance a first order lens could project. *(SDMM collection, P-7038)*

They got to the barge and climbed aboard it and they were able to call ashore from there to tell them that they were all right.

I got some kind of a notation from the commandant for my rescue action. I would have gotten a medal if I had jumped overboard, but just because I had pulled her aboard without jumping overboard, I just got a commendation for it.

And then there were a couple of times . . . One marine at the fuel docks evidently was sitting on the edge of the dock while he was on guard duty and fell asleep. The next morning they missed him; they couldn't find out where he was. About five days later I was up on the ladder cleaning the lens, getting ready for inspection and I saw this guy come floating down the bay. He had his overcoat on and his pistol on him and he was dead. So he was floating upright. I went out and pulled him in.

Then there were a couple of fishermen that I pulled in that had been drowned and washed ashore . . .

RW: [During that time] you were still working for the Commerce Department; you



Boatswain's Mate Chief Rad Franke, officer in charge of the Ballast Point Light Station, standing on Ballast Point looking out over the channel around 1955. ***SDMM collection P-7039)***

weren't working for the Coast Guard yet?

RF: Yes. In 1939 [President Franklin D.] Roosevelt merged the Lighthouse Service with the Coast Guard so all the lighthouse keepers that were young enough to pass the physicals were converted into the Coast Guard and given rates according to the wages that they were getting. After waiting awhile, although I had already been classified 1-A in the draft, I got a report from the draft board to come down to get assigned. I told them at the time I went down there that I was already in the Coast Guard, although I hadn't been signed up yet, that they had taken us over and were trying to decide what they were going to do with us. So I wound up as a third class coxswain. My [Lighthouse Service pay was] $100 a month[23] [including a furnished home for free. The Coast Guard classified our housing as] subsistence, deducted [it] from that [wage I'd been receiving], [and] what was left was [what my Coast Guard] pay scale would have been and that qualified me to be a third class boatswain's mate . . .

RW: Did they ever have any airplanes go into the water?

RF: During the War North Island was shared by the Army. The Army and Navy flyers used to compete with one another. After the war the Navy made a swap with the Army. They gave them Sunnyvale[24] for the other half of North Island, so they were flying P-38s out of there. They had these young kids, 21, 22 years old, as pilots of them. They were wild and every once in a while one of those planes would go into the bay, but I never had anything to do with any of the rescuing of them because they were pretty well monitored. So as soon as they went down the military had rescue work going on right away . . .

RW: When the War [World War II] started, wasn't there a net put across the channel?

RF: The submarine net first was put inside the Bay out by the fuel depot. They found out that that was too far in, so finally they mounted it, yes, right in front of Ballast Point, from Ballast Point over to North Island. That was because it was the narrowest part of the channel. Otherwise, where it was put originally, it made too long a span. The net would be closed from six o'clock at night to six o'clock in the morning.

That was another experience that I had after the War broke out. On December 7th



In 1957 Radford Franke's 27 years as a lightkeeper at Ballast Point came to an end when he retired from the U.S. Coast Guard. Pictured with Boatswain's Mate Chief Rad Franke (on right) are his wife, Marie, and their son, Ken, a cadet at the California Maritime Academy. (*Courtesy of Radford Franke*)

[1941] when all of the lights of the city were extinguished and there was nothing showing, they sent me out on the 83-footer to extinguish the buoys out at sea.[25] The boat would put me aboard a buoy and then drift away. Without any lights on it or anything, it was kind of frightening because I didn't know if they were going to be able to find me. I could imagine that there were Japanese submarines all around the place there. But I had to go out and put the lights out on the buoys, turn the gas supply off.

At the whistle buoy I had to tie a gunnysack around the whistle so that it couldn't be heard. There was no way of cutting the sound out because it [was] operated by the motion of the waves. But I did extinguish the light on the whistle buoy; I muffled [the whistle] by putting the gunnysack around it.

Did you ever know about those whistle buoys? There is a big long cylinder underneath the buoy. As it rolls up on a wave it would suck air up into the tube and when it came down between the waves, it would force the air up through the whistle. That is the way they would get the sound out of it. It wasn't mechanically made; it was all by nature itself. There was no machinery that operated it; it was just the motion of the waves that did the work.

RW: Was it a diaphragm-type of an affair?

RF: It had valves on it like the size of a tennis ball that when it went down it would compress the air under the tube and make it go up through the whistle rather than escape.

RW: When the War started all lights were extinguished all over San Diego and you said the lighthouse and the buoys were out. That kind of didn't leave you anything to do, did it?

RF: Except for general upkeep of the station. We had to keep the station in operation, that is, if anything went wrong, we had to get it back in operating condition again. Every Friday morning we would try our fog signal out to be sure it was working. We would give it a half-hour test. No, there was nothing as far as the lighthouse was concerned. Everything was secured.

RW: I came to San Diego in September 1941, and I remember that in December [and] January we thought that we were going to be invaded, [that] the Jap[anese] were right off our coast. There was a Japanese under every rock as a spy. Did you get that feeling down there at Ballast Point?

RF: When I had to go out and secure the lights on the buoys, yes, I did. I could just imagine that the submarines were all over that place . . .

RW: The net went in right after Pearl Harbor?

RF: That is true, but they had it on the inside of the bay.

RW: Was there any indication to you that there was going to be a war?

RF: Not really. No. It was a surprise to everybody when all of a sudden we discovered that Pearl Harbor had been bombed . . . But, we never were attacked. Fort Rosecrans installed some 19-inch rifles up on top of the hill.[26] They fired a couple of rounds just to zero the guns in, but those were the only shells that were ever fired out of there. After that, everything was done by air. The coast artillery was becoming a thing of the past . . .

RW: During the war years there were a lot of ships going in and out of the channel.

(Text continued on page 50)

REMEMBER THE MAINE! and Mine the Harbors

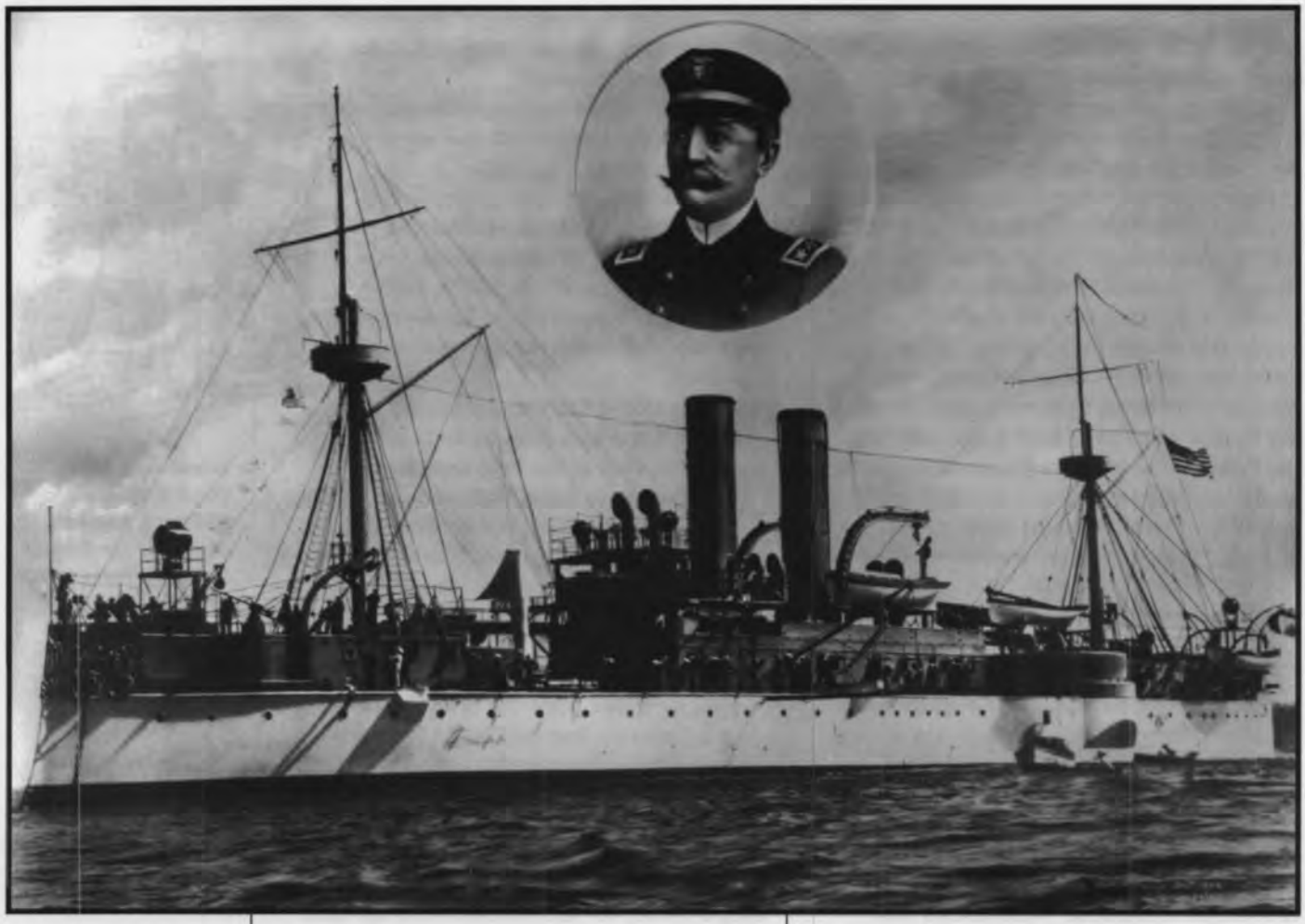
By Diane Cooper



The remains of the USS MAINE, Havana Harbor, as seen on February 16, 1898, the morning following the explosion that destroyed her. Captain Sigsbee felt that "although the war which followed was not founded on the destruction of the MAINE as a political cause, that disaster was the pivotal event [leading to] the conflict." *(Courtesy of Naval Historical Center)*

At 9:40 p.m. on February 15, 1898 a thunderous explosion shattered the quiet of Havana Harbor and destroyed the USS MAINE.[1] Witnesses not on board the MAINE reported that "at the moment of concussion a vast mass was seen to rise to a great height [but a] sudden and blinding light" made it impossible to discern the nature of that mass.[2] Within a few minutes the MAINE, with her forward section completely demolished and her afterpart relatively intact, sank below the surface of Havana Harbor, claiming the lives of two officers and 261 members of her crew.[3]

Two explosions of distinctly different character, separated by a very short but noticeable interval, occurred. Witnesses on board other vessels in the harbor heard "the noise of a shot [then] a few seconds later . . . a tremendous explosion."[4] Captain Charles Dwight Sigsbee, seated in his cabin located in the MAINE's after superstructure, described the explosion as "a bursting, rending, and crashing sound or roar of immense volume, largely metallic in character . . . followed by a succession of heavy, ominous, metallic sounds, probably caused by the overturning of the central superstructure and the falling of debris. There was a trembling and lurching motion of the vessel, a list to port, and a movement of subsidence."[5] Lieutenant John Hood, seated on the port side of the deck,



The USS MAINE at sea in 1896. Captain Charles D. Sigsbee, pictured in the inset, stated, "There were larger ships in the navy than the MAINE, but none were more delightful to command or to serve in." Sigsbee brought the MAINE to Havana in January 1898 to show the flag and protect American citizens and property following riots in the city. ***(Courtesy of Naval Historical Center)***

remembered a "big explosion, . . .I both heard and felt . . . that sounded and felt like an underwater explosion . . . that came from forward, starboard, [followed by] a second explosion."[6] According to men below deck it sounded like "a dull report, followed by the crashing of splinters [or] a jarring explosion - just one solid explosion, and the ship heaved and lifted . . . and then all was dark."[7]

> According to the official board of inquiry findings, submitted to President William McKinley on March 21, the forward part of the ship was lifted to a marked degree at the time of the first explosion, [which] was more in the nature of a report like that of a gun, while the second explosion was more open, prolonged, and of a greater volume. The second explosion was . . . caused by the partial explosion of two or more of the forward magazines of the MAINE.[8]

In his telegram to Secretary of the Navy John D. Long, Captain Sigsbee reported the vessel's sinking and suggested that "public opinion should be suspended till further notice."[9] Instead, the sinking of the MAINE lit the fuse of war as patriotic Americans everywhere found in this disaster their new rally cry: "Remember the MAINE! To hell with Spain!"[10]

Incensed by the reported abuses the Spanish military heaped upon the Cuban insurrectionists and by the gall of the Spanish minister in Washington, Senior Dupuy de Loma, who characterized McKinley as "weak and catering to the rabble," Americans demanded action.[11] The tidal wave of public sentiment washing through Washington threatened to remove McKinley and all other Republicans from office during the upcoming elections. Congress, despite hopeful news from the ongoing diplomatic negotiations between the American minister in Madrid, General Stewart Woodford, and the Spanish government, began speaking out in support of war.[12]

Finally, on April 11, two days after Spain conceded to American demands for an armistice and amnesty for the Cuban insurgents, McKinley bowed to public pressure and delivered a message to Congress requesting the "authority to use the army and the navy to

end hostilities in Cuba." One sentence in the President's message acknowledged Spain's concessions and suggested that Congress should give "just and careful consideration" to that fact.[13]

For eight days Congress debated McKinley's message. With passions running high, impromptu choirs of Congressmen sang renditions of "The Battle Hymn of the Republic," "Dixie," and "Hang General Weyler[14] to a Sour Apple Tree As We Go Marching On" in the lobby. On April 19, Congress passed a joint resolution declaring Cuba's freedom, demanding Spain's withdrawal from Cuba, directing the President to use armed force to insure the above, and disclaiming any intention on the part of the United States to annex Cuba. McKinley signed the joint resolution the next day, and on April 21, 1898, the United States officially went to war with Spain.[15]

Across the country Americans lined up for an opportunity to get in on the fighting and volunteer regiments and battalions offered their services to Uncle Sam. Military camps appeared complete with bivouacs, parade grounds, and drill sergeants while men marched through city streets to the cheers of local citizens. In California, the San Diego Chapter of the National Wheelmen's Association formed the "Wheelmen's Rifle Corps" and stood ready to serve as bicycle scouts and messengers in case of hostilities and art students in San Francisco organized an art exhibition and sale to benefit the war effort. Across the Bay in Oakland, soldiers staged mock battles on the hillside as doctors cared for the wounded and ill in Camp Merritt's field Hospital. Ships loaded with men and equipment left the port of San Francisco bound for the Philippines.[16] After thirty years of peace, the country embraced the idea of going to war.

While the American public and Congress whipped themselves into a frenzied hysteria for war, the chief engineers of the War Department refined and implemented plans to defend the country's important harbors against Spanish attack. Using the twenty-eight harbors identified in the Endicott report[17] as important ports of entry, they began allotting funds in 1896 to repair existing fortifications and build new ones at those sites. By the time war was declared, military-led work details of civilian volunteers were being assembled to fortify existing defenses by mining the harbor entrances. Along the Pacific coast only three locations – the mouth of the Columbia River, San Francisco, and San Diego – qualified as harbors worth mining.[18]

When the chief engineers identified these three harbors as significant and important components of the nation's defense, they took the first step toward creating a formidable and permanent military presence along the Pacific coast of the United States.[19] On July 4, 1897 plans for the defense of the Pacific coast were reported in the *San Diego Union.*

> It was told at the war department today that a battery of modern guns had been erected at San Francisco, that other defenses were being built, and that the city was fairly protected. Fortifications are also being erected at San Diego, and the officials are confident that that city is safe from attack. The mouth of the Columbia River is also supplied with defenses. Puget Sound is yet to be protected but work on the fortifications at that place are being pushed, and it is expected that they could be quickly put in condition in case of trouble.[20]

Less than a year later, the War Department increased the harbor defenses for the mouth of the Columbia River, San Francisco, and San Diego. Money for this defense build-up came from the National Defense Act of March 9, 1898. President McKinley allotted a total of $1,540,00 for the torpedo defense of the country and later supplemented that amount with an additional $50,000 for the purchase of mining materials and $300,000 for planting and maintaining the mine fields from the Deficiency Act of May 4, 1898. Some of the more important materials purchased with this money included "about 400 miles of single and multiple cable, 150 tons of explosives, 1,650 new torpedo cases, 44 electric search lights, 1,500 compound plugs for mines, 4,500 circuit closers and regulators, and 17 sets of casement-operating apparatus."[21] Except for the explosives, the Engineer Depot in Willits Point, New York purchased and distributed these materials to the designated harbors. Around the country work details of patriotic civilian volunteers assisted with the preparation and planting of the mines. To insure the safety of friendly vessels and maintain the mines a large fleet of tugs and boats, and numerous trained personnel, at an average daily cost of $3,000, was required. Both the U.S. Revenue Cutter Service and the U.S. Lighthouse Service furnished vessels and personnel to guard and maintain the minefields.



Wheelman's Rifle Corps militiaman. (Richard F. Pourade, *History of San Diego, The Glory Years*, p. 247. *Union-Tribune Publishing*, 1964.)



The view from above the gun batteries at Fort Rosecrans overlooking Ballast Point Lighthouse in 1910. The United States declared Point Loma a military reservation in 1852 and appropriated more than a thousand acres for defense purposes. During the 1870s the military considered building a gun emplacement for a 15-inch Rodman smoothbore cannon, but abandoned the idea due to a nationwide depression. In 1897, work commenced on the construction of Battery Wilkerson for the first of four 10-inch breech-loaded disappearing rifles. From these meager beginnings, San Diego grew in military importance. *(SDMM Collection, P2653)*

Of the three Pacific Coast locations, San Diego received the most profound and lasting benefits. The new fortifications constructed at San Diego's Point Loma military reservation established a permanent military presence at that site. In 1899, forty-seven years after the government set the area aside for the military, the Army named the area Fort Rosecrans. The 1898 threat of foreign invasion set San Diego on a new course, one that entrenched the military along the shores of San Diego Bay and ultimately turned it into a navy town.

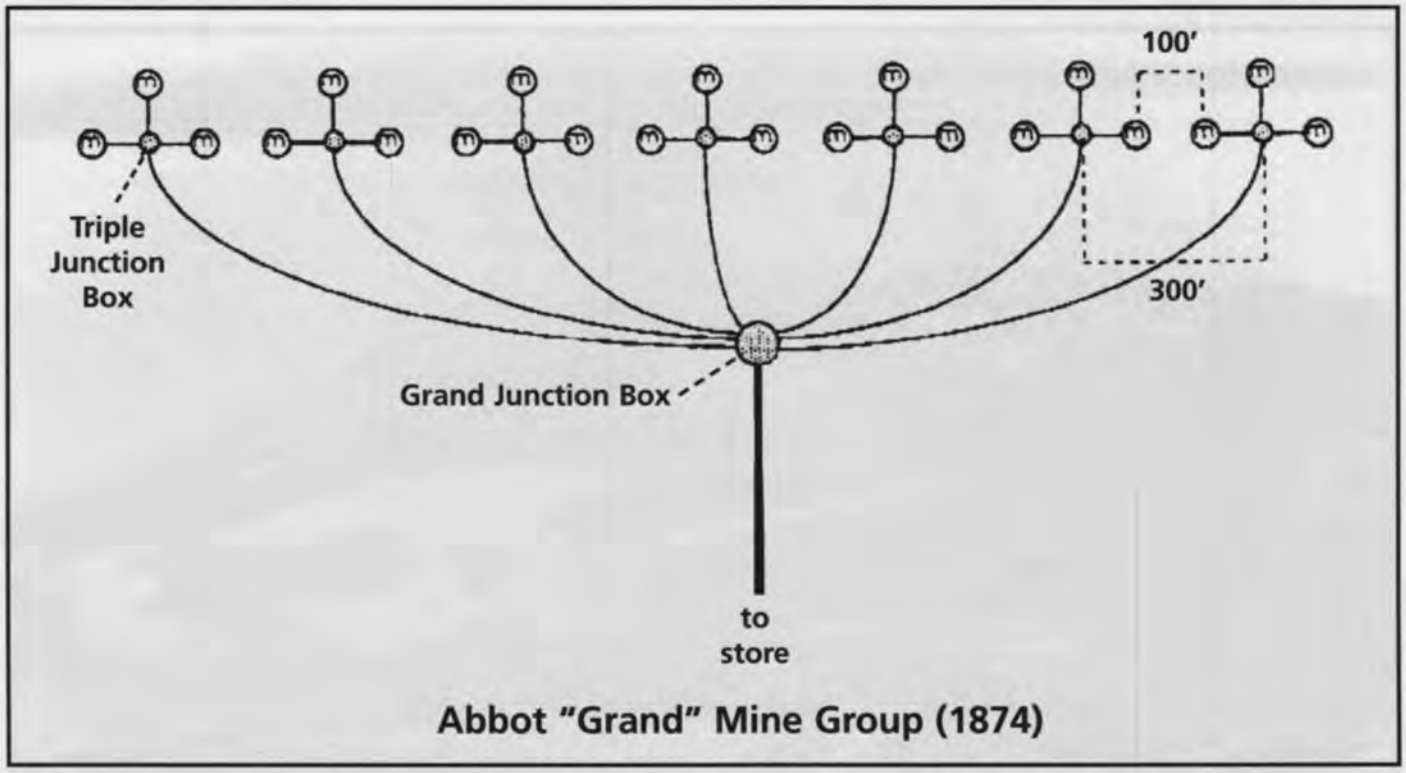
During the latter quarter of the nineteenth century, the fortification of the harbor entrance to San Diego was, at best, sporadic. Although Congress appropriated funds for the continuation of work on California harbor defenses, most of the money went to fortifying San Francisco. San Diego considered its port at least as important as San Francisco's, and sought congressional support to establish a permanent military post at Point Loma.

> San Diego, from its importance as a seaport and its nearness to the boundary of a foreign country, should be made a permanent military post . . . If there is any necessity of fortifying the harbor of San Francisco and maintaining troops there, there is an equally great, if not greater, necessity of doing the same thing at the harbor of San Diego.[22]

In February 1896, Senator White, a member of the Committee on Coast Defenses encouraged the San Diego City Council with the news that the city was on a defense bill pending before Congress. "The late war talk has doubtless resulted in awakening the country to its defenselessness . . .It must be remembered that the great business cities of the east are practically defenseless [with] nothing adequate to prevent the bombardment of New York, Philadelphia, Boston, Baltimore, etc."[23] Without the funding, however, all of San Diego's harbor defenses were merely ideas on paper.

With the increasing tensions between the United States and Spain, the War Department allotted $9,700 for the construction of a mining casement and a cable tank on San Diego's Point Loma.[24] An additional $6,300 allotment was made for the torpedoes and other equipment necessary to mine the harbor.[25] Although the original plans also called for and approved the construction of a torpedo storehouse, a lack of available funding postponed its construction.[26] At the same time work continued on four gun emplacements along Ballast Point. By mid-March the 10-inch breech-loading disappearing rifles were mounted and trained on the entrance to San Diego Bay. Six weeks later, workmen completed the construction of the mining casement and the cable tank.

Upon the completion of the gun emplacements, Major Charles E. L. B. Davis ordered Lt.



Abbot "Grand" Mine Group (1874)

James J. Meyler to organize a civilian volunteer corps of 120 able-bodied young men to assist with the mining of San Diego harbor.[27] On April 18, he addressed a gathering of forty-one patriotic citizens and explained his need for quick and careful volunteers. "A careless man, he said, might do more damage than all the warships Spain could bring here."[28]

Although no promise of monetary compensation accompanied Meyler's orders, he expressed his belief that the government would not leave the men who gave their services in this project unrewarded. He also assured them no "employer would discharge a man in his employ who was patriotic enough to assist his country in an hour of need."[29] Ed Fletcher, one of the volunteers, later claimed "I was paid $14.00 for helping put mines in San Diego Bay."[30] At the end of the meeting all forty-one men signed a pledge to "volunteer our services to the government to assist Lieut. J. J. Meyler, corps of engineers, U.S.A., in the submarine mining defense of San Diego harbor."[31] On April 20, following another call for volunteers meeting, an additional thirty-two men signed the pledge.[32]

Work commenced on May 3, when the volunteer carpenters reported to Ballast Point to build engine and dynamo houses and construct shelving in the mining casement[33]. Within the week the electricians joined the carpenters and began preparing necessary shore communications. Meyler's volunteer forces received unexpected reinforcements on May 11, when a sergeant and four privates of the engineer's battalion arrived from Willet's Point, New York.[34]

The cable used to mine San Diego harbor weighed six to eight tons per half mile section. On May 12, Meyler received four miles of the one inch diameter steel cable and his men immediately began the work of laying cable in the harbor entrance. At the time the newspaper reported 25 or 30 mines would be planted in the harbor entrance "to keep Spanish ships out of this harbor, in case a stray vessel flying that flag should attempt to pay the port a visit."[35]

Local speculation as to the number and locations of the mines began in April. The *San Diego Union* reported on the four systems used for mine deployment in harbors. Two of these systems, the detached groups and the self-acting mines, relied on the random placement of mines capable of self-detonation throughout the harbor. When a ship came in contact with on of these mines the metal in the hull completed an electric circiut within the mine and it exploded. Both of these systems virtually closed the harbor. The skirmish-line system used a large loop of single-conductor cable that began and ended in the mining casement. A short cable connected to a mine tapped into the main cable every 250 feet. The control panel in the mining casement was used to detonate these mines. The fourth harbor mining

Colonel Henry Abbot's grand mine group design allowed multiple mines to be laid in the harbor with only one power cable connecting it to the shoreside control panel. Designed in 1874, this system remained in use with few modifications until World War I. (Courtesy of Mark Berhow, *A Guide to Controlled Mines in U.S. Army Harbor Defenses*)



This view of Fort Rosecrans, taken between 1910 and 1915, shows the results of the harbor defense work done for the Spanish-American War. Starting on the extreme right, you can see the lighthouse wharf with the harbor pilot boat anchored offshore of the stables. The smaller white buildings along the shore, below and in between the two large white barracks, are (from left to right) the mining casement, the torpedo storehouse, the torpedo wharf, and the torpedo cable tank. The barracks housed the 68th Company, Coast Artillery (left) and the 115th Company, Coast Artillery (right). Built during the Spanish-American War, these buildings housed materials and equipment for harbor mining and the men assigned to harbor defense well into the 20th century. *(SDMM Collection, P3312)*

system, and the one many San Diegans hoped Meyler would use, was the grand mine group.

The grand mine group arrangement for controlled submarine mine fields was the most common layout used prior to World War I. Colonel Henry Abbot developed this system in the 1870s using the largest insulated multiple cable available in large quantities. The multiple cable connected the shoreside facility to an underwater grand junction or distribution box where Abbot connected each of the cable's seven single conductors to a single insulated wire. Each single wire ended in a triple junction box, which allowed Abbot to place three mines at each junction box, thus creating seven groups of three mines.[36]

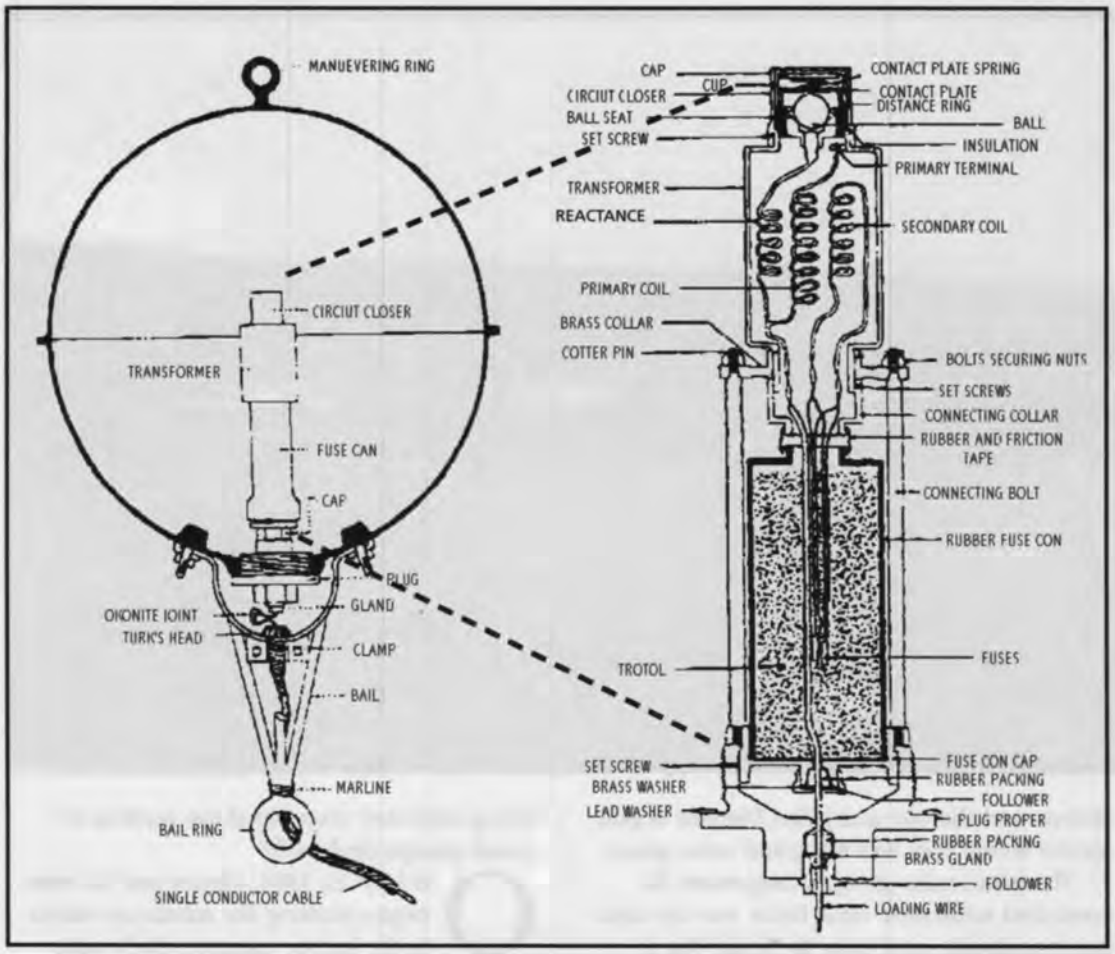
The mine groups were deployed in a triangular configuration with a minimum of 100 yards between them. This meant a grand group covered approximately 2,000 feet or four tenths of a mile. On shore, a panel in the mine casement controlled all 21 mines of the grand group. Originally, activation of one mine in a group resulted in the activation (detonation) of all three mines in that group. Subsequent improvements included the use of two 20-position telephone-type selector switches, which allowed for the selective control and detonation of each mine in the grand group.[37]

Abbott's design required a minimum of three lines of defense, each consisting of a sufficient number of grand mine groups to secure the harbor entrance. The size of the channel being defended determined the number of grand groups deployed.[38]

On May 23, 1898, Meyler and his men began planting the submarine mines in the harbor entrance. Each mine weighed 1,500 to 1,800 pounds, including the anchor, and contained approximately 100 pounds of dynamite, "a sufficient amount of energy to raise the whole outfit with case, along with a good-sized part of the ocean and a Spanish cruiser or two."[39] Using the tug SANTA FE[40] to sink the mines, Meyler's crew planted six mines on May 23 and nine more on May 24, creating five groups of three mines each. Special buoys, resembling channel markers, marked the exact location of the mines while regular channel buoys marked the open passage.[41]

With the harbor mined, the Secretary of War's wartime navigation regulations went into effect. These regulations closed San Diego harbor everyday between 8:00 p.m. and 4:00 a.m. and discontinued the navigational lights at Ballast Point Lighthouse and on the channel beacons. The new rules regulated the speed and course allowed on the Bay, promised safe passage for friendly vessels, and threatened to fire upon unauthorized or hostile vessels. Two Napoleon guns were mounted at Ballast Point and trained on the mine field to enforce that threat.[42]

Strict patrol of the entrance by a government tug or cruiser was supposed to begin as



This illustration of a buoyant controlled US Army spherical mine type is similar to the mines planted in the San Francisco and San Diego Bays in 1898. Few changes in mine design occurred between 1880 and 1940. The circumference of the mine was used to identify it, hence a 32-inch circumference mine was known as a "No. 32" mine. (Courtesy of Mark Berhow, *A Guide to Controlled Mines in U.S. Army Harbor Defenses*)

soon as the mines were laid. When the promised vessel failed to arrive, Meyler attempted to patrol the harbor entrance by placing men in anchored boats outside the mine field. This arrangement proved unsatisfactory and on June 1, Lt. Meyler hired Captain J. L. Paulsen to patrol the harbor entrance outside the mine field in the launch URANIA. Nearly a month later, the United States Revenue Cutter CORWIN finally arrived and took over the harbor entrance patrol.

Major Davis received orders to remove or explode the mines on August 17, 1898. Once again he placed Meyler, recently promoted to captain, in charge of the project. Speaking to newsmen, Colonel Charles R. Suter, division engineer of the Pacific Division, said the following about the mine's removal.

> These mines will not be removed by explosion, as some people may suppose but the electric current will be disconnected and then they will be [removed] and stored away for future use. They are very expensive, and it would be a foolish waste of money to explode them. These mines can be kept for many years. They were brought here from the East about six years ago.I suppose the order for removal of the harbor mines has been brought about by the navigators in the Eastern harbors, where the greatest caution has to be exercised by the large number of vessels coming and going.[43]

Meyler prepared to take up the mines, remove their charges, and then clean, paint, and store all the mining materials for future use. The removal of the mines, however, was delayed due to the unavailability of the SANTA FE, the only tug in the harbor capable of doing the job. The project was even further delayed when a newspaper account of an accident that occurred on the Mississippi River while removing mines increased the local marine insurance rates for vessels engaged in such work. Finally, Meyler and the owners of the SANTA FE entered into a work contract agreeable to both parties in mid-September. On September 21, Captain Meyler and a crew of fifteen men began the dangerous task of removing the mines.

Planting and removing these mines required the utmost care since the dynamite used in them contained 75% nitroglycerine. Commonly

dynamite only contained 40 to 60% nitroglycerine. The additional nitroglycerine made these mines extremely dangerous and deadly. In an attempt to minimize the danger involved in disarming the mines, the plug that held the dynamite in place was removed from a distance by "an ingenious contrivance" that used electricity.[44]

Meyler's men completed the mine removal without any mishap in three days. The only incident of note occurred on September 22 when the men "were considerably astonished . . . upon taking up one of the torpedoes to find that it had a great dent in its side, having evidently been run into by some vessel entering or leaving this port." An unidentified vessel had experienced an unknown miracle during the war months when it collided with a mine in San Diego Bay without detonating it.

After removing the mines, cables, and other equipment from the Bay, Meyler's men removed the compound plugs, annular rings, and charges from the cases. They cleaned and painted the cases and junction boxes before storing them in the new torpedo storehouse with the rest of the materials, appliances, and instruments. The explosives were safely stored in an underground magazine. [45]

Although the threatened Spanish invasion along the Pacific coast never materialized, it had a long-lasting influence on local developments. Congress finally recognized the importance of San Diego harbor and funded the installation of fortifications at its entrance. Though the number of troops stationed at Fort Rosecrans decreased in the succeeding decade, the Fort remained occupied and the harbor artillery defense remained on active stand-by. San Diego entered the twentieth century with federal recognition as an integral part of the Pacific Caostal defense. And once recognized, the city never looked back. Instead it looked ahead and saw its future bound to the fortunes of the armed services. From the volunteer actions of a few dozen local residents intent on doing their part to "remember the MAINE," San Diego grew to become home to the Navy and the Marines.

Diane Cooper received her MA in Maritime History and Nautical Archaeology from East Carolina University. A published author, she currently serves as one of the editors of the Mains'l Haul. *She is also the Curator of Collections at the Maritime Museum of San Diego.*

NOTES

1 Captain Charles Dwight Sigsbee, commander of the MAINE, wrote the following description of his vessel. "The MAINE and the TEXAS were the first of the modern steel battle-ships built by the United States. She was designed at the Navy Department and built at the New York navy-yard. Her last keel-plate was laid September 17, 1889; she was launched November 18, 1890, commissioned September 17, 1895,and left the navy-yard at 10 a.m. on November 5, 1895, drawing 22 feet 1 inch forward and 21 feet 8 inches aft. When fully supplied with coal and provisions she was 'down by the head.' The MAINE differed greatly in appearance from all other vessels of the United States Navy. Instead of one superstructure, as commonly seen, she had three, forward, after, and central. All were the same breadth transversely. Their sides at the bow and stern were formed by the continuation upward of the outside skin of the ship. Along the sides of the superstructures there was a clear deck-space affording enough room for formations and drills. Her hull was white to the rail; the superstructures, funnels, and masts, and all permanent fittings above the rail except the pilot-house, were dark straw-color. The boats and bower-anchors were white; the guns and search-lights were black. There were larger ships in the navy than the MAINE, but none were more delightful to command or to serve in. Her quarters were ample for everyone, . . . The members of the crew were berthed chiefly in the forward and central superstructures, and on the berth-deck forward of the junior officers' quarters. This distribution of the crew, when considered in connection with the region of the explosion, explains the loss of so many of the crew as compared with the officers. The quarters of the officers were aft; mine in the after-superstructure . . . The MAINE had two 'winged' or 'sponsoned' turrets; that is to say, they were at the sides and the projected a few feet beyond the hull. They were placed between the superstructures, one on each side of the ship, . . . In each were two ten-inch breech-loading rifles. In addition, she carried six six-inch breech-loading rifles, besides seven six-pounder and eight one-pounder rapid-firing rifles. She had four above water torpedo-tubes on her berth-deck. The following are statistics relating to her: extreme length, 324 feet; beam, 57 feet; displacement, 6650 tons;

indicated horse-power, 9290; trial speed, 17.5 knots." Captain Charles Dwight Sigsbee, "Personal Narrative of the MAINE," *The Century Illustrated Monthly Magazine*, vol. 52, no. 1 (November 1898), pp.76-79. See also Fred T. Jane, *Jane's All the World's Fighting Ships, 1898*, London: Sampson, Low, Marston and Company, 1898), p. 203.

2 Harry D. Mawson and J. W. Buell, *Leslie's Official History of the Spanish-American War, A Pictorial and Descriptive Record of the Cuban Rebellion, the Causes that Involved the U.S., and a Complete Narrative of Our Conflict with Spain on Land and Sea*, (Washington, DC: War Records Office, 1899), p. 66.

3 According to Captain Sigsbee, at the time of the sinking of the MAINE she carried a crew of 328 plus 26 officers. Sigsbee also listed that 254 men were lost outright and seven men died later from their wounds for a total of 261 deaths among the crew. Captain Charles Dwight Sigsbee, "Personal Narrative of the MAINE, Part II," *The Century Illustrated Monthly Magazine*, vol. 52, no. 2 (November 1898), pp. 241 and 248.

4 Sigsbee, "Part II," p.249. Sigsbee quotes the testimony given by both Captain Frederick G. Teasdale, master of the British bark DIVA, and Mr. Sigmund Rothschild, a passenger on board the CITY OF WASHINGTON to the Board of Inquiry.

5 *Ibid.*, p. 242.

6 *Ibid.*, p. 250.

7 *Ibid.*, pp. 253-254.

8 *Leslie's Official History*, p. 66.

9 *Ibid.*

10 Thomas A. Bailey, *A Diplomatic History of the American People*, NY: Appleton-Century-Crofts, Inc., 1955, p. 503.

11 *Leslie's Official History*, p. 62. In Bailey, *Diplomatic History*, p. 500, this phrase is also been translated as "a bidder for the admiration of the crowd."

12 See Diane Cooper, "Diplomat and Naval Intelligence Officer: The Duties of Lt. George L. Dyer, U.S. Naval Attaché to Spain," in *Crucible of Empire, The Spanish-American War and Its Aftermath*, James C. Bradford, editor, (Annapolis: Naval Institute Press, 1993), pp. 1-22.

13 Bailey, *Diplomatic History*, p. 508.

14 Spain assigned the task of suppressing the Cuban uprising to General Valeriano Weyler. In February 1896, General Weyler established concentration camps where he incarcerated revolutionists, sympathizers, and neutrals with little or no cause. Nicknamed the "Butcher," Weyler imprisoned men, women, and children in camps that fostered disease, semi-starvation, and ruthless beatings. Newspaper owners Joseph Pulitzer and William Randolph Hearst played on American sympathies for the rebels with their "yellow journalism." Long before the sinking of the MAINE, Weyler and the Cuban situation aroused America's sense of justice and desire for war.

15 Bailey, *Diplomatic History*, p. 509-510.

16 See Arthur Ribbel, "Spanish-American War Brought San Diego Glory," *San Diego Union*, January 13, 1985; Richard F. Pourade, *The History of San Diego, The Glory Years*, (San Diego: The Union-Tribune Publishing Company, 1964), p. 247; Mrs. Henry C. Vacher's Spanish-American War Scrapbook compiled from San Francisco newspapers, no page numbers, in the Maritime Museum of San Diego's Archives and Manuscript Collection.

17 In 1885, President Grover Cleveland appointed civilians andmembers of the Army and Navy to the "Board on fortifications or Other Defenses." Headed by the secretary of War, William C. Endicott, the board studied the coastal defenses of the country and, in its January 1886 report, recommended 27 prinicipal ports, arranged in order of importance, that should receive fortifications. Since the board became known as the Endicott Board, the report it submitted became known as the Endicott Report.

18 House, *Annual Reports of the War Department, Report of the Chief of Engineers*, pt. 1, 55th Cong., 3d sess., 1898, H. Doc. 2, p. 12.

19 Prior to the Spanish-American War minimal fortifications existed at these locations. Following the 1868 deeding of one thousand acres of land on Point Loma to the federal government, San Diego began waiting for the military to take over the area. In the 1870s a series of appropriations were promised and fought for but never materialized. The Endicott Board, chaired by the Secretary of War, William Endicott, selected San Diego as one of 27 sites recommended for harbor defense in 1887. Listed according to importance, San Diego ranked 21st out of the 28 locations. Eight years passed before Congress funded the construction of a battery of four 10-inch disappearing rifles plus a mine-storage casement at San Diego's Ballast. Permanent stationing of first troops at the fort occurred in March 1898, as a response to the threat of Spanish invasion. See Barry Alan Joyce, *A Harbor Worth Defending, A Military History of Point Loma*, (Cabrillo Historical Association, 1995), pp. 11-19. According to the Chief of Engineers, defenses at the mouth of the Columbia River prior the war included two "works of old type," neither of which was permanently manned until 30 June 1898. All the new and expanded emplacements resulted from the threat of war and invasion. House, *Report of the Chief of Engineers*, pt. 1, 1898, p. 31.

20 "Pacific Coast Defenses. A Strong Fleet and Ample Fortifications Are Promised," *San Diego Union*, July 4, 1897, 4:3.

21 House, *Report of the Chief of Engineers*, pt. 1, 1898, p. 12.

22 *San Diego Union*, October 3, 1898, 3:2.

23 "Harbor Defenses - Senator White Sets Forth the Status of San Diego," *San Diego Union*, February 2, 1896, 5:3.

24 A mining casement was constructed to house the oil

engine and other machinery required to operate the harbor mines. The casement also housed the control panel that allowed manual detonation of the sumerged mines. The cable tank was able to store the submarine cables in a wet environment when the cables were not in use. Other single and multiple cables that did not require wet storage, were generally stored in the mining casement.

25 The term "torpedo" originally referred to explosive charges moored in the sea, or underwater mines. The first use of naval mines for harbor defense occurred during the Crimean War (1854-1856). Invented by M. Jacobi, these mines used a chemical fuse to mechanically fire on contact. The mines were always moored and, by international agreement, they were required to automatically become safe in case they broke loose. Two main types of mines existed in 1898: (1) "observation" or "controlled" mines fired electrically from the shore, and (2) "contact" mines activated when struck by a ship. Admiral David Farragut immortal words "Damn the torpedoes and full steam ahead!" referred to the mines planted to defend Mobile Bay during the Civil War.

26 Inside the torpedo storehouse large shelves or platforms were built to hold the torpedo cases (the exterior metal shells that encased the explosives and mechanical parts of the mine). Usually this building also contained an instrument room and an office.

27 The men stationed at the mouth of the Columbia River and in San Francisco received orders to plant mines at those locations as well. It is unclear whether either of those locations enlisted the assistance of civilians in this work. Between April 1898 and June 1898 the Columbia River fortifications, under the direction of Major Walter L. Fisk, accumulated materials, constructed buildings, installed apparatus, procured explosives, and laid cable in preparation of mining the river's mouth. They never planted any mines. In San Francisco, Lt. Francis R. Shunk led the work detail that procured all the necessary materials, equipment, and supplies, and planted three grand mine groups as the Bay's first line of defense.

28 "To Mine The Harbor. Company of Volunteers Organized For the Purpose," *San Diego Union*, April 19, 1898, 5:1.

29 *Ibid.*

30 Ed Fletcher, *Memoirs of Ed Fletcher*, (San Diego: Pioneer Printers, 1952), p. 677. Ed Fletcher served as a California State Senator.

31 *San Diego Union*, April 19, 1898, 5:1.

32 "Men Respond Readily, Lieut. Meyler's Company of Volunteers Constantly Increasing," *San Diego Union*, April 21, 1898, 5:3.

33 When the men reported to work at Ballast Point, Meyler administered a special oath devised for these volunteer corps that bound them to faithfully serve the government and to remain silent about the work they performed. See "Volunteers Meet, Carpenters To Go To Ballast Point Today With Lieut. Meyler," *San Diego Union*, May 3, 1898, 5:2.

34 *San Diego Union*, May 3, 1898, 5:2; "Planting The Mines, Explosives to be Prepared Today at Ballast Point," *San Diego Union*, May 11, 1898, 5:4; and "Mines To Be Laid, All Material for the Work Now at Ballast Point," *San Diego Union*, May 12, 1898, 5:4.

35 *San Diego Union*, May 12, 1898, 5:4.

36 Mark Berhow, *A Guide to Controlled Mines in the U.S. Army Harbor Defense*, 1997, p. M-5 and M-6. As conductor cables improved it became possible to eliminate the smaller junction boxes and attach 19 or more mines directly to the distribution box. This system was used during WW I and II.

37 *Ibid.*, M-6.

38 *Ibid.* Although Lt. Meyler did not plant a grand group in San Diego Bay, Lt. Shunk planted three grand groups in order to complete one line of defense across the entrance to San Francisco Bay.

39 "Planting the Mines, Important Work of Defense to be Performed Today," *San Diego Union*, May 23, 1898, 5:3.

40 Christian Telson built the tug SANTA FE at his San Diego yard for John D. Spreckels in 1888. The twin-screw tug was 68 feet 3 inches (length) by 16 feet 3 inches (beam) by 6 feet 7 inches (depth) registered 51 gross tons and 25 net tons. She worked on the San Diego Bay for at least thirty-three years and assisted scores of well-known vessels visiting the bay. In July 1905 the SANTA FE rushed to the aid of the USS BENNINGTON after she exploded and towed her toward shore where she was beached in shallow water.

41 House, *Report of the Chief of Engineers*, pt. 1, 1898, p. 777, and "Mines In The Harbor, Dynamite Floats in the Channel Near the Entrance," *San Diego Union*, May 25, 1898, 4:3.

42 *San Diego Union*, May 23, and House, *Report of the Chief of Engineers*, pt. 1, 1898, p. 778.

43 "Harbor Mines To Come Up, Order for Their Removal as There is No Longer Any Fear of a Spanish Attack," (newspaper, date, and page unknown), Mrs. Henry Vacher's Spanish-American War Scrapbook, SDMM Manuscripts and Archives Collection.

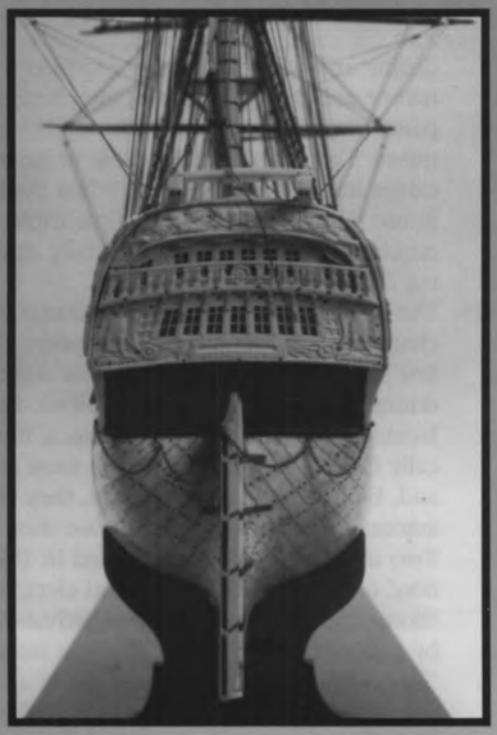
44 See "On the Waterfront," *San Diego Union*, September 20, 1898, 3:2; September 21, 1898, 3:4; September 23, 1898, 3:2; and "Mines Taken Up," *San Diego Union*, September 24, 1898, 3:4.

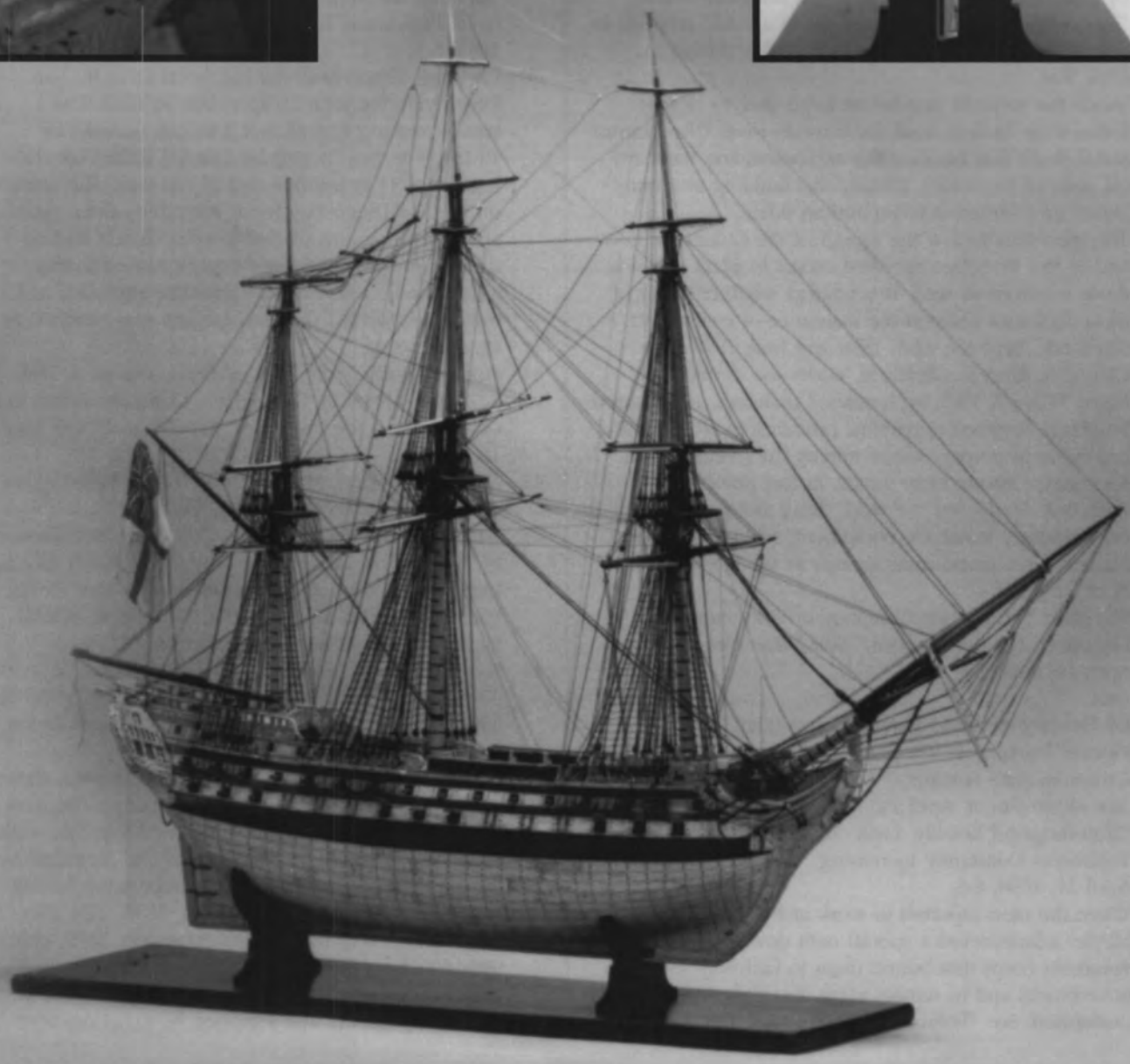
45 House, *Annual Report of the War Department, Report of the Chief of Engineers*, pt. 1, 56th Cong., 1st. sess., 1899, H. Doc. 2, p. 979. It is assumed that this work was done in strict compliance with the "Regulations for the Preservation and Care of Submarine Mining Materials" issued on February 14, 1898. See also House, *Report of the Chief of Engineers*, 1899, pages 999-1000 for a detailed description of the methods used at the Columbia River fortification to store their mining equipment and supplies.



The Marvelous World of Miniature Ships

By Bob Crawford







Prisoners at Portchester Castle built the model of the LE VENGEUR DU PEUPLE in 1794. These photos show the LE VENGEUR prior to restoration. (Left: details of port gallery. Center: stern. Right: figurehead.) This French 74-gun ship of the line served as an escort for a grain convoy from the United States bound for the besieged French mainland during the last week of May 1794. The British fleet, under the command of Admiral Howe, damaged six ships and sank the LE VENGEUR off the coast of Brest, France. *(Courtesy of Michael Paris, photographer, Vancouver Maritime Museum)*

Imagine, if you will, an early man attempting to describe to someone his crossing of a river or lake using a log. He reaches to the ground for a stick to depict his vessel and uses his fingers to describe how he straddled the craft and propelled himself from one point to another. An event such as this was the beginning of ship modeling as we now know it: the practical application of scale to the reproduction of larger objects in miniature.[1] Through time ship modeling has evolved into a craft that offers a glimpse into earlier cultures and civilizations, helps define the technology of the sea, documents the history of man's relationship to and dominance over the sea, and depicts the aesthetic beauty of a ship. Only the imagination and creativity of the ship models' artisans limits the uses, past and present, of this craft.

Ship or vessel models have been built for at least 5,000 years. The earliest known models still in existence, clay Bronze Age models, depict crude canoes and rafts.[2] These simple representations of the types of craft used by early man show little real detail. More works of art than sources of technological documentation, they still provide a wealth of information - original use, building techniques, types of materials used - to the educated eye. Whether man built these for aesthetic reasons or as toys for children remains unknown. Their existence, however, suggests the important role these crafts played in the lives of their makers.

Egyptian models, on the other hand, show a wealth of detail. These models preserved many of the construction details and building techniques of the Egyptians as well as the artistic embellishments noted in Egyptian archaeological objects. Archaeologists discovered some of the best known examples of Egyptian models in the tombs of Tutankhamen and Mehenkvetre, the Chancellor and Vizier of the Pharaoh Mentuhotep. These models represented vessels used in the transportation of stone along the Nile during the construction of the great pyramids, simple transport and fishing vessels used in the general commerce of the region, and the spectacular ceremonial barges of Egyptian royalty.[3] While their precise purpose remains a mystery, the presence of these models in the tombs of royalty attests to their value as works of art, ceremonial objects, and functional representations of Egyptian knowledge and technology. Perhaps the models included in the crypt helped the deceased travel to the next world. Perhaps they represented the wealth and prestige of the deceased. Regardless of their original purpose, the knowledge of Egyptian culture gained today through the study of these models cannot be underestimated. At the same time their artistic beauty and value as works of art stands unchallenged.

The votive models found in churches throughout Europe were generally construct-



USNA Model No. 34 – Unidentified British 70-gun ship of c.1730. View of the interior of the captain's cabin, or "Great Cabin," located at the ship's stern on the upper deck. Note the decorative wall panelling and the ornate design of the windows, or "lights" in the screen bulkhead to the right (rear). The hinged door there opens onto the captain's open-air stern walk. The doorway in the center background leads to the starboard-side quarter gallery which housed the captain's privy. The checkered floor represents a painted canvas which served both to decorate and protect the deck of the Great Cabin. Digital photo taken by inserting a 4 mm, 30 degree arthroscope through a portside upper deck gunport. ***(Courtesy US Naval Academy Museum)***



ed by seaman *ex voto*, as completion of a vow, such as "get me through this mess, God, and I'll build a model for the church in tribute."[4] These crude models have been built by sailor craftsmen and studied for centuries as depicting the evolution of sail through the ages. Noteworthy because of the inclusion of technological improvements in equipment and our ability to date the models through the records of the churches where they reside, they provide documentation of nautical advances during the great age of sail. One of the earliest known examples of a votive model dates back to the 15th century and resides in Museum Prins Hendrik at Rotterdam.[5]

Probably the most highly prized, emulated and studied models in existence today are the "Admiralty" or "Dockyard" models of 16th through 18th century England.[6] Exactly why these models were built remains a subject of debate. For many years historians believed the models were built for the Admiralty Board, those individuals making high level naval decisions, for their consideration when building new ships. Even today many people have difficulty visualizing the finished three-dimensional objects when viewing two-dimensional drawings. Perhaps the models were used as three-dimensional "plans" of these proposed vessels or, in some cases, proposed modifications to existing vessels. Recent developments support this theory. At the National Maritime Museum of Greenwich, England, and the Colonel Henry Huddleston Rogers Collection at the U.S. Naval Academy, Annapolis, Maryland,[7] curators employed fiber optic technology to explore the interiors of some of the finest examples of Admiralty models in these two institutions' collections. They inserted endoscopes[8] through hatches, gun ports or other such openings and toured their way throughout the ships' interiors. This tour revealed such marvels as parquet flooring, working helms and tillers, working chain pumps, intricate cabinetry, and marquetry inlays in bulkheads and furnishing throughout models dating back two or more cen-

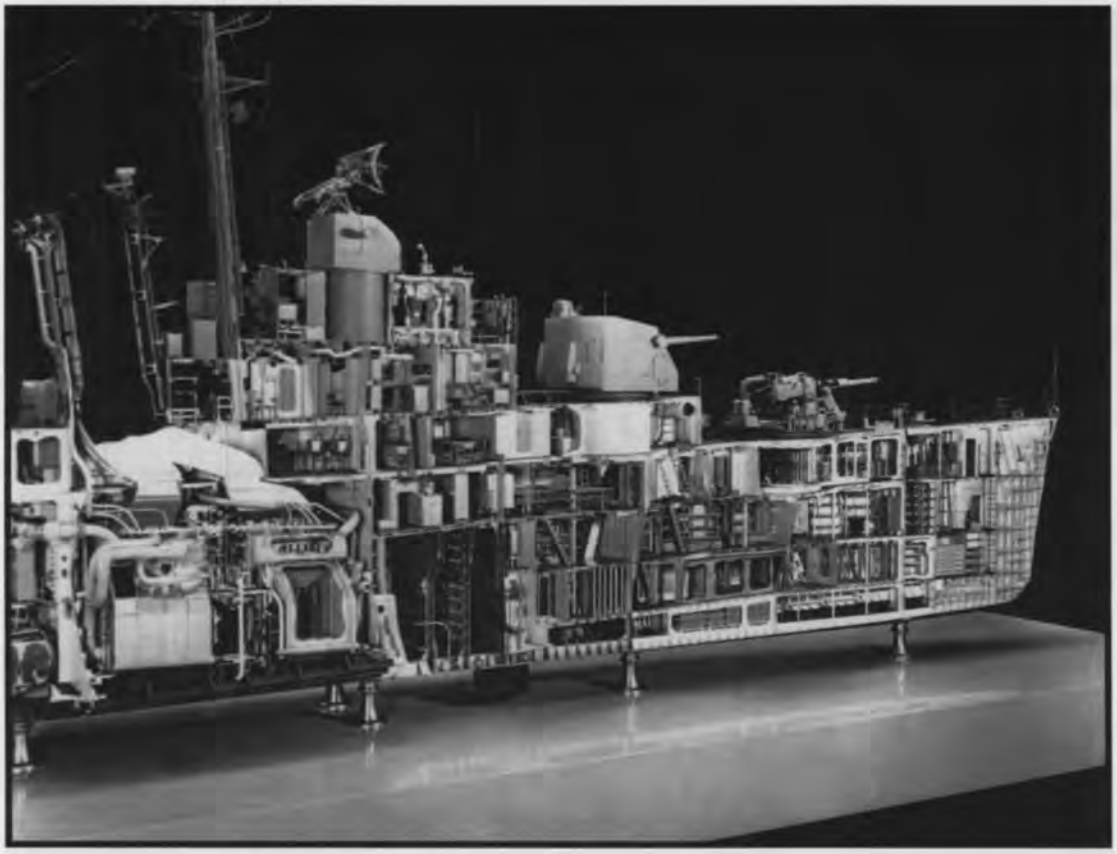


USNA Mode No. 5 – Unidentified English 60-gun ship of c.1700 (possibly the EXETER of 1697). View of the lower portion of the fore jeer capstan, situated on the gun deck. The double staircase leads to the main hatch on the upper deck above. The modeller left much of the decks unplanked in order to reveal the frame (consisting of beams, ledges, and carlings) beneath. This photograph was taken by inserting a 10 mm, 0° laparoscope affixed to a 35 mm camera through a starboard-side gunport and pointing slightly aft. The photographer is Mr. Richard Bond. *(Courtesy US Naval Academy Museum)*

turies.[9] The craftsmen who built these intricately detailed interiors hundreds of years ago could no more foresee the technology of the endoscope than they could see a man actually walking on the moon. And yet they modeled interiors destined to never again see the light of day. Why build in such details, unless it was to show someone, as construction proceeded on the ways, how the development of a ship progressed from one deck to another?

Some of the approximately 122,440 sailors captured and incarcerated between 1803 and 1814 during the Napoleonic Wars produced prisoner-of-war models.[10] As the War progressed, the French Navy drafted many craftsmen, jewelers, coopers, smiths, and other skilled laborer. When captured, these craftsmen formed the nucleus of an industry that, incorporating their knowledge as sailors and mariners and responding to their living conditions within the prisons, produced some of the most remarkable models ever seen. Prisons and prison hulks (decommissioned ships stripped of sailing gear and anchored out of reach of shore capable of detaining up to 900 prisoners) housed seaman prisoners in unimaginable conditions for the duration of the War.[11] In order to improve their conditions and rations, the prisoners developed an industry that did not compete with local tradesmen.[12] They manufactured models for sale to local patrons. While these models lacked the technical details of Admiralty or Dockyard Models of the same general period, they exhibit remarkable artistry and craftsmanship produced under the most difficult of circumstances and conditions.

One of the first obstacles encountered by the prisoners was obtaining a source of materials since authorities frowned on tearing the ship apart for wood to use in model construction. Initially little money or means to buy such materials existed. They turned to the one source of construction material available to them in abundance, the soup bones that came in their rations.[13] Prisoners carefully milled dried bone into various dimensions,



This cut-away view of the Gibbs and Cox model of USS AGERHOLM (DD-826) shows the extraordinary detail that went into this Gearing Class model. Note the approximately 400 boiler tubes visibile in the Babcock and Wilcox "M type" boiler in the engine room aft of the bridge. Also note the ready room just forward of the bridge on the main deck. ***(Courtesy of U.S. Naval Academy Museum)***

which the shipwrights then carved and manipulated into frames, beams, planks, knees, and other necessary structural components. Other tradesmen turned guns, built gun carriages, carved intricate figureheads and transom carvings, built masts, and yards and all of the associated gear for ships.[14] Skilled craftsmen walked[15] human hair into the various scaled sizes of ropes and lines required to rig these vessels. In many instances the models included articulated gun decks that, through the use of an ingenious cam and pulley action, allowed the entire gun deck to shifted from side to side. This gave the appearance that as one side of the ship's guns were "run out" the other was withdrawn.[16] Once the prisoners sold some of their early models, money became available for them to purchase additional rations, improve their living conditions, and to purchase additional tools and materials for future construction. Highly prized and extremely valuable, even the simplest of these models currently sell for $50,000 or more.[17]

A splendid example of early 20th century model construction resides aboard the San Diego Maritime Museum's 1898 steam ferry BERKELEY. Built for the U.S. Navy by Horace E. Boucher, a French-born Naval architect and model builder employed by the Navy, the USS CALIFORNIA / USS SAN DIEGO serves as an exquisite example of the time, effort and craftsmanship of the "modern" model shipwright.[18] Boucher built the hull of sheet metal over a wood frame and used India ink to draw the weather decks, complete with the proper "nibbing" and joinery technique, in minute detail. He incorporated exquisite machine work in the guns, boats and other small detailed fittings. Boucher's attention to detail earned him the reputation as the master of his age. He went on to found Boucher Models, predecessor of today's BlueJacket Shipcrafters, one of the finest manufacturers of scale model ship kits and fittings. For many years they supplied the Navy with "builder's models" of significant vessels in active service.

Gibbs and Cox models are the epitome of modern ship model construction, with virtually every vessel the firm ever designed for the US Navy represented in the finest detail imaginable.[19] One prime example of the detail and craftsmanship of Gibbs & Cox is the model of the USS AGERHOLM (DD-826)[20] now residing in the engineering building at the US Naval Academy at Annapolis, Maryland. During World War II, the United States built over



Inset: This Close-up of the STAR AND STRIPES show the mirror-image construction of the cockpit and Gardiner's attention to detail. Note the compasses, computer dials, and the block on the traveler. *(Courtesy of John Wright)*

The final match of the 1987 America's Cup races, held in Perth. Australia, featured the challenger, *KOOKABURRA*, against the defender, *STAR AND STRIPES*. These models, built by Ken Gardener, are part of the Dennis Conner America 's Cup exhibit currently on displayed at the Maritime Museum of San Diego.

100 Gearing Class destroyers, designed by Gibbs and Cox, at a cost of $17 million per ship.[21] For each of those destroyers, Gibbs and Cox built a highly detailed model. The model of the Agerholm cost over a $1 million to build and shows virtually every detail within the interior of the ship including the approximately 400 boiler tubes, multiple firebricks, burners and valves used to construct one of her Babcock and Wilcox "M type" boilers. Every frame, floor and pipe in her hull, incredible detailed workings of each individual gun including ammunition stowed in the magazines, bunks, galley caldrons, etc., are all depicted at 1/4 inch = 1 foot (1:48) scale. Another splendid example of their work is an 18-foot model of the USS MISSOURI (BB-63)[22] which now resides in the Missouri State Capital.

The Space and Naval Warfare Systems Center San Diego (SSC San Diego),[23] currently builds and maintains a fleet of 1/4 inch = 1

foot (1:48)[24] brass models that it uses to evaluate the efficiency of various electronic antennae and their interaction with one another aboard ship. At present this fleet includes approximately 50 models of various ships including ocean going tugs, destroyers, a battleship, tankers, cruisers and at least five different aircraft carriers. These waterline (no underwater hull) models, built of brass sheet laid over a wood frame, include any object that may effect the radiation or reception of an antenna. Since radio waves are scalable, the Navy determined that it is far cheaper to build these systems in model form and make adjustments in the location or placement of shipboard electronics systems at the lab than to wait until the vessel enters into service with a completed multi-million dollar electronics system to discover system problems or design errors.

The Navy also builds and tests models in Washington, D.C., at the David Taylor Model Research Basin where models of various hull forms are towed through this massive indoor pool. Measurements are taken of wake action, resistance and drag, etc., and the results analyzed to find the effect of hull shape on the efficiency of hull movement through water. Factors such as beam-to-length ratios, sonar domes, bulbous bows, rudders and propellers and shafts all have an effect on a ship's performance. Depending on the ship's mission each modification will effect fuel economy, sound signature, sea keeping qualities, speed, and endurance and, therefore, must be factored into hull design in order to get the best performance out of a given tonnage, power ratio, and carrying capacity.

A recently opened exhibit aboard the Maritime Museum of San Diego's 1898 steam ferry BERKELEY examines the history of the America's Cup as documented by Ken Gardener's series of defender and challenger models. With this series, built for America's Cup skipper Dennis Conner, this master model-builder has documented every America's Cup final race from 1851 to the present. While AMERICA herself stands alone, every other series has the challenger and defender vessels side-by-side with the exception the 1871 race, which had two defenders. The exquisite models allow the visitor to witness the subtle and sometime dramatic changes in these racing sailboats over the years.

Ship model-building goes far beyond the simple creation of things of beauty that others can appreciate. The craft has its utilitarian functions as well. Through the ages, the art of ship modeling has fulfilled a wide variety of uses including recreation, education, historic documentation, research, technological development, and providing the simple pleasure of the aesthetic beauty of a well-crafted ship model.

[Editor's note: Bob Crawford is the Curator of Models at the Maritime Museum of San Diego and also serves as the Chief Engineer of the museum's steam yacht MEDEA.]

NOTES

1 See A. Richard Mansir, *The Art of Ship Modeling*, (NY: VanNostrand Reinhold, 1982).
2 Guy R. Williams, *World of Model Ships and Boats*, (NY: G.P. Putnam's Sons, 1971), p. 29-32.
3 *Ibid.*
4 *Ibid.*, pp. 40 and 45.
5 The Maritime Museum of San Diego's collection contains a fine example of what is suspected to be a votive model. Although the model's provenance (origins and history) are unknown, it is clearly of the style and antiquity associated with votive models. Investigation into this model's origins continues.
6 See John Franklin, *Navy Board Ship Models 1650-1750*, (London: Conway Maritime Press, 1989).
7 Colonel Henry Huddleston Rogers bequeathed his model collection, consisting of 108 ships and small boats, to the U.S. Naval Academy in 1935. Rogers, an eminent railroad executive, acquired the collection of ship models crafted by one of the foremost administrators of the British Navy between 1790 and 1818. This complete chapter of naval architectural history presents a three-dimensional record of the chronological developments of British ship construction. Colonel Rogers' distinguished military career included service along the Mexican border in 1916 and as a Lt. Col. of Artillery during World War I. He received the United States Distinguished Service Medal, the French Croix de Guerre with Palm, and the Croix de Chevalier of the Legion of Honor. See United States Naval Academy Museum, *Henry Huddleston Rogers Collection of Ship Models*, Annapolis: Naval Institute Press, 1954, for a complete photographic catalog of the collection.
8 The medical profession relies on endoscopes, fiber optical devices with photographic and video capabilities, to examine the interior of a bodily canal or hollow cavity and to perform a variety of medical procedures such as arthroscopic surgery.
9 This survey of admiralty and Dockyard models in these collections continues. At the U.S. Naval Academy, Major Grant H. Walker, U.S. Army (Retired), is still exploring and photographing the interiors of models in the Henry Huddleston Collection. See Major Grant H. Walker, U.S. Army (Retired), "New Light Shed Below-Decks," *Naval History*, March/April 1995, vol. 9 no. 2, pp. 48-52.
10 Ewart C. Freeston, *Prisoner-of-War Models 1775-1825*, (Annapolis: Naval Institute Press, 1983), p. 2.
11 *Ibid.*, pp. 3-12.
12 *Ibid.*, p. 16.
13 *Ibid.*, pp. 40-43. Although bone was the most readily available source of building material, it was not the only source. Prisoners also used baleen, ivory, tortoiseshell, and wood, according to availability.
14 *Ibid.*, pp. 55-82.

15 To manufacture rope the natural fibers are twisted or spun right-handed into yarns, yarns are laid up left-handed into strands, and strands are right-laid to form the finished rope. This process, known as walking, took place in a long building known as a ropewalk or ropehouse. Using human hair and working on a much smaller scale, the prisoners followed the same process to create the ropes and lines they required. The prisoners used both human hair and, for the large models, horse hair. See Freeston, pp. 50-51, 70-74.

16 Freeston, *op. cit.*, pp. 75-76.

17 Although "literally hundreds" of these models still exist, the majority reside in museums in England and the United States, in historic English homes, or in the care of the British National Trust. Occasionally a prisoner-of-war model may appear for sale in an antique store, an estate sale, or for sale by a private party.

18 The USS CALIFORNIA, built by Union Iron Works in San Francisco, California, was launched on 28 April 1904 and commissioned on 1 August 1907. On 1 September 1914 she was renamed the USS SAN DIEGO. Her dimensions were 503 feet 11 inches (length) by 69 feet 7 inches (beam) by 24 feet 1 inch (draft) and displaced 13,680 tons. Four 8-inch guns, sixteen 6-inch guns, eighteen 3-inch guns, and two 18-inch torpedo tubes made up her armament. Eight hundred twenty-nine officers and crew manned this vessel. The SAN DIEGO served in the Eastern Pacific fleet for a total of ten years until 4 August 1917 when she reported to the Cruiser Division 2 in the Atlantic. She escorted convoys through the first dangerous leg of their passage to Europe. On 19 July 1918, a German submarine sank the SAN DIEGO southeast of Fire Island. The Department of the Navy loaned this model to the Maritime Museum of San Diego for exhibit.

19 Gibbs and Cox, one of the oldest naval architecture marine engineering firms, was founded in 1929 as an outgrowth of the Gibbs Brothers organization, established in 1922. In 1937 they opened their model department, which, for nearly a quarter of a century, turned out some of the finest American-built models. World War II dramatically impacted the firm as over 70% of the tonnage launched to support the war effort was built to Gibbs & Cox designs. They also designed a wide variety of cargo ships, bulk carriers, containers, and roll on-roll off ships for merchant fleets. Today their diversified client list includes military and commercial, domestic and international organizations. See P. C. Coker, *Building Warship Models* (Columbia, S.C.: The R.L. Bryan Company, 1974), pp. 291-300.

20 USS AGERHOLM (DD-826), built at the Bath Iron Works in Maine, was launched on March 30, 1946 and commissioned on June 20, 1946. A Gearing class destroyer, her dimensions were 390 feet 6 inches (overall length) by 40 feet 10 inches (beam) by 19 feet (maximum depth) and displaced 2,400 tons. She carried six 5-inch 38 caliber dual-purpose guns in three twin mounts, one depth charge rack, and two triple tube torpedo launchers. Although her crew consisted of fourteen officers and 260 men, she could accommodate 23 officers and 340 men. See *Jane's Fighting Ships, 1964-1965*, (N.Y.: McGraw-Hill), p. 350.

21 The Gearing Class of destroyers was merely an enlarged version of the Sumner Class with an additional 14-foot section amidships to accommodate additional fuel tanks and other installations. See *Jane's Fighting Ship's 1946*, (United States: MacMillan Company), p. 365.

22 Built at the New York Navy Yard in Brooklyn, New York, the USS MISSOURI (BB-63), an Iowa Class battleship, was launched on 27 August 1942 and commissioned on 1 June 1944. Her length was 860 feet at the waterline and 887 feet two inches overall with a beam of 108 feet 2 inches and a draft of 38 feet. She displaced 45,000 tons when empty and 59,000 tons when fully loaded. Her armament included nine 16-inch 50 caliber and twenty 5-inch 38 caliber dual purpose guns. Four geared turbines powered her at 33 knots though, while in service she did reach a top speed of 35 knots. She was designed to accommodate an average complement of 169 officers and 2,689 enlisted men in wartime. The MISSOURI served as the surrender site for the Japanese Navy at the end of World War II. During the summer of 1998 she will become a museum at Pearl Harbor.

23 The Space and Naval Warfare Systems Center, San Diego used to be known as the NRaD, the NOSC, and the Naval Electronics Laboratory Center (NELC/NEL). One of many naval operations in San Diego, the model shop for this Center is located on the west side of the road leading to the Point Loma Lighthouse.

24 As an example of the relative size of these models, a model of the USS NIMITZ (CVN-68) is 23 feet long, 5 feet wide and over 6 feet tall. The nuclear aircraft carrier USS NIMITZ, launched on 13 May 1972 and commissioned in September 1973, was 1,040 feet at the waterline and 1,092 feet overall in length with a beam of 134 feet and a draft of 37 feet. She displaced 91,400 tons when fully loaded. Four steam catapults launched the nearly 90 aircraft that used her 252-foot wide flight decks. Nuclear-powered, the NIMITZ could steam for at least thirteen years or approximately one million miles before refueling. Her complement totaled 6,100 personnel, of which 2,800 were assigned to the air wing (pilots, mechanics, etc.) and the remaining 3,300 were crew.

"Dolls, Drinks, and Dice," San Diego and the Floating Casinos

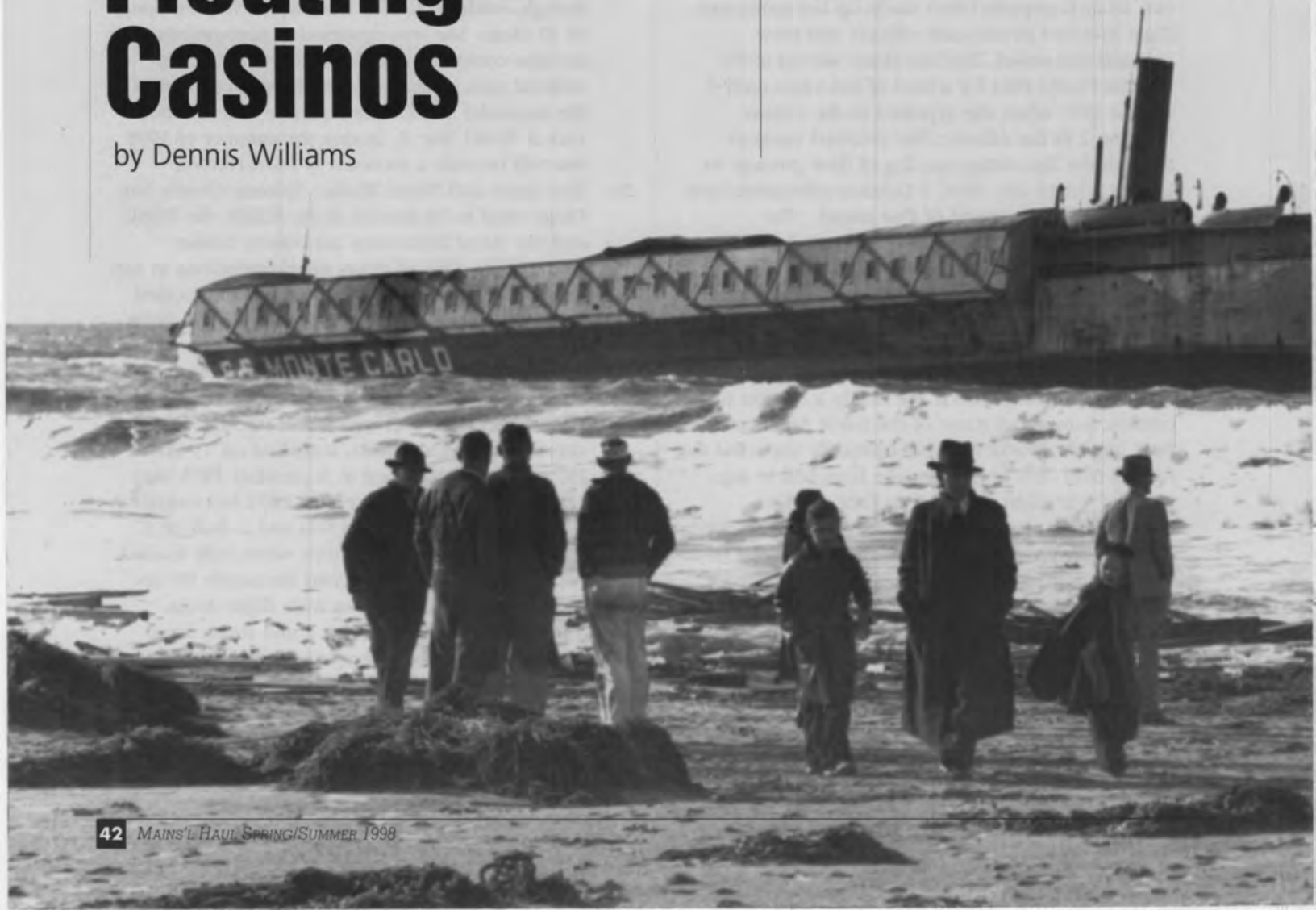
by Dennis Williams

On the last day of 1936, breakers crashed on Coronado beach and the wind blew cold from a dying gale. About 6 a.m., while driving to work on the strand, Captain Ben Jobes, master of the San Diego-Coronado ferry, spotted a ship grounded just outside the breaker line. The gambling ship MONTE CARLO had been anchored offshore until 34-knot winds snapped her heavy anchor chains during the night and ran her aground.[1]

For almost a year, the MONTE CARLO and the notorious RENO, part of Southern California's "dolls, drinks, and dice" fleet of floating casinos, operated beyond state jurisdiction in water three miles off Point Loma.[2] Of the eleven casinos anchored off resort towns as far north as Santa Barbara between the 1920s and 1946, only the MONTE CARLO and the RENO ever worked offshore of San Diego.[3]

Products of national prohibition and the worldwide Great Depression, these gambling ships flourished due to the social attitudes of Southern Californians. Many residents viewed gambling, especially on board ship, as a casual and acceptable form of entertainment and adventure similar to that found at speakeasies, nightclubs, and roadhouses.

In 1920 the eighteenth amendment went into effect prohibiting the manufacture, sale, or trans-



portation of liquor into, out of, or within the United States. This created a general attitude of disrespect for the law as drinkers and non-drinkers throughout the country took up drinking and average citizens began brewing gin, beer, or wine in their homes. Suddenly Americans viewed the consumption of alcohol as fashionable and smart, making the sale of illicit liquor tremendously profitable and generating a wave of organized criminal activity. Profits from the illegal manufacture and sale of alcohol also corrupted nearly every level of law enforcement to some degree.[4]

The stock market crash of 1929 kicked off one of America's greatest economic disasters, the Great Depression. Many banks failed, the economy stagnated, and unemployment rose to more than 25%. In the early 1950s, the Kefauver Committee studied the phenomenon of gambling in California and concluded that parts of the state had been "literally infested" for years with every type of illicit racket.[5] Perhaps as a relief from the Depression, or as an impulse to strike it rich overnight, Californians, like many Americans, gladly bet on dog races, played the slots, spent freely on bingo, and frequented bookmakers, thus setting the stage for gambling ships.

Seizing a loophole in the law that allowed gambling in federal waters, entrepreneurs located their ships three miles offshore and, therefore, out of reach of state regulations. For Southern California businessmen, the concept of combining the immensely popular and legal fishing barge with the equivalent of a speakeasy seemed like an incredibly provocative and lucrative idea. Flying in the face of law enforcement, owners blatantly advertised the shipboard action over the radio, in newspapers, on billboards and posters, and even by skywriting.[6]

It took an ambitious, headline-grabbing Attorney General named Earl Warren to finally put the gambling ships out of business. Warren, who campaigned on honesty in law enforcement, used his anti-gambling crusade as a stepping stone to become an immensely popular republican governor and, later, a crusading and controversial Chief Justice of the Supreme Court. Warren felt the problem with gambling was it created disrespect for the law. "Any time a man sees a slot machine operating, he knows that someone is being paid off. He knows that the people paid to enforce the law are also being paid not to enforce it. In addition, gambling turns loose a stream of money that falls into corrupt hands. That money is used to buy police and sheriffs and district attorneys."[7]

During 1936 the presence of the MONTE CARLO and RENO off Point Loma served to embarrass the local police as they attempted and failed to permanently close down the gambling ships. This colorful, though short-lived, chapter of San Diego's history, however, came to an end on December 31, 1936 when natural forces accomplished what the police could not. With the MONTE CARLO aground and breaking up, gambling cruises out of San Diego ended. Although San Diego's participation in this industry lasted less than a year, gambling ships in general flourished along the coast of Southern California for two decades despite the fact that gambling was illegal in the state of California.

In 1936, a gale deprived Depression weary San Diegans of gambling, drinking, music, dancing, and other pleasures when the 255-foot floating casino MONTE CARLO wrecked on Coronado's Silver Strand. It was rumored that cases of whiskey and perhaps as much as $150,000 in silver dollars still remained locked in "one-armed bandit" slot machines in the ship's sandy grave. ***(Courtesy San Diego Historical Society,*** **Union-Tribune** ***Collection.)***



Ships of Many Names: San Diego's Gambling Ships

"Alias the Reno:"

1918 - 1921	HMS Mistletoe
1921 - mid 1920s	Chiapas
Late 1920s - early 1930s	La Playa de Ensenada also referred to as Playa Ensenada
Early 1930s	La Playa
1931-1934	City of Panama
1934-1938	Star of Hollywood (official registered name)
1936	Reno* (promotional name)
1936-1939	Texas (promotional name)
1940-1942	Star of Scotland

"Alias the Monte Carlo"

1921- 1924	USQMC Tanker #1
1924-1932	McKittrick
1932-1936	Monte Carlo

* This name change was never officially documented and resulted in the Reno being run out of San Diego and the owners receiving a fine.



Captain Jobes returned to the wreck after contacting the Coronado police. Heavy seas battering the Monte Carlo's superstructure began tearing away gambling equipment, dining room furniture, and other debris to the delight of gathering spectators. A *San Diego Union* article described the scene:

> Seekers of souvenirs, firewood and anything else cast up on the beach swarmed onto the beach, and several started carrying away articles which the police had pulled from the surf. The practice stopped when [Coronado Chief of Police Ivan] Smith caught one citizen going home with a complete roulette wheel . . . [8]

A rumor of several hundred cases of whiskey aboard the stricken vessel resulted in "unusual vigilance" among the watchers.

The 300-foot Monte Carlo began her career as USQMC Tanker #1, a concrete-hulled oil tanker built as part of a federal experimental program testing concrete as an alternative to steel. During World War I German submarines sank United States ships in the North Atlantic faster than they could be replaced by conven-

One of San Diego's two gambling ships, the Monte Carlo, anchored off Point Loma and out of reach of local law enforcement. Water taxis, based at the old Hawthorn Street landing, south of the present day Coast Guard station, took passengers out for a night of dining, dancing, and, of course, gambling. City officials tried unsuccessfully to shut down the water taxi operations and arrested at least one boat skipper. The charges, however, were dismissed when a state law that prohibited transportation of persons to a gambling ship was declared unconstitutional. *(Courtesy San Diego Historical Society Photograph Collection.)*





The bar on board the SS La Playa de Ensenada. (Courtesy Patrick Smith Collection)

tional means.[9] The need for urgency coupled with the war-induced steel shortage led to the conception and creation of this concrete fleet of merchant ships built during and immediately after the war. Five shipyards throughout the United States produced a dozen of these vessels.[10] Constructed in 1921 at Wilmington, North Carolina, USQMC Tanker #1 was built during the final year of the program.[11]

During the course of this experimental program, builders concluded concrete was not a viable alternative to steel. While concrete proved a readily available and, therefore, inexpensive building material, it lacked longitudinal strength and durability and exhibited a tendency to shatter locally under impact.[12] This led to the discontinuation of the program. Following its end, a few of these vessels began commercial careers. In 1924 USQMC Tanker #1 appeared in the Merchant Vessels of the United States under her new name, the McKittrick.[13] Registered to the Associated Oil Company, she operated as a tanker out of San Francisco for nearly eight years. Retired from the oil business and with her engines removed,[14] her new owners, Edward V. Turner and Marvin Shouweiler, named her the Monte Carlo and outfitted her as a gambling barge.

San Diego's other gambling ship, the Reno, began her career as a British decoy merchant vessel. Early in World War I, a German U-boat underscored the helplessness of British surface ships when the submarine single-handedly sank three large British cruisers in one day. Late in 1914 the British developed special warships disguised as harmless merchant vessels to combat the German U-boats. British shipyards converted older ships, sailing vessels, and various fishing craft into decoys and constructed a few specially designed decoy vessels to create the "Q-ship" fleet. In 1918 the steamer HMS Mistletoe was built in Grangemouth, Scotland as part of that decoy fleet. The decoys appeared as routine merchant vessels and usually exhibited a rather slovenly and unkempt exterior. During the early years of the war German submarines captured individual ships at sea, removed the crews, and then destroyed the vessels with gun decks or time bombs. This humanitarian practice not only saved lives, it also saved expensive German torpedoes reserved for more difficult targets, such as faster vessels and large warships. When stopped by a submarine, Q-ship crews went into action. Special "panic parties" went into the lifeboats while the rest of the crew remained on board prepared to blast away with hidden guns and depth charges. After some early Q-ship successes, the Germans responded with unrestricted warfare tactics.[15]

A 2,500-hp., triple expansion steam engine, capable of cruising at 17 1/2 knots powered the 262 1/2 foot steel-hulled HMS Mistletoe. The vessel carried two 4-inch guns, one 3-pounder, light and heavy machine guns, and depth charges.[16] She only operated for nine months before the war ended. A terse entry from her log describes one of her encounters with a submarine.20 June [1918]. Sighted submarine on surface (3:30 a.m.), opened fire.

Probably scored some hits. Submarine turned [and] fired on us. Submarine ceased fire and proceeded throwing out black smoke from her engines. We ceased fire and proceeded to chase submarine. Overhauled him and opened fire, observed some hits scored. Submarine opened fire. We observed five direct hits around the conning tower. [Submarine's] gun crew left fore of tower and proceeded with all haste to go down below. Submarine appeared to be in trouble. She turned and rolled over on [her] beam ends to port and sank.[17]

After the war, the Compania Naviera de los Estados de Mexico, based in Mazatlan, Mexico, purchased the HMS Mistletoe. The decoy merchant ship, renamed the Chiapas, became a genuine merchant vessel carrying freight and passengers between Central America and San Francisco. A few years later she began hauling fruit from Mexico to ports along the United States Pacific coast under the name La Playa de Ensenada.[18] Fate and the lure of easy money cut her merchant career short.

Like ships gliding on convergent courses, Prohibition, illegal gambling, the Depression, and the La Playa de Ensenada collided off the California coast when, at the close of the 1920s, the ship's owners determined running a gambling ship promised much greater returns than hauling fruit. Although prohibition had corked the bottle in the United States and gambling was illegal in California, both drinking and gambling remained legal in Mexico. With her name shortened to the La Playa, she entered the world of

Coronado city workers prepare to haul away gambling equipment and furniture washed ashore from the gaming ship Monte Carlo. The authorities took four complete roulette wheels, parts of two others, craps tables, furniture, and other items salvaged from the ship to the Coronado police station. *(Courtesy San Diego Historical Society Photograph Collection.)*



Left: Advertising posters like this blanketed waterfront telephone poles enticing gamblers and other fun seekers to board the CITY OF PANAMA for an evening of entertainment. As one of the few gambling ships capable of traveling, cruises on board the CITY OF PANAMA proved very popular. The majority of the gambling ships were engineless hulks anchored offshore.

gambling, illegal saloons, prostitution, high seas robbery, gunplay, and murder. Working out of Ensenada, the LA PLAYA began running "Cruises to Nowhere [for] thirsty gamblers and party animals."[19]

When Mexico closed its borders to gambling in the early 1930s, the LA PLAYA shifted operations from Ensenada to San Pedro. There she joined the growing fleet of gambling vessels, including the hulk MONTE CARLO, anchored off Long Beach.[20] While California law still prohibited gambling, once a ship traveled three miles out to sea she passed out of local control and into waters administered by the federal government. In the 1920s and 1930s no federal law prohibited gambling beyond the three-mile limit.[21]

In 1931 the LA PLAYA became the CITY OF PANAMA and shifted operations to Santa Monica. Posters hung throughout Southern California advertised "Let's Go 'Nowhere' Tonight" aboard the CITY OF PANAMA.[22] The six-hour-long cruises operated each night of the week from 7:30 p.m. to 1:30 a.m. and featured "tempting beverages, dining, dancing, exciting games, rathskeller, and a lavish floor revue" for only one dollar.[23] One unadvertised special, prostitution, was omitted from the posters. Vice-hungry CITY OF PANAMA customers made lots of money for her owners until the murder of a 24-year-old passenger in 1933 made the ship unwelcome along the coast.[24]

A name and location change followed the murder. In 1934 her owner, Martin S. Lewis, Jr., of Los Angeles, listed her in the *Merchant Vessels of the United States* as the STAR OF HOLLYWOOD. For the next four years STAR OF HOLLYWOOD migrated up and down the coast of California.

On 11 January 1936, under the unofficial name RENO, she opened for business in San Diego, anchored off Point Loma. With tongue firmly planted in cheek, the *San Diego Union* reported the RENO's loading of "wet goods" (alcohol) and snickered at "sportive" games, such as "Ping-Pong and other innocent pastimes," claimed by the managers. According to the newspaper, "the Ping-Pong tables were curiously decorated with numbers from '1 to 38,' while the 'Parcheesi's' boards were covered with green felt with 'come' and 'don't come' as the home points. [L]arge chromium bird cages . . . contained three small cubes rather than singing canaries."[25] Almost immediately the RENO boasted large nightly crowds of up to 500.

San Diego Police Chief George Sears declared he would not allow gambling ships offshore and requested help from federal officials.[26] The situation resolved itself in April when the authorities forced the RENO to leave San Diego and she was towed to Long Beach.

In an attempt to disguise ownership, to stay one step ahead of the law, and for promotional purposes, her owners had changed the STAR OF HOLLYWOOD's name to RENO when they relocated to San Diego. From 1934 to 1938 she appeared in the *Merchant Vessels of the United States* as the STAR OF HOLLYWOOD registered to Martin S. Lewis, Jr. of Los Angeles. Between January and April 1936, however, she worked out of San Diego under the name RENO.[27] This unofficial name change allowed the United States Customs office to order her departure from, San Diego. The dispute over her official documentation, or lack thereof, also resulted in a fine for her owners.[28]

Two months after the RENO's departure, the MONTE CARLO arrived in San Diego, forcing Chief Sears to once again go to battle against the popular gambling ships. Prior to her June 1936 arrival, the MONTE CARLO managed to acquire a shameful reputation equal to that of the RENO while off the coast of Long Beach.

In 1935, five bandits armed with sawed-off shotguns and other weapons, boarded the MONTE CARLO in a dawn raid and escaped with $32,000 in cash and jewels.[29] Besides pirate-style robberies, the law constantly breathed heavily down the necks of co-owners Turner and Shouweiler. During an earlier raid, authorities arrested both men and confiscated $50,000 in gambling equipment.[30] On 25 March 1936, finding the gambling ship business too uncomfortable, the owners announced the sale of the MONTE CARLO to Jim Lloyd of Los Angeles who planned to move the ship to San Diego.[31]

Despite attacks on offshore gambling by local police and the district attorney in San Diego, Los Angeles, and Orange Counties, law enforcement officials were often legally outmaneuvered. In 1936, for example, charges against San Diego



Right: More than fifty years of storm-driven sands buried the concrete-hulled MONTE CARLO until only about five percent is exposed at low water. Because the World War I era experimental tanker may be the only one still in existence, it could be a candidate for the National Register of Historic Places, according to a 1985 San Diego Union-Tribune article.

water taxi operators Jack Peters and William A. Hoss were dismissed when the state law prohibiting the transportation of persons to gambling ships was declared unconstitutional.[32] Federal authorities pinned their hopes on a bill outlawing gambling ships in territorial waters. Unfortunately, this bill took years to pass and it was not until 1948 that President Harry S. Truman signed it into law.

In 1939 four gambling ships defiantly operated off the Los Angeles coastline, including the STAR OF HOLLYWOOD, now renamed the TEXAS.[33] The TANGO and the MT. BAKER (formerly the SHOWBOAT) were anchored off Long Beach while the REX[34] and the TEXAS were located off Santa Monica. It would take the "Battle of Santa Monica Bay," pitched between state Attorney General Earl Warren and an entrepreneur-gambler named Tony Cornero to break the back of offshore gambling.[35]

Prior to owning the grandest floating casino ever, the REX, Cornero, the "Admiral of the Rolling Bones (as in dice)," smuggled illegal alcohol during Prohibition. His floating casino boasted roulette wheels, card tables, an off-track betting room, 300 slot machines, and a 500-seat bingo parlor.[36]

Warren lost round one when the courts backed up Cornero's claim that the gambling ships were anchored outside California's territorial waters and therefore beyond the state's jurisdiction. "I'm beyond the three mile limit," Cornero boasted to a Warren aide. "You can't touch me."

Angered by Cornero's defiance, Warren declared, "I don't care whether the ships operate within or without the so-called three mile limit. We shall proceed against them." A Warren deputy later explained that Warren never meant to imply he would violate Cornero's rights or the law. He merely believed that in this case the three-mile limit did not prevail. "He was convinced that there was a law that applied to those ships and it was up to us to find it," the deputy explained.[37] After sufficient research and analysis, Warren chose the U.S. Supreme Court decision *New Jersey* v. *New York*, 1931, as his legal precedent. This decision empowered a state to abate any "public nuisance" even if doing so forced the law to go outside its territorial limits. Arguing that the REX qualified as a public nuisance since it enticed its customers to lead dissolute lives, Warren began plotting Cornero's downfall.[38]

In July 1939, Warren assembled a twenty-vessel fleet consisting of four state Fish and Game

Below left & right: Fletcher Nash diving on the sunken remains of the SS STAR OF SCOTLAND (the former San Diego based gambling ship, RENO) exploring the tron midships area and (on the right) examining one of the original portholes installed by the Royal Navy in the starboard midships.





Commission patrol boats, and sixteen water taxis, fire-fighting boats, and fishing vessels. His crew included about 300 law enforcement officers, eight state accountants, and assorted lawyers.[39] Directing the raid from the shore, Warren watched as his men boarded the REX. The action heated up when Cornero and his crew repulsed the lawmen with high-pressure fire hoses and then slammed shut the REX's heavy steel entrance door.[40]

"I won't give up the ship," Cornero shouted. But ten days later he surrendered unconditionally. The TEXAS, meanwhile, capitulated without a fight.[41]

Cornero went to court, charging Warren with piracy on the high seas. Warren successfully argued that at the time of the raid the gambling ships were actually in a bay and thus within California's territorial limits.[42] Backed into a legal corner, Cornero agreed to drop his piracy charges and to pay the $15,000 bill incurred by the state during the ten-day raid and siege.[43]

One last role remained for the TEXAS (ex-RENO) prior to her demise. In 1940, she was leased by Charles Arnold and renamed for the final time becoming the STAR OF SCOTLAND.[44] Arnold fitted her with side galleries for fishermen and anchored off Santa Monica where she enjoyed moderate popularity and success until the outbreak of World War II. The war brought another shipping boom to the United Sates, which increased the value of anything and everything afloat. After Arnold turned the vessel back over to her owners, W.E. Monstad and Harry Wilson, they received an offer of $50,000 for the aged and leaky steamer. Hoping to realize greater profits, the owners hung onto the ship and scheduled her for dry-docking. Unfortunately, wartime conditions delayed the dry-dock repairs. On 23 January 1942, the leaks became serious and the owners and crew began a desperate struggle to save the ship. Heavy ground swells battered the vessel until it finally became obvious she was going down.[45] The steamer sank in less than two minutes with the loss of one life.[46]

Today San Diego's short-lived venture into the world of "dolls, drinks, and dice" as host to part of the Southern California gambling ship fleet rests in watery graves. What's left of the RENO now provides a home to reef fish and serves as host to scuba divers in Santa Monica Bay while the MONTE CARLO's hull, exposed at low tide in front of the Coronado Shores Condominiums, causes the occasional beach stroller to stop and puzzle over that curious shape of concrete at the edge of the surf.

Dennis Williams, a public relations specialist, is a maritime researcher and free-lance writer. When time permits, he also volunteers in the Maritime Museum of San Diego's Development Department and Library.

NOTES

1 "Navy Man Drowns in Attempt to Reach Wrecked Game Ship," *San Diego Union*, 1 January 1937, 2:3.
2 Patrick Smith, "A Fallen Star," *California Diver*, March-April 1986, p. 33.
3 Ernest Marques, telephone conversation with author, 1 April 1998.
4 Prohibition, the legal ban on the manufacture, sale, and transport of intoxicating drink, began in January 1920 when the eighteenth Amendment became law. Many Americans felt that Prohibition impinged on their freedoms, caused people to drink more, promoted a general disrespect for the law, and generated a wave of organized criminal activity. Additionally, criminals used the profits from illegal alcohol to corrupt nearly every level of law enforcement and the government. See Prohibition, *Encarta On-line Encyclopedia*, 1998.
5 Leo Katcher, *Earl Warren: A Political Biography*, (New York: McGraw Hill, 1967), p. 77.
6 John Downing Weaver, *Warren: The Man, The Court, The Era*, (Boston: Little, Brown, 1967), p. 77.
7 Katcher, p. 129.
8 *San Diego Union*, 1 January 1937, 2:3.
9 Robert Eberhardt, "Concrete Shipbuilding in San Diego, 1918-1920," *The Journal of San Diego History*, Vol. 41, No. 2, Spring 1995, p. 114.
10 F.G. Fassett, Jr., editor, *The Shipbuilding Business in the United States of America*, vol. I, The Society of Naval Architects and Marine Engineers, 1948, p. 53. Also see Eberhardt, pp. 116-132. Of the twelve vessels produced, two were built in San Diego. The Pacific Marine Construction Company in San Diego launched the concrete-hulled CUYAMACA and SAN PASQUAL in 1920. This yard was located on a 22-acre parcel at the foot of 32nd Street. Triple expansion steam engines powered the 434 foot 3 inch vessels. The CUYAMACA worked as an oil tanker prior to her conversion to an anchored oil tank in Louisiana waters. After a squall badly damaged the SAN PASQUAL in March 1921, the unrepaired vessel became a store ship in Santiago, Cuba. She was dismantled in 1932.
11 *Merchant Vessels of the United States*, (U.S. Department of Commerce, Bureau of Navigation, 1924 - 1931) and Fassett, p. 53.
12 Eberhardt, pp. 131-132.
13 In 1924 the MCKITTRICK, homeported in San Francisco, appeared for the first time in *Merchant Vessels*. A footnote identified it as the former USQMC TANKER #1, a concrete-hulled vessel. The following year, when entries were expanded to include owners, the Associated Oil Company of California based in San Francisco was listed as the MCKITTRICK's owner. The MCKITTRICK last appeared in the *Merchant Vessels* in 1931.
14 Eberhardt, p. 132.
15 F.J. Dittmar and J.J. Colledge, *British Warships, 1914-1919* (London: Ian Allan, 1972), p. 126. The practice of unrestricted warfare flouted international law and the traditional code of conduct at sea honored for centuries by all but pirates. Following the loss of submarines to British decoy vessels that seemed to fire without warning or regard for German lives, U-boat commanders received orders to adopt new and seemingly unfair tactics. On 4 February 1915, Germany declared it would sink vessels without warning as it was dispensing with the old formalities. Britain, her allies, and all neutrals were warned that their ships, military or merchant, were at risk when in the waters near England.
16 Bonnie J. Cardone and Patrick Smith, *Shipwrecks of Southern California*, (Birmingham: Menasha Ridge Press, 1989), p. 50. See also Bill Beebe, "Interesting Life, STAR OF SCOTLAND Has Been More Than Just a Fishing Boat," *Santa Monica Evening Outlook*, March 8, 1990, n.p. and E.H.H. Archibald, *The Metal Fighting Ship*, (London: Blandford Press, 1971), p. 150.

17 *Log of the HMS MISTLETOE*, 20 June 1918 (Public Record Office, Great Britain), n.p.

18 Cardone and Smith, p. 50. A controversy appears to exist over the vessels precise name. According to Cardone and Smith the new name was LA PLAYA DE ENSENADA, but Ernie Marquez maintains her name was PLAYA ENSENADA. To date the author has not been able to verify either name, however, the subsequent shortening of the name to LA PLAYA suggests the former name may be the correct one. For the purpose of clarity, only LA PLAYA DE ENSENADA appears in the text.

19 Edward M. Ries, "From Tall Ship to Fishing Barge," part 3, *Mains'l Haul*, vol. 28, no. 2, Winter 1992, p. 13 (reprinted from *South Coast Sportfishing*).

20 "Icons," *Los Angeles Times* magazine, 19 January 1992, p.7 and H.F. Burnmester, "Five Outlaws Raid Monte Carlo and Chain Employees," *Long Beach Press-Telegram*, July 8, 1935, p. A4.

21 Bruce Henstell, "Now, Those Really Were 'Floating' Craps Games," *Los Angeles Magazine*, vol. 23, no. 2, December 1978, p. 129.

22 Cardone and Smith, p. 50. See also Bill Beebe, "The STAR OF SCOTLAND - Her Hole Card Wasn't Good Enough," *Outlook West*, Weekend Outlook, 23 January 1982, p. 8.

23 CITY OF PANAMA poster facsimile, *Outlook West*, Weekend Outlook, 23 January 1982, cover.

24 The 24-year-old passenger died from a severe beating that allegedly took place on board the CITY OF PANAMA. Both the first officer and the master-at-arms were tried and acquitted in federal court. An outraged public, however, demanded local law enforcement official close down the CITY OF PANAMA in order to satisfy the people and serve justice.

25 "New Floating 'Pleasure Palace' Opened 3 Miles Off Pt. Loma," *San Diego Union*, 11 January 1936,1:1-2

26 *Ibid.*, and "Coast Guard Aid To be Sought In Local War On Gambling Ship," *San Diego Union*, 22 January 1936, 1:1-2. Police Chief Sears immediately requested information and assistance on how to "handle the situation" from federal authorities in Los Angeles and San Francisco. Following a meeting between the district attorney, sheriff's department, police department, and the city attorney, the city of San Diego appealed to the Coast Guard for assistance. It is highly unlikely that the Coast Guard responded in a positive manner since they were a federal agency and the ships were operating in federal waters where gambling was legal. Although the Coast Guard did not recognize offshore gambling as illegal, it did consider dumping such items as roulette wheels and other confiscated goods into the ocean and bays as illegal.

27 Ernest Marques to Dennis Williams, 22 April 1998. See also *Merchant Vessels of the United States* during the years 1934-1938 for steamer STAR OF HOLLYWOOD entries.

28 Captain Harold Huycke to Dennis Williams, 13 December 1997.

29 Burnmester, p. 1.

30 "Gaming Ship Dismantled," *Los Angeles Times*, 5 May 1934, n.p.

31 "Monte Carlo's Sale Announced," *Los Angeles Times*, 25 March 1936, n.p.

32 "Game Ship Taxi Charge Quashed," *San Diego Union*, 15 April 1936, 10:3.

33 Marquez to Williams, 22 April 1998. According to Marquez the STAR OF HOLLYWOOD spent a short time as the MONTE CARLO following her ill-fated career as the RENO. After 1938, this vessel does not appear in the *Merchant Vessels of the United States* under any of the above three names or as the TEXAS. It is unclear if TEXAS was an officially registered name or merely another attempt to hide ownership through the use of the shell name game.

34 In 1938 Cornero purchased the sportfishing barge STAR OF SCOTLAND, stripped her masts and deck fittings, roofed her over, and created a spacious gambling hall he named the REX. Prior to entering the gambling fleet the REX, built in 1887 and christened the KENILWORTH, had spent twenty years in the Cape Horn trade, another twenty-three years as the Alaska Packers' STAR OF SCOTLAND working in the salmon trade, and eight years as a sportfishing barge out of Santa Monica. Following her short-lived career as a gambling ship, her new owners, Frank Hellenthal and Charles Lockwood, rerigged her as a six-masted schooner, restored her name STAR OF SCOTLAND, and returned her to the merchant trade. On 13 November 1942 a German U-boat sank the STAR OF SCOTLAND while enroute from Cape Town to Brazil. In 1940 a second vessel (originally named the HMS MISTLETOE) was renamed the STAR OF SCOTLAND and employed as a sportfishing barge off Santa Monica. The lives of these two vessels often become confused. See Ries, pp. 11-15.

35 Bruce Henstell, "The Battle of Santa Monica Bay," *Westways*, December 1992, p. 48.

36 *Ibid.*, p. 47.

37 Katcher, p. 128.

38 Henstell, p. 46-47.

39 Jack Harrison Pollack, *Earl Warren, The Judge Who Changed America*, (Englewood, NJ: Prentice Hall, 1979), p. 69.

40 "Cornero Resists Effort to Board Palatial REX," *Long Beach Press-Telegram*, 2 August 1939, p. 1.

41 Weaver, p. 80.

42 Warren accomplished this feat by reinterpreting the legal definition of the three-mile limit. He argued the three designation began off a straight-line coast rather than from the shoreline. By his calculations Cornero was definitely within state waters even though he was a little over three miles from the Santa Monica Bay shoreline.

43 Katcher, p. 130.

44 Charles Arnold leased the TEXAS in 1940 for use as a floating nightclub and sportfishing barge. Since his earlier sportfishing barge enterprise proved so successful, Arnold renamed the TEXAS the STAR OF SCOTLAND in an attempt to recapture his previous clients. (His first fishing barge, the STAR OF SCOTLAND, was later turned into a gambling casino and renamed the REX.) The fact that both vessels shared a name and two similar careers tends to be slightly confusing for researchers.

45 The precise cause of the STAR OF SCOTLAND'S sinking remains unknown. At the time it was believed a heavy swell thrust under the fishing galleries and lifted a row of rusting plates all at once allowing the sea to pour in. While diving on the wreck, however, marine archaeologist Patrick Smith discovered all the plates below the fishing galleries remain intact.

46 Ries, pp. 13-14.

Keeping the Lights

(Text continued from page 23)

Weren't there some crazy things happening, like groundings, and rammings?

RF: We had one incident there. A liberty ship was coming down the bay and it was heading right for Ballast Point. I kept watching it and watching it, to wait for him to turn. He didn't turn, so I went out and grabbed the bell and started ringing it in rapid succession to warn him of [the point.] I don't remember now, but I figured he straightened his way out. But our son, whose bedroom was upstairs, said that he did come up on the beach. He could have, very well, but he could have backed off very easily because it was deep water. It was 62 feet right in front of the station because of the current that washed through there. But that was the only real incident. Of course, nothing was traveling in and out of the harbor after six o'clock at night. The submarine nets were closed then.

RW: Were there mines on the net?

RF: No.

RW: Was San Diego Bay mined at all?

RF: Not to my knowledge. There may have been mine fields outside of the harbor, but nobody was aware of it. They had what they called a station ship, a sailing yacht, that used to anchor out by the whistle buoy on the outside of the harbor to stand guard for anything that might be coming in. Like tuna boats, and everything, if they didn't get inside the harbor before six o'clock at night, they had to stay out overnight until they could come in the next day when they opened the net up.

RW: So fishing wasn't shut down?

RF: Not entirely. No.

RW: I understand the fishermen were given the word to keep their eyes open.

RF: Well, when the war broke out all of our fleet was in Pearl Harbor. The only thing we had in the bay here [was] the tuna boats. The captains of them were reserve naval officers, so they got a bunch of them with 50-caliber machine guns on their bows patrolling up and down the Bay. But nothing of any size was here to protect our harbor anymore.[27]

The Army came down with a bunch of 50-caliber machine guns and set them up on the beaches. But they had nothing except the old World War I guns that were at Fort Rosecrans, and the two guns that they had built on top of the hill. They never got a chance to use them at all, nothing ever got within danger of us.

RW: [I see] a pilot boat[28] was moored alongside [the Lighthouse]. Did you know the harbor pilots?

RF: Yes . . . The Fort was closed to civilians and the fact that I didn't have to stand watches anymore because of the blackout, I proceeded to run the pilot boat for them whenever they had to go out to bring a boat in or to take a pilot off the boat when he got it out to sea.[29] . . . After I left the station I wasn't familiar with anybody anymore, or connected with [the harbor pilots] either.

RW: When did you leave the station?

RF: In 1957.

RW: You were Chief by then, weren't you?

RF: That's right.

RW: Were you kind of sad to leave?

RF: I was, but the men that we were getting from the military weren't that dependable. The enlisted men wouldn't pay attention to the work like the lighthouse keepers did. Lots of times at night when they were standing watches, instead of being on duty, they would have their girl friends come down and see them. In fact, when I made that rescue, the man [that] I said I couldn't find was on the 83-footer down in the galley having coffee rather than being out on watch where he should have been. So it was just things like that [and] I had enough time in to retire. I wouldn't have gained anymore by staying in any longer, so I finally left. But I did have 31 years of service altogether, because my National Guard time that I had earlier in my life all counted towards my military service.

RW: Did you completely retire, or did you go on to something else?

RF: I went to work for Convair in quality control on an electronics Atlas missile.[30]

RW: That was a change, wasn't it?

RF: It was really good. Yeah, that was the first night that one of our neighbors took us out to dinner. That was the first time I ever had had to really go out and enjoy myself in the evening because we couldn't leave the station on account of our watches that we had to take care of. We went out and had dinner and we went down to Mission Valley and looked around to see all the lights. It was really a treat.

It is hard to understand the kind of a life we lived. But even when we were in the old Lighthouse Service, we couldn't throw a paintbrush away, or we couldn't throw anything away. We had a certain amount of equipment allotted to us and in order to get it replaced we [had] to save the old one so that the inspector could see that it was worn enough to be replaced. It was things like that.

When I got to Ballast Point, in order to get a new light bulb, we had to save the brass screw on the old one to show that it was gone. But we had an advantage down here because the Navy ships that were anchored in the harbor, the kids would be hanging over the side painting the ship and when the bell would ring for chow, rather than clean the paintbrushes, they would throw them overboard. So we picked up a lot of that stuff on our beach that would drift down there. So we always had plenty of stuff to qualify for replacements.

RW: You also picked up a few lobsters, too, didn't you, and abalone?

RF: Yeah, we had a trap on one of the beacons outside of the bay. The little one-man fishing boats used to anchor inside of the Bay in the cove, the lee side of the Point. We used to give them water for consumption, to fill their tanks. We would give them any old paint that we had left over to paint their boats. So we were always kept [well] suppl[ied with] fish. One little Greek fellow used to bring us short lobsters in.

A lot of things that we couldn't get from the Coast Guard or the lighthouse service because of finances, we had to bum them from the Navy. This would be another incentive. Like the palm trees that are on the Point there now, I got them for a sack of lobsters that I took down to the gardener. In return he gave me the palm trees that are now [about] 17 feet high on the Point. They are now gradually getting to be destroyed. Because all the buildings have been torn down out there, there is nothing out on Ballast Point except the degaussing station[31] and the barracks for the men on the 83-footer.[32] There is no more lighthouse out there.

RW: Isn't there any light at all?

RF: There is a little electric light on the end of a catwalk and a horn out there that is all electrically operated.

RW: Isn't it still a navigational hazard?

RF: It still is a hazard, but there is a . . . small light mounted on a dolphin on the edge of the channel . . . in front of the Point . . . It is an automatic light and they also have a foghorn out there. The personnel in the degaussing station probably have control of the foghorn. It is only a small diaphragm horn . . .

RW: But [the light] isn't magnified, is it?

RF: No. Well, you can see it. It is in a little lantern of some kind. When I drive down Harbor Drive in the evening I can look over there and see that light flashing. It is a white flashing light now rather than the green light. The green light was there because of the elevation of the tower and the background of the city behind it that was all in white lights. So they had to put a colored light up there in order to distinguish it from the white lights that were in the background. It was a fixed light.

The buildings have all been vacated . . .The Navy has torn down all of the Coast Guard buildings and they've built a barracks there for their personnel . . . there is nothing at the light station there at all anymore . . .There is no more light station personnel out there, [but] the Coast Guard still keeps a cutter out there . . .

RW: Why was it torn down?

RF: The Navy [took over in 1959] and moved the submarine base down into the Fort Rosecrans area of which Ballast Point was a part. They wanted to take all of that area over. When they put the degaussing station out there they were on Coast Guard property. I guess they didn't particularly like to be ruled by the Coast Guard, so [as of 1990] they are in the process now [of tearing down the light station]. The Coast Guard still has possession of the Point and the Navy only has permission to use it for the degaussing station.

The Navy is trying to work a deal where they can get the whole Point itself. If they do, then they will build an officers' mess hall out there where they will have an open mess where the officers can go and have their dinners there and their entertainment[33]. . .

RW: [Finally,] there was no Shelter Island in those days.

RF: Shelter Island was always there, but it was mud flats that were only visible at low tides. In fact, during the war the Navy had used Shelter Island for an ammunition dump. They kept a crew of men out there. They had a water tank that was on a pedestal above the waterline to supply the galley there with water.

Long after the war had ended all of this equipment stayed on the island. When a big storm came one year it washed this water tank off of the island and it wound up on our beach at Ballast Point. I salvaged it, took it apart, and worked it in our carpenter shop. I made

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Keeping the Lights

myself a picnic table out of the redwood. It is out there on the patio right now. Shelter Island since then has been connected to the mainland and they have hauled in enough soil to raise it up quite a few feet up above the water level. It has quite a resort built out on it now.

RW: It seems to me [that] you had good duty; you were there at a great time.

RF: I am very, very pleased. I don't know why I deserved it, but everywhere I went I made out real well. I enjoyed my work.

NOTES

1 Radford Franke's recollections of life at Año Nuevo Lighthouse appeared in the article "Keeping the Lights" in the Winter 1998 issue of *Mains'l Haul*, pp. 10-21. See also "A Keeper's Life" in *The Keeper's Log*, Fall 1988, pp. 14-18.

2 Following his retirement in 1931, Hermann Engel developed a friendship with his replacement, William Mollering, and he often returned to Ballast Point to "reminisce over the turns and adventures of his career." Born in Danzig, Germany, Engel went to sea at a young age. He served in the U.S. Navy for eight years as a gunner's mate and a deep-sea diver. He was awarded the Medal of Honor for his conduct in the Battle of Manila Bay during the Spanish-American War. Hermann Engel died at the age of 66 on 14 December 1935. (See *San Diego Union* 16 December 1935, 1:7 and 17 December 1935, 2:5.)

3 In 1852 the United States Government appropriated more than a thousand acres of Point Loma and declared the area a military reservation. During the reminder of the nineteenth century the government installed a lighthouse (on the top of the Point), a number of gun batteries for harbor defense, a quarantine station, and a coaling station at this military reservation. In 1898 Battery D, Third Artillery moved from the San Diego barracks out to Point Loma to become the first regularly stationed troops at the reservation. In 1899 the military reservation on Point Loma was officially named Fort Rosecrans in honor of Major General William Starke Rosecrans of the Union Army. General Rosecrans was so honored for his service during the Civil War. Sixty years later the Army transferred this area to the United States Navy.

4 The Lighthouse Service appointed Bill Mollering head keeper following Hermann Engel's retirement in 1931.

5 Steve Pozanac replaced Bill Mollering as head keeper in the mid - 1930s.

6 Franke acquired a variety of maintenance skills while in the Lighthouse Service that he used after leaving Ballast Point and moving into a home in Point Loma. "The first thing I did when we bought this house was to install all copper pipe. I took all the old galvanized pipe out and installed all copper pipe. I re-roofed the house. It was no problem at all."

7 A review of Norma Engel's *Three Beams of Light: Chronicles of a Lighthouse Keeper's Family* appears in this issue.

8 The even numbered red buoys always mark the right side of a channel as you enter it while the odd numbered green buoys mark the left side of the channel.

9 One of the fifth order lenses in Cabrillo National Monument's collection may be the lens from Ballast Point Lighthouse; however, its provenance (history of use and ownership) is unrecorded and, therefore, unknown. Currently these lenses are in curatorial storage where they are being documented and researched while they await a new exhibit location.

10 Fixed lights showed a steady light all around the horizon while a revolving light produced a flash. The number of flashes depended on the number of flash panels and the speed with which the optics revolved. The interval between flashes helped mariners identify which lighthouse they were seeing.

11 San Diego's whaling industry never relied on Arctic-bound fleets of ships. Instead it used small boats based at Ballast Point that chased and killed whales in the harbor. Female whales used San Diego Bay for calving and by 1853 a few transplanted New Englanders began taking advantage of that fact. Five years later two whaling companies established shore-whaling facilities on Ballast Point. From here they pursued, captured, rendered, and processed whales for approximately 30 years. When a strong wind blew toward San Diego, the stench of bubbling try-pots and partly processed carcasses filled the city. According to surviving records, the shore-whaling industry at Ballast Point produced nearly 22,000 gallons of oil during the 1870-1871 season. The following and best season produced 55,000 gallons of oil and 200 pounds of whalebone. Over the next 15 years the industry slowly declined until they produced a low of 15,000 gallons of oil in 1886. After that production steadily declined and the Ballast Point shore whaling operations disappeared. The walemen believed the increasing number of steamers using the Bay scared away the whales.

12 The primary purpose of ballast, heavy materials placed in the lowest part of the vessel, was to give the vessel stability. Richard Henry Dan recorded that the PILGRIM's ballast was leveled off just above the keelson and covered with donnage (dried brush) in order to make a platform to stack the hides on.

13 Dana described San Diego as the best harbor in California for landing and taking on board hides. A number of hide-houses stood along the shore near Ballast Point. Here the rough and uncured hides were processed and prepared for the long voyage back around Cape Horn.

14 In 1795 the Spanish began construction on a fort at the base of Point Guijarros. This site controlled entrance to San Diego Bay since it overlooked the narrow strait separating Point Loma and North Island. Silting along North Island narrowed the channel even further, making any hostile intruder an easy target for the shore-based cannons. The only descriptions of the fort come from the archaeological excavation on the fort's site and a few contemporary writers.

15 The Maritime Museum of San Diego displayed this bell, believed to be the original fog bell from Ballast Point Lighthouse, from 1989 to 1991.

16 The fresno scraper, manufactured by and named for the Agricultural Works of Fresno, California, worked on the same principle as the buck scraper or the drag scraper. Basically they were earth digging and transporting devices that consisted of a crescent-shaped bottomless bucket. A drag scraper was operated along the ground by a cable strung between a mast and an anchor. A buck scraper was a modified drag scraper with two runners that lifted the scoop from the ground when full. Apparently a fresno scraper resembled a buck scraper in design and function.

17 William Mollering unexpected death on 5 January 1938 at the age of 45 was caused by a head injury suffered while tending the Ballast Point light on 29 December 1937. According to the deputy coroner, at 4:50 p.m. on the 29th Mollering's bent to uncover the giant light and, upon straightening up, struck "his head against a flange on the light's pedestal." Mollering turned on the light, determined it was working satisfactorily, and returned to his home on the Fort Rosecrans Reservation. At 7 p.m., after remarking that he was bothered by a dizzy sensation, Mollering collapsed. Despite the efforts of the army physician and a civilian physician, Mollering died a few days later from what the coroner called "a traumatic hemorrhage that caused subsequent illness." (See *San Diego Union*,

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18 6 January 1938, 12:1 and 7 January 1938, 12:2.) Point Hueneme lies on the California coast approximately mid-way between Los Angeles and Santa Barbara. Eleven miles southeast of the point is Anacapa Island, the eastern-most of the northern Channel Islands group.

19 Lime Point Lighthouse sits on a small outcrop of rocks along the northeast entrance to the San Francisco Bay. Situated below a steep cliff and in the shadow of the north end of San Francisco's Golden Gate Bridge, this site was chosen in 1883 for a fog signal station. In 1900 a lens-lantern joined the duplicate 12-inch steam whistles on this station. The lens-lantern consumed up to 150,000 pounds of coal a year in an attempt to pierce the fog. Over the years, light attendants at Lime Point have contended with rock slides, bottles thrown from the bridge, a hold-up by two armed robbers, and a freighter that tried to eradicate the station when the pilot wound up 200 yards off course. Automation arrived at Lime Point in 1961.

20 While Franke's years of experience at Ballast Point and Año Nuevo qualified him as a navigation specialist and a chief, he lacked the formal training required for that designation. In order to overcome his missing educational qualifications, the Coast Guard enrolled him in government navigation training courses. With these educational credits added to his record Franke was promoted to chief.

21 Pozanac retired to Garden Grove, California (near Los Angeles) where he lived out his life. He was over 100 years old when he died on 25 December 1988. (An obituary was not located in the *San Diego Union*.)

22 Appropriations made in 1897 allowed the Army Corps of Engineers to build upon part of the Zuniga Shoals, located to the south and west of North Island, and create the Zuniga jetty. The jetty extends south from the southwest edge of North Island in a parallel manner to Point Loma. The jetty ends opposite the end of Point Loma.

23 Franke received $105 when stationed at Año Nuevo since it was an island station and, therefore, merited more pay than a land station like Ballast Point. He also faithfully sent his mother $30 a month until 1940 to help support her and raise his two younger half-brothers.

24 Located at the southern end of the San Francisco Bay, Sunnyvale is northwest of San Jose.

25 Immediately following the attack on Pearl Harbor, the West Coast observed blackout conditions from dusk to dawn. San Diego maintained blackout conditions for the first six months of the war.

During that time Franke's lighthouse duties changed since no navigational beacons were in use.

26 By 1948 all the guns in these batteries had been removed. The concrete battery casements still remain as silent reminders of the San Diego harbor defense system during the first half of this century. While these casements are visible from Cabrillo National Monument on Point Loma, they are on Navy land and, therefore, are not accessible to the public.

27 For information on how World War II impacted the tuna fishing industry and the subsequent role tuna fishermen played in the war, see August J. Felando's "California's Tuna Clipper Fleet: 1918-1963," part 2, *Mains'l Haul*, Winter 1997, Vol. 33, No. 1, pp. 16-27.

28 The harbor pilot boat referred to was built in San Diego in 1914. Named PILOT, it remained in active service ferrying harbor pilots to and from commercial vessels entering and leaving the Bay until 1997. She is currently moored alongside the ferryboat BERKELEY at the Maritime Museum of San Diego. Her future career will be working as a floating classroom in the educational program A Day on the Bay jointly sponsored by the Maritime Museum, the Chula Vista Nature Center, and the San Diego County Outdoor Education Center.

29 While identifying photos for this article, Rad Franke spoke of taking a harbor pilot over to Broadway Pier to a convoy ship filled with troops headed overseas. He said it was a very strange feeling watching them and realizing many of them would never come home.

30 "It was [Mollering's] son that got me the job at Convair after I retired from the lighthouse service. He had grown up, gone to college and got an education. He was one of the VIPs *(Very Important Person)* of Convair."

31 Ships and submarines, being steel structures, gradually acquire magnetic properties that enable magnetically sensitive weapons such as mines to detect them. To eliminate these magnetic fields as much as possible when transiting a mine hazard area, several coils of electrical cable, called degaussing coils, are installed inside the vessel. Direct current flowing through the coils mitigates the ship's magnetic signal. The instruments at the degaussing station on the site of the Ballast Point Lighthouse verifies that the degaussing equipment installed aboard ships and submarines is still doing its job.

32 The Coast Guard still maintains an 83-foot cutter at Ballast Point.

33 In 1992 the Navy completed and opened their new officers' club facility on Ballast Point.



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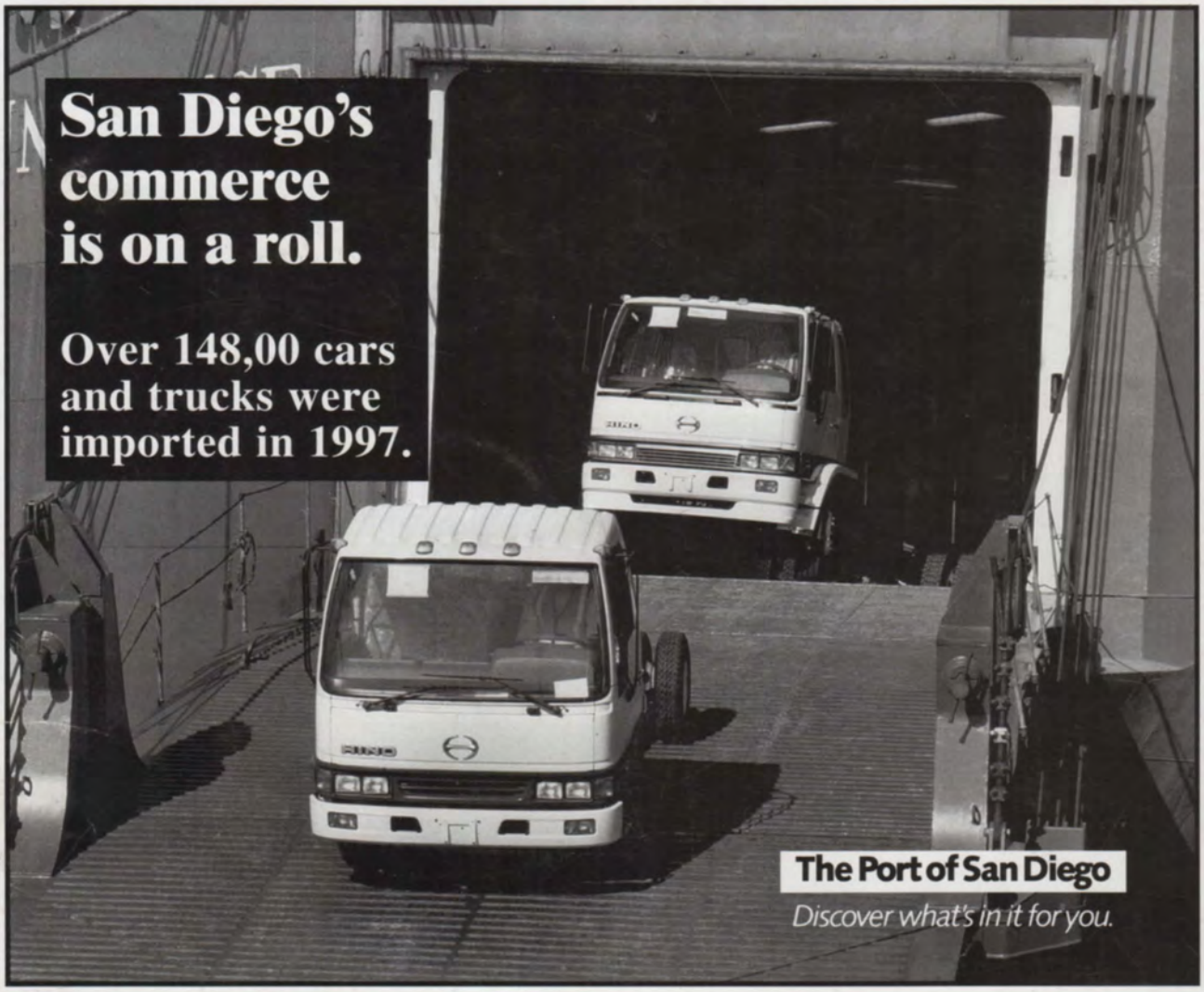
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Museum crew (Jeff Saar, top; Fred Krone, bottom, back to camera), hoist the Southern Pacific Lines insignia up onto BERKELEY's smokestack, about 1976. *(SDMM, Jerry MacMullen Collection, P–2454.)*

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(619) 234-9153
FAX (619) 234-8345
e-mail address:
library@sdmaritime.com

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MAINS'L HAUL

A JOURNAL OF MARITIME HISTORY



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On the cover . . .

Crews and baggage cart tractors at the ready, passengers prepare to disembark at the Oakland pier in the 1950s. *(SDMM Collection, P-11705C)*

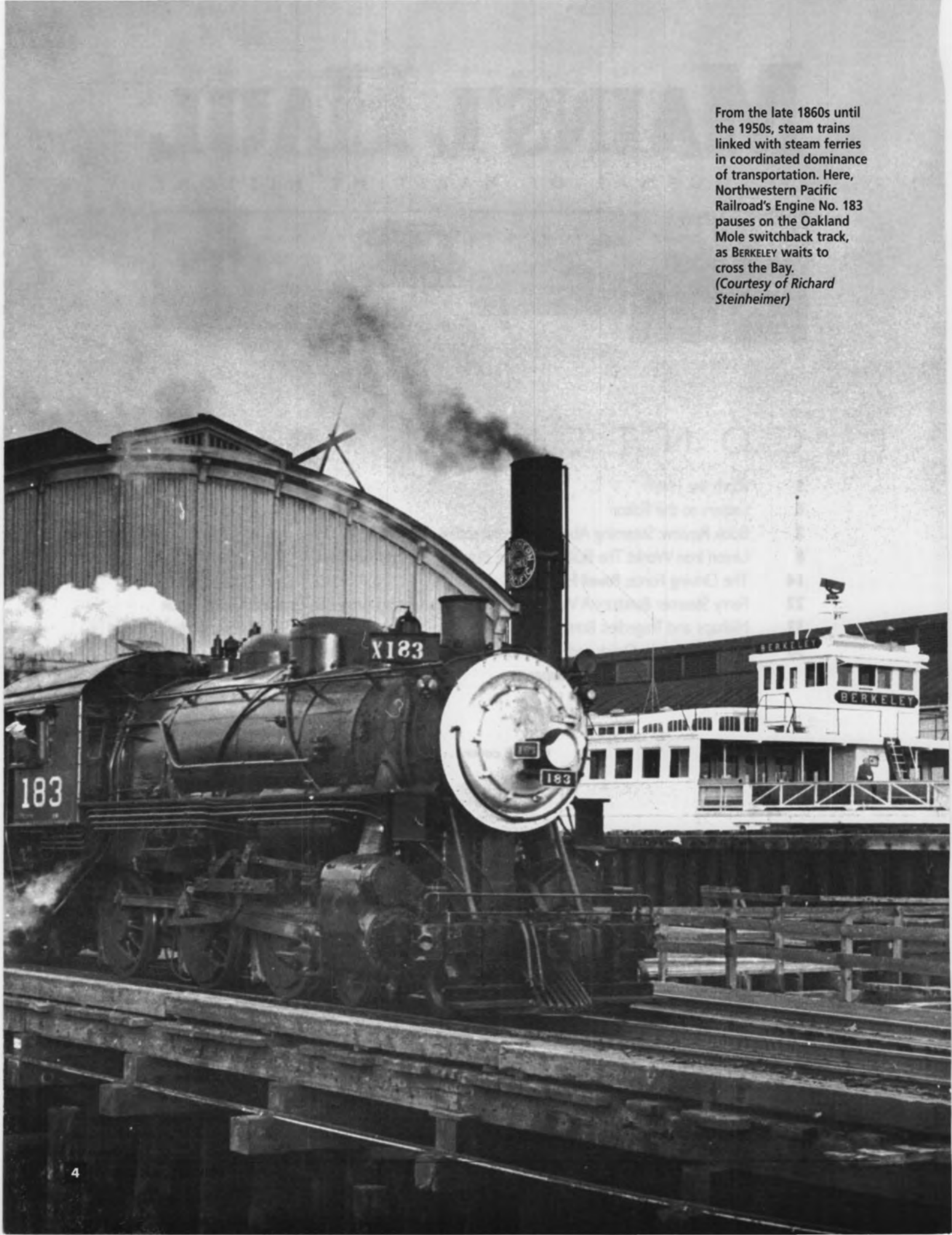


Mains'l Haul is the quarterly historical journal of the Maritime Museum Association of San Diego. Its mission is to engage our members and the public in the study of maritime history, expanding their knowledge and appreciation of this field. The journal is also a benefit of membership in the Maritime Museum Association of San Diego.
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MARITIME MUSEUM ASSOCIATION OF SAN DIEGO
STAR OF INDIA 1863

"*Mains'l Haul*—An order in tacking ship bidding 'Swing the main yards.' To loot, steal, or 'acquire'."
—John Masefield



From the late 1860s until the 1950s, steam trains linked with steam ferries in coordinated dominance of transportation. Here, Northwestern Pacific Railroad's Engine No. 183 pauses on the Oakland Mole switchback track, as BERKELEY waits to cross the Bay. *(Courtesy of Richard Steinheimer)*

FROM THE HELM

Sail, Steam, and a Century of Progress

As this issue of *Mains'l Haul* goes to print, BERKELEY will be celebrating her centennial anniversary. In our Museum, so much activity and interest surrounds the STAR OF INDIA, that we tend to lose sight of the historical, architectural, and social significance of our other large vessel, the steam ferry BERKELEY. Our celebration of her centennial provides us with the ideal opportunity to contemplate the BERKELEY and the historic relationships that bind her to the STAR OF INDIA and the city of San Diego.

From San Diego's founding as a western settlement in 1769 to the middle of the nineteenth century, this city was connected to the outside world primarily, indeed almost exclusively, by sea. Trading vessels, whalers, fishing vessels, and the occasional warship created the tenuous skein of communication, immigration, commerce, and political administration that sustained our city as a far distant outpost of the Atlantic economic world. The longer and more tenuous such vital seaborne connections became, the more dependent the far-flung Atlantic economic communities, including San Diego, became on the technology and the culture of the sailing ship.

Sailing ships depended utterly upon the wind: a source of power greatly variable in its distribution, availability, and intensity. The nature of a primary energy source provides essential regulating mechanisms for human activity: the calculated expenditure of time and resources for work, play, politics and art. Although the wind-driven oceanic sailing ship created world-wide connections and the first large scale technological system, the very nature of its primary energy source kept these connections and this system from functioning in a regular and predictable manner. Without the ability to control and manage the velocity, direction, and duration of the wind, sailing ships were unable to provide the Atlantic economic communities with regular and precisely scheduled interchange. Newspapers carried the tide tables, the only predictable maritime information, on the front page. Ship arrivals were news, ship departures conjectural. Schedules were vague and workdays keyed to the needs of the moment or the season. This was the world for which STAR OF INDIA was created, and the world in which San Diego, a product of the sailing ship, established itself.

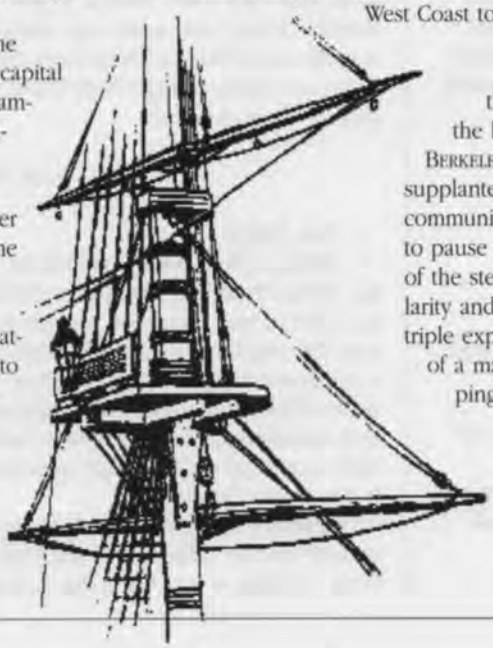
That world ultimately became incongruous with the advent of steam mechanization and the gravitation of capital to this new form of energy. In America especially, steamers on rivers and coastal routes, later aided by the railroads, stitched the continent together and created an inward stimulus for immigration, investment and conquest. Even *Pax Britannica*, founded on the deepwater supremacy of British sea power in the age of sail, came to rely upon a worldwide chain of coaling stations. The demise of the sailing ship and the world it created was not due to inherent technical inefficiency or natural limitations of size, strength, or speed; it was due to the incompatibility of organic economies with mechanized systems. Indeed, into the twentieth century, the sailing ship continued to advance technically even while the Atlantic world economy unraveled beneath her. The STAR OF INDIA's history is representative: a life long journey into ever more marginal niche markets.

A quarter of a century before STAR OF INDIA was launched, the union of railroads and telegraph first linked London to Dover and Paris to Calais. Neither enterprise managed to achieve financial success while they relied upon sailing ships to maintain the cross channel connection. When steam ferries, which could run to schedule, replaced those sailing ships, these enterprises began to prosper. Commercial steamship routes linking Panama's West Coast to California and its East Coast to New Orleans were established by 1847. Again, neither route proved profitable until a railroad connected them across the isthmus in 1855. In the first case a steamship route linked two railroads, in the latter a railroad linked two steamship routes.

Each stitch in the growing mechanized world unraveled the weave of the older Atlantic economic world, substituting for wind a large scale system that could arrange the acquisition, transportation, and storage of fossil fuel for consistent and predictable expenditure by ever more integrated machines running ever more precisely to schedule. Within this technologically advancing world, sailing ships, unwilling to concede obsolescence, continued to challenge the steam vessels.

This new world had its own heroic moments and catastrophes, of course, just as the old one had, and you will read about some of them, as they related to the BERKELEY, in the pages of this journal: the rise of west coast shipbuilding; experimentation with new technologies and arrangements of propulsion; the creation of railroads and their linkage to steam navigation; the great earthquake and fire of San Francisco; the mishaps of "the pile driver's friend" and her even more pernicious predecessor SILVER GATE. Of them all, the February 23, 1905 collision between the steam ferry BERKELEY and the schooner POINT ARENA, whose captain "was determined to keep his course," now appears as a symbolic representation of the world-wide technological struggle between sail and steam; a struggle our museum addresses through the preservation and exhibition of both the sailing bark STAR OF INDIA and the steam ferry BERKELEY.

As the articles presented in this issue make clear, BERKELEY is a noteworthy element of a technological revolution that linked the West Coast to the rest of the world in new ways, a revolution that changed our own community and its relationship to the sea beyond recognition. Now, in the latter days of that mechanized world BERKELEY helped create, a world itself being supplanted by a revolution in electronic and communications technology, it might be well to pause and listen for the faint receding wail of the steam whistles, and consider the regularity and dependability of BERKELEY's great triple expansion engine: the pulsing heartbeat of a maritime San Diego that is slowly slipping away.



Raymond Ashley
Executive Director

LETTERS TO THE EDITOR



"The Marvelous World of Miniature Ships" (Spring/Summer 1998)

Dear Editor:

While reading the Spring/Summer 1998 issue of *Mains'l Haul*, I noticed a glaring error on page 39 regarding the 1987 America's Cup held in Perth, Australia.

As all yachtsmen well know, the reason it was held there was the fact that the trophy was previously won in 1983 by the yacht AUSTRALIA II from the Royal Perth Yacht Club of Australia. Therefore, the DEFENDER of the trophy was the yacht KOOKABURRA III and the CHALLENGER the yacht STARS AND STRIPES.

Otherwise, it is as usual, a great issue. Keep up the fine work. Good Wind and Good Sailing,

Roy Benstead
Staff Commodore, 1975
Southwestern Yacht Club

There is no question that Dennis Conner's STARS AND STRIPES *was the challenger in the 1983 America's Cup. The information for the photo caption was taken straight from the plaque attached to the model case and we, unfortunately, neglected to correct it.*

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"Dolls, Drinks, and Dice" (Spring/Summer 1998)

Dear Editor:

Dennis Williams' "Dolls, Drinks, and Dice," in your Spring/Summer 1998 *Mains'l Haul* resolved the STAR OF SCOTLAND mystery that bothered me for many years.

Years ago I saw a chart of the Santa Monica coast showing the position of the sunken fishing barge STAR OF SCOTLAND. Also, at the San Francisco Maritime Museum, I learned from their KENILWORTH display that this vessel was ultimately renamed the STAR OF SCOTLAND, served as a fishing barge off Santa Monica, and during World War II was rerigged as a schooner and was sunk off the coast of Africa by a German submarine.

How could one vessel be sunk in two different places? This mystery bothered me for many years because as a youngster I spent many happy hours fishing on the STAR OF SCOTLAND and developed an affection for this old hull. Dennis Williams, in his "Dolls, Drinks, and Dice," solved this mystery for me by finally explaining (but not until reading his reference note 34) that there were two ships named STAR OF SCOTLAND; both served as fishing barges off Santa Monica. One sunk at Santa Monica and the other by a German submarine.

I was pleased to learn that my old fishing platform died a noble death as a viable cargo carrier during World War II.

Very truly yours,
Leo Block

⚓

"Keeping the Lights," Parts I and II (Winter 1998, Spring/Summer 1998)

Dear Editor:

Many readers will likely bring to your attention the minor error in the photo caption at the bottom of page 15 ["Keeping the Lights (Part II)" Vol. 3, No. 2 & 3, Spring/Summer '98] but allow me to be one. The team hitched to Rad Franke's wagon are mules, not donkeys. A mule is a hybrid resulting from the union of a mare (female horse) and a jackass (male donkey).

Guy Willis

Dear Editor:

Having served with Chief Franke at the Ballast Point Light Station in 1956 and 1957, I was especially pleased to read the articles recounting his career as a lighthouse keeper. I was stationed at Ballast Point at the time of his retirement and remained at the light station until I had completed my four-year enlistment in the Coast Guard.

I guess what made the articles so special was the thought that the Ballast Point Lighthouse had been decommissioned and disappeared without a trace, and its place in San Diego's nautical history had never been recognized. Thanks to Chief Franke your readers now know of the role the light played in our city's maritime past.

During my tour of duty at Ballast Point we served on a "port and starboard" liberty basis. That is, we had the duty every other night. Two of the crew were always on board and had watch responsibilities for a 24-hour period. During night shifts we checked the light and weather conditions. If fog was obliterating the flashing light of Buoy #6 then we turned on the foghorn until such time as the fog lifted. I recall a particularly dark and foggy night while I was on duty. I had just completed my rounds and returned to the bachelor quarters for a cup of coffee. I was in the galley tending to my coffee when I heard a noise at the window. Peering in at me was a face that resembled the Creature from the Black Lagoon. Needless to say I nearly suffered the "Big One." It turned out the Navy Seals were conducting a nighttime exercise and had selected Ballast Point as their target. Suffice it to say, I put up no resistance.

Thanks once again for the informative and interesting series of articles. I have added the publications to my collection of lighthouse memorabilia.

Sincerely,
Bill Barnhill

Dear Editor:

Many thanks for the outstanding issue of the Museum's magazine. The photos are real gems. On page 15 of the [Winter issue of] *Mains'l Haul* is a photo [identified as] the SEQUOIA and the boat being rowed ashore or to the lightship. I spent a year on the SEQUOIA in 1937 as second mate. One of my duties was to be in charge of the boat you see in the photo. I am enclosing [part] of my memoirs while on the vessel. Brings back memories as it is like seeing myself standing up at the steering oar.

The SEQUOIA was stationed at the Lighthouse maintenance dock and base on Yerba Buena Island in San Francisco Bay. It was one of several tenders in the San Francisco District, being responsible for the maintenance of aids to navigation on the California Coast, which included

shore lights and sea buoys. It was equipped with a work boat for landing supplies at light stations and for surf landings, a very heavy boat rowed by four sailors, with the Second Mate at the rudder in charge of the boat. It was a change for me, very interesting, and an assignment that required much skill and physical dexterity. I also had to learn welding and acetylene cutting of anchor chain.

. . . I enjoyed my work as Second Mate on the SEQUOIA, performing varied and challenging tasks that required a high degree of seamanship. Annually we serviced lights located on the highest points on the isolated, desolate San Clemente Islands off the Southern California coast. In charge of a dozen seamen carrying 100 pound acetylene cylinders on their backs, I would clamber up what seemed to us to be mountains. At other times we had to take a 20-foot heavy wooden boat loaded with a ton of coal and provisions through a pounding surf at isolated coastal light stations. Six men would be at the oars, with me in the stern steering the boat and ready to drop the sea anchor to keep the boat from broaching, and to enable us to pull off the beach on the return to the ship. Sometimes the boat would capsize in the breakers, casting all of us into the sea along with the cargo. Together with the First Mate, I had to be on the foredeck when working buoys, some weighing as much as nine tons and 30 or more feet in length. We had to scurry about the deck securing heavy buoy anchor chain, so we could turn out sections of chain and add new chain. The work was hard and dangerous, and I enjoyed it.

. . . During the summer months some of our trips would take us away from our home port of San Francisco for as long as three weeks. In the winter months, adverse weather conditions kept us moored at the base, or tending aids to navigation in San Francisco Bay. . . .

. . . The duties of a vessel handling large sea buoys weighing many tons, and the servicing of coastal lighthouses was dangerous and challenging, requiring a high level of sea-going knowledge and skill. It can be said that the Lighthouse Service had an intimate knowledge of every foot of the coastline of the United States. In 1939 the Lighthouse Service had under its command a total of 108 vessels and 39 lightships manned by seagoing personnel.

Sincerely,
Captain Niels P. Thomsen, USCG (ret.)

Dear Editor,

Many thanks for the two copies of the *Mains'l Haul* containing Radford [Franke]'s articles. He is a member [of the United States Lighthouse Society] and quite a character. I would like to point out one misidentification. On page 15 of Volume 34 Number 1, he identified the Lighthouse Service tender as the SEQUOIA when in fact it's the LUPINE.

The SEQUOIA was in the district at the same time but she was a longer and totally different hull shape and didn't have white topping on the bow. No doubt the SEQUOIA also tended the lightship from time to time; it just wasn't "this time."

Wayne Wheeler
President, U.S. Lighthouse Society
244 Kearney St. - 5th Floor
San Francisco, CA 94108



The CABIN BOOKSHELF

STEAMING ABOUT THE WEST COAST

Robin E. Sheret, *Smoke Ash and Steam, West Coast Steam Engines*, (Victoria B.C.: Western Isles Cruise & Dive Co. Ltd., 1997); 108 pages, illustrated with photographs and diagrams, glossary, bibliography. ISBN 0-92-1107-04-8. (Softcover) $19.95.

Book Review by Bob Crawford

During the course of researching material for this issue and the story of the BERKELEY engineering plant, we consulted numerous engineering manuals, attempting to verify technology, practice and terminology. Trying to synopsize pages of text from these manuals into terms the lay reader would be familiar with and still remain interested in the basic story was a challenge. It is with this experience in mind that I can appreciate the effort Robin E. Sheret made in his book, *Smoke Ash and Steam, West Coast Steam Engines.*

While much of the history of ships themselves and the West Coast present more questions than answers, the text and simplified drawings go far to answer how it is that steam is put to work. The author organized the text in a manner that allows the reader to skip about in areas that are of interest, mix and match equipment so as to understand what there is in a particular engineroom, or simply read for knowledge's sake. Most of the drawings are easy to follow, although when the book attempts to show sequential events with multiple panels of very similar looking details, it becomes very easy to lose track of what is being shown. With some small effort, though, these passages can be gotten through and do not detract from an overall pleasant learning experience.

I do, however, have a couple of problems with the book. For some reason, the West Coast ceases to exist south of Point Conception. There is virtually no mention of any activity in Los Angeles and San Diego. The steamers HARVARD and YALE, CATALINA, ORIZABA, and tug SANTA FE, to mention only a few, fail to receive any attention at all. In addition and closest to home, the BERKELEY, with her wonderfully restored engineering spaces, is nowhere to be seen (MEDEA was European so I'll overlook her deletion, although EPPLETON HALL, also from Europe, did receive some notice). Secondly, steam's evolution ceased with the advent of the multiple expansion reciprocating steam engine, and as there is little explanation of the steam turbine, the author elected to overlook the 4000 H.P. turbine driven LANE VICTORY, homeported in San Pedro. Hopefully, before the publication of the second edition, we will get Mr. Sheret to the southern end of the West Coast, convince him of its existence and show him some of the finest examples of the age of steam still around. Sour grapes aside, if you have an interest in how steam works, this book will be a rewarding read.

Bob Crawford, an employee of the San Diego Maritime Museum, serves as the Chief Engineer of the steam yacht MEDEA.

UNION IRON WORKS
The Builders of the BERKELEY

By Roberto Landazuri

A true Forty-niner, the shipyard that built and launched the BERKELEY began in 1849 when the Donahue brothers, James and Peter, opened their smithy.[1] Peter, a trained foundryman, and James, a boilermaker, ran their simple charcoal forge and a pair of hand-operated bellows, in a modest structure on the northwest corner of Jackson and Montgomery Streets in San Francisco. Their brother Michael, a molder by trade, joined them and the operation moved to larger quarters at the northeast corner of First and Mission Streets, in an area known as Happy Valley. Presumably the union of the three brothers and their crafts inspired them to officially conduct business as Donahue's Union Iron and Brass Foundry.

Shortly after their March 1850 move to First and Mission, the Donahues achieved an historic first when they produced the first iron casting in the state of California. The item, a spring bearing for the propeller shaft of the 1844 steamer JOHN S. MCKIM,[2] the first commercial vessel built in the United States having a propeller drive, proved an important landmark for the Donahues as well. At fifty cents a pound, the Donahues turned a good profit on the 200-pound pillar blocks, but more importantly, this job represented the company's first foray into maritime production.[3]

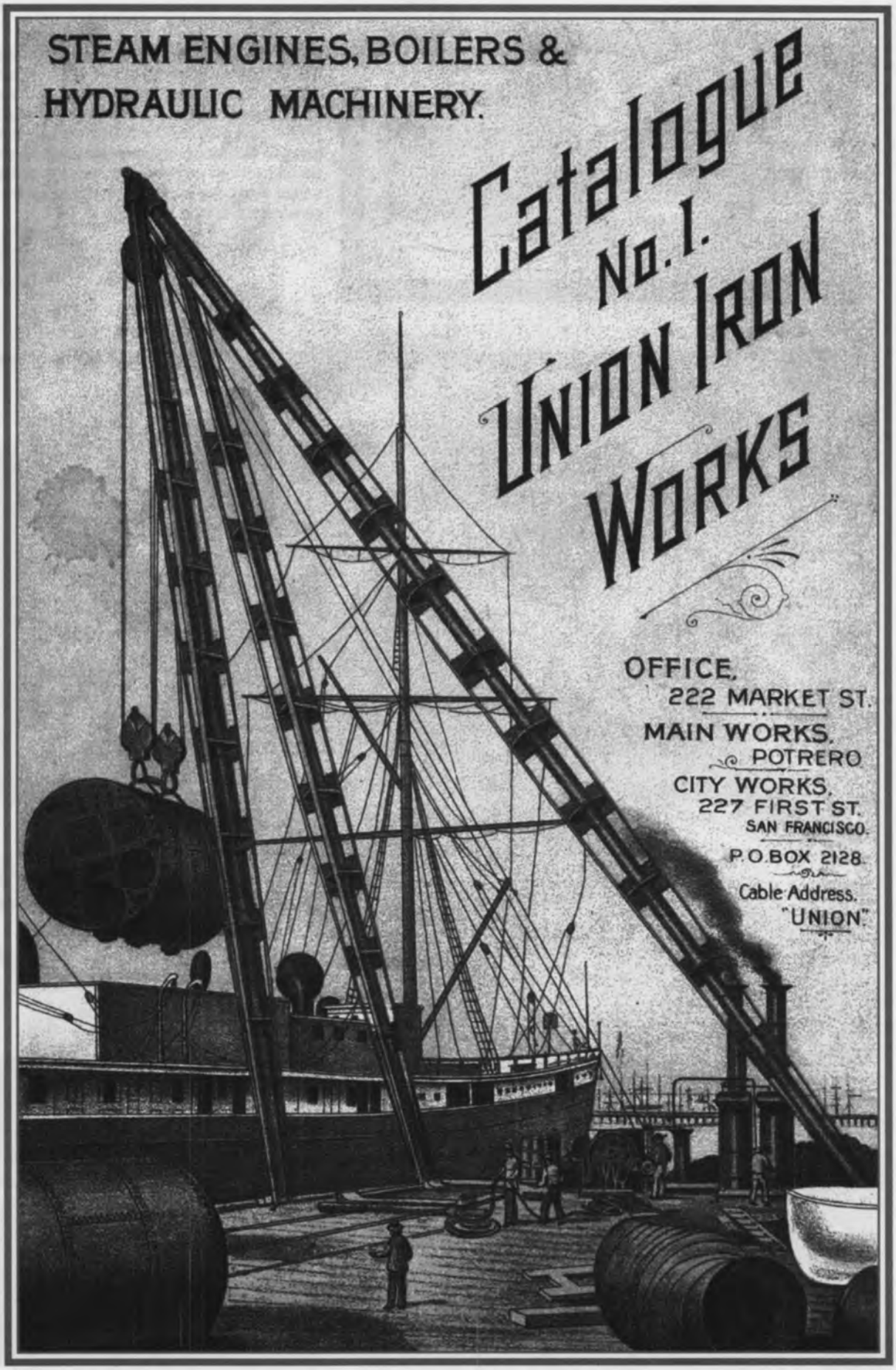
A few years later, James and Michael sold out to Peter, who became the sole owner.[4] Under his leadership, the company made millions in the early 1850s manufacturing steam engines, saw mills, threshing machines, grist mills, gearing, malt rollers, and other kinds of mill work. They also advertised building castings, iron fronts and columns for stores, railings for balconies and stairs, door and window sills, and staircases. Ever the visionary, Peter Donahue began a 33 year association with the San Francisco Gas Works[5] in 1852 when he played an instrumental role in the incorporation of this utility, which first brought gas street-lighting to San Francisco on the evening of February 11, 1854.

In June 1856 Donahue constructed a large brick building on the First and Mission site, and shortened the company's name to Union Iron Works, Peter Donahue, Proprietor. The company achieved another important landmark when it designed and constructed the machinery for the sidewheel steamer SAGINAW,[6] the first US Navy steam vessel built on the West Coast, which was completed at Mare Island in 1859.[7] Five years later Union Iron Works assembled the second war vessel constructed on the Pacific Coast, the Civil War monitor CAMANCHE.[8]

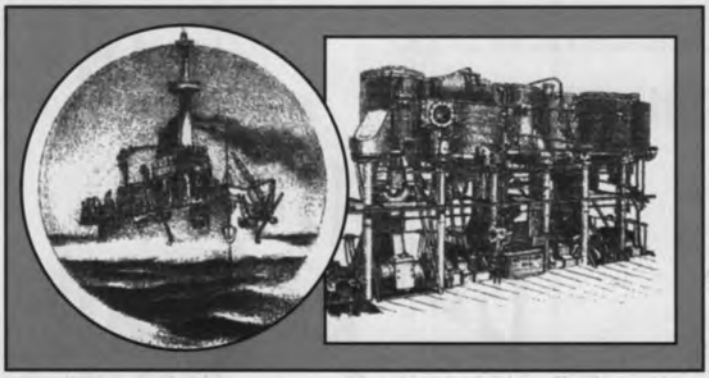
Donahue also became involved in transportation ventures such as the Omnibus Street Railroad[9] and the fifty-mile San Francisco and San Jose Railroad,[10] for which tracks would eventually be built around Mission Bay southward through the Mission District. Finding himself spread too thinly across so many undertakings, Peter Donahue sold two-thirds interest in Union Iron Works to Henry J. Booth, formerly of the Marysville Foundry, and local businessman Charles S. Higgins. From 1863 to 1865 the company operated as Donahue, Booth and Company, adding to its products the manufacture of locomotives.[11] A significant appointment during this time was Irving M. Scott as the firm's general manager.[12] When Donahue, Booth and Company failed to flourish, Peter Donahue and Charles Higgins sold their interest in the company to a partnership comprised of Henry Booth, George W. Prescott, and Irving M. Scott. For the next ten years, H. J. Booth and Company (Irving M. Scott, general manager) promoted their production of

> locomotives, marine and stationary boilers, flue, tubular, Cornish and marine boilers, hoisting machines, pumps and pumping machinery, quartz mills, concentrators, stamps, mortars, hydraulic machinery and distributors, screens, Blake quartz crushers, pattern making, oil machinery, as well as plans and specifications for mill work furnished free of cost.[13]

When Henry J. Booth retired in June of 1875, the company changed its name to Prescott, Scott and Company, and shifted its focus to the construction of large hoisting and pumping plants for the Comstock Lode, and machinery for the Alaska-Treadwell Mines.[14] Pumping machinery capable of pumping 106,000 gallons of water per hour from a depth of 400 feet was built for Union Consolidated Mine.



The cover from Union Iron Works' first catalogue, published in 1892, depicts the installation of a Scotch boiler with three furnaces, similar to, though smaller than, the Scotch boilers installed on the BERKELEY.

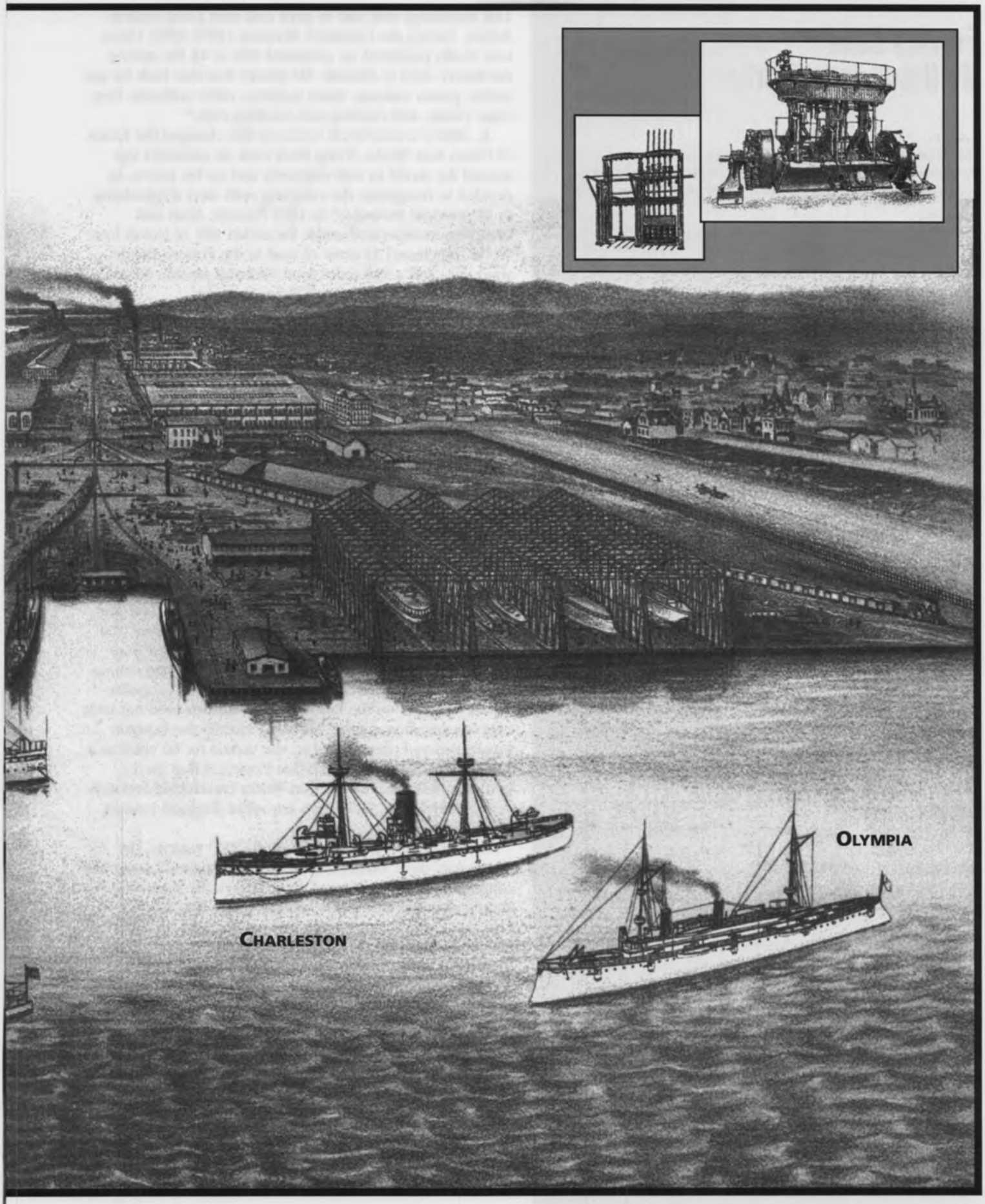


This two-page general view of the Potrero site, published in 1892 in Catalogue No. 1, includes five of the naval vessels constructed by Union Iron Works. The inset in the upper left-hand corner is of an early triple-expansion engine built for the cruiser shown next to it. The inset on the far right shows a compound engine with thrust bearings on each end, identifying it as a double-ended ferryboat engine, from the same era as the one constructed for the SILVER GATE in 1887.

OREGON

SAN FRANCISCO

MONTEREY


CHARLESTON
OLYMPIA

Ferries Built By Union Iron Works

BERKELEY
1898 Southern Pacific Railroad passenger ferry. First complete ferry built by Union Iron Works. (Firm designed ferryboat SILVER GATE, and designed and built her engines in 1887 for San Diego and Coronado Ferry System).

SAN PABLO
1899 Atchison, Topeka & Santa Fe Railroad passenger ferry. Sold for scrap in 1937. Her hull became first fish reduction plant on San Pablo Bay.

TAMALPAIS
1900 Northwestern Railroad passenger ferry. Burned for scrap in 1947.

SAN PEDRO
1910 Atchison, Topeka & Santa Fe Railroad passenger ferry. Renamed TREASURE ISLAND when she joined Key System in 1938.

NAPA VALLEY
1910 Monticello Steamship Co. passenger ferry. In 1927 Golden Gate Ferries acquired Monticello Steamship Co. and then, two years later, merged with Southern Pacific Railroad. Ferry purchased by Puget Sound Navigation Co. in 1942 and renamed MALAHAT. In 1956, towed to Portland, Oregon and burned for scrap.

SAN MATEO
1921 Six-Minute Ferry Co. auto ferry. This short-lived ferry company operated for three years (1919-1922) on the Carquinez Strait between Vallejo's Morrow Cove and Crockett. Some plans identified this company as "Rolph Navigation Co." since the chief funding source for the firm was James "Sunny Jim" Rolph, five-term mayor of San Francisco (1912-1930) and later the governor of California. Six-Minute Ferry began construction but never took possession of ferry since she was still on the ways when Southern Pacific acquired the company. Ferry went to Puget Sound in 1940.

SHASTA
1922 Six-Minute Ferry Co. auto ferry. Acquired by Southern Pacific while under construction. Went to Puget Sound in 1940, later moved to Willamette River, Portland, Oregon, and turned into a restaurant.

YOSEMITE
1922 Six-Minute Ferry Co. auto ferry. Acquired by Southern Pacific while under construction. Went to Rio de la Plata in 1939 and renamed ARGENTINA.

EL PASO
1924 Richmond-San Francisco Transportation Co. auto ferry. Retired in 1956.

NEW ORLEANS
1924 Richmond-San Francisco Transportation Co. auto ferry. Renamed RUSSIAN RIVER in November 1938. Retired 1956.

KLAMATH
1924 Richmond-San Francisco Transportation Co. auto ferry. Retired in 1956. San Francisco design firm of Walter Landor & Associates acquired and berthed her at Pier 5. Rebuilt in 1964, she served as Landor's corporate headquarters from 1968 until 1986 when Landor sold her to Dura-Flame Corp., who moved her up the Delta to Stockton.

FRESNO
1926 Southern Pacific Railroad auto ferry. Went to Puget Sound as WILLAPA in 1937.

STOCKTON
1926 Southern Pacific Railroad auto ferry. Went to Puget Sound as KLICKITAT in 1937.

MENDOCINO
1927 Southern Pacific Railroad auto ferry. Went to Puget Sound as NISQUALLY in 1937.

This machinery was said to have cost over a half-million dollars. During the Comstock Bonanza (1859-1880) Union Iron works produced an estimated 90% of all the mining machinery used in Nevada. Machinery was also built for gas works, power stations, water turbines, cable railroads, beet sugar plants, and roasting and smelting ores.[15]

In 1880 a crucial event occurred that changed the future of Union Iron Works. Irving Scott took an extended trip around the world to visit shipyards and on his return, he decided to reorganize the company with steel shipbuilding as its principal business.[16] In 1883 Prescott, Scott and Company incorporated under the earlier title of Union Iron Works, purchased 32 acres of land in the Potrero District, about two and a half miles from First and Mission Streets, and constructed a new shipbuilding complex.

In 1892, the state-of-the-art shipyard at 20th and Illinois Streets was described as the most complete West Coast steel and iron shipyard, equal to any yard in the United States or Europe. The new yard included a hydraulic lift drydock (invented by George W. Dickie), 300-ton and 600-ton hydraulic flange presses, electric and hydraulic traveling cranes, numerous other hydraulic tools, mills, generators and motors for independent drive.[17] General Manager Irving Scott ran the plant while the Dickie Brothers, George and James, oversaw the firms' shipbuilding operations as superintendent and manager. Thanks to its major expansion program, Union Iron Works was equipped to manufacture in its own plant everything that heretofore had to be purchased from vendors outside the region.

In 1887 Union Iron Works designed and built the engines for San Diego's ferryboat SILVER GATE, the first propeller-driven ferry on the Pacific Coast. Unfortunately, she proved so difficult to handle that she was removed from service shortly after her launch.[18] A decade later the company designed and built the BERKELEY, the second propeller-driven ferryboat on the Pacific Coast, and powered her with a triple-expansion engine. Although initially the BERKELEY was considered unmanageable, she served for 60 years as a Southern Pacific ferryboat on San Francisco Bay. In the years that followed, Union Iron Works constructed fourteen steel-hulled ferries, more than any other shipyard located along the Bay.[19]

During the last two decades of the 19th century, the firm's glory days, Union Iron Works built some 75 naval and commercial vessels, many of them historically significant.[20] Shortly after the turn of the century Union Iron Works underwent a series of ownership changes until, in 1905, Bethlehem Steel of New Jersey purchased the yard. When Bethlehem Steel turned the shipyard over to New York's Todd Shipyards in 1982, the marine architectural drawings and company records from the San Francisco yard were donated to San Francisco Maritime National Historical Park.[21] Nearly all the vessels built by Union Iron Works are represented in this collection, a collection that contains an important part of San Francisco's maritime history.

Roberto Landazuri works as a project archivist in San Francisco Maritime National Historical Park's Historic Documents Department. He also works as an archivist and librarian at the San Francisco History Center of the San Francisco Public Library, and at University of California, San Francisco's Archives and Special Collections.

NOTES

1 For more on Peter Donahue's early activities in California, see George Harlan and Clement Fisher, Jr., *Of Walking Beams and Paddle Wheels, A Chronicle of San Francisco Ferryboats*, (San Francisco: Bay Books Ltd., 1951), pp. 76-109.

2 Built in Allowaystown, New Jersey, in 1844, the 242 ton JOHN S. MCKIM sailed out of Bridgeton, New Jersey. After a 14-year career, she was abandoned and disappeared from the official records. See *Merchant Steam Vessels of the United States, 1790-1868*, (New York: The Steamship Historical Society of America, Inc., 1975), p. 115.

3 "History of the San Francisco Yard, Bethlehem Steel Company, Shipbuilding Division," *The Argonaut*, August 29, 1947, p. 10.

4 James died in 1862 at the age of 38. Michael moved to Davenport, Iowa, where he served three terms as mayor.

5 Charles Coleman, *PG&E of California. The Centennial Story of Pacific Gas and Electric 1852-1952*. San Francisco Gas Works, the precursor to Pacific Gas & Electric, was largely financed by Union Iron Works' early profits. The three brothers were among the original eleven stockholders. From 1855 until his death in 1862 James Donahue served as San Francisco Gas Works' president. Peter also served as president from 1866-1867 and again from 1870-1883.

6 On September 16, 1858 the Mare Island Navy Yard laid down the keel of the first naval vessel built on the Pacific Coast. Originally launched as the TOUNCEY on March 3, 1859, she was renamed the SAGINAW prior to her commissioning on January 5, 1860. In 1870, while en route to San Francisco, the SAGINAW detoured to Ocean Island to rescue any shipwrecked sailors stranded there. As she neared this rarely visited island on October 29, the SAGINAW struck an outlying reef and grounded. Her crew transferred a large portion of her gear and provisions to the island before the surf battered the ship to pieces. On November 18, Lt. John G. Talbot, the executive officer, led a party of five and set off in a small boat for Honolulu in search of help. Thirty-one days and 1,500 miles later, their boat capsized in the breakers off Kauai. Coxswain William Hanford, the only survivor, managed to secure aid for his marooned SAGINAW shipmates. See *Dictionary of American Naval Fighting Ships*, Vol. VI (Washington, D.C.: U.S. Government Printing Office, 1976), p. 230.

7 Captain David G. Farragut, who later became the Navy's first Admiral, established Mare Island Navy Yard in 1854 on the northeastern end of the San Francisco Bay and served for four years as its first commandant. In a letter to the Secretary of the Navy dated May 19, 1858, Farragut wrote "... it would have been my proudest feeling to build a ship of war of the native woods ... I hope it will be done by some other commandant." Four months after his departure, Mare Island Navy Yard received orders to build a four-gun, wooden-hulled, steam-driven, side-wheel gunboat that displaced 453 tons and had a draft of $4^1/_2$ feet. During the next 140 years, Mare Island Navy Yard built over 500 naval vessels that reflected maritime technology's evolution from sail to coal to fuel oil to atomic power. On March 31, 1996 the Navy closed the Mare Island Naval Shipyard and began the process of turning the site over to the city of Vallejo. See Sue Lemmon and E.D. Wichels, *Sidewheelers to Nuclear Power, a Pictorial Essay Covering 123 Years At the Mare Island Naval Shipyard*, (Annapolis: Leeward Publications, Inc., 1977.)

8 The CAMANCHE was associated with several Pacific Coast "firsts." Built in 1863 by Donahue, Ryan & Secor & Co. of Jersey City, New Jersey, she was dismantled and shipped around Cape Horn aboard the AQUILA, which sank at the dock in San Francisco on November 14, 1863. When Union Iron Works raised, reassembled, and launched the CAMANCHE a year later, she attained the distinction of being the first monitor built on the Pacific Coast, the first of that vessel type to sink (albeit in unassembled form), and, subsequently, the first Pacific Coast-built monitor to be salvaged.

9 One of San Francisco's first public transit systems and the first street railroad on the Pacific Coast, the Omnibus Street Railroad opened for business in October 1862. The system's horse-drawn equipment operated from North Beach to South Park by way of Montgomery and Third Streets.

10 In addition to Donahue's business involvement, Union Iron Works manufactured equipment for this company. The railway, which later extended its service as far as Gilroy (approximately 25 miles south of San Jose), was eventually sold for $3.25 million and developed into the Southern Pacific Railroad system.

11 This move brought another first to the history of the Union Iron Works. During this time they built the "California," the first locomotive constructed on the Pacific Coast. The shop built a total of seventeen locomotives.

12 "Irving M. Scott," *Overland Monthly*, vol. XXVII (Second Series), May, 1896, no. 161, p. 4. Scott, born near Baltimore in 1837, came to California in 1860 and almost immediately went to work for Peter Donahue as a draftsman. Three years later he accepted the position of superintendent of drafting at the Miners' Foundry. Before year's end, Scott returned to Union Iron Works as the superintendent and general manager. Scott's conviction that the Comstock Lode (the gold and silver bonanza that had begun at Virginia City, Nevada in 1859) would continue to provide major revenues for iron works was the main reason he'd sought the supervisory position at Miners' Foundry. It also must have been what motivated Donahue, Booth and Company to bring him back as general manager within a year. His brother, Henry Scott, also worked in San Francisco's foundries and eventually served as president of the Union Iron Works. See Irving and Henry Scott entries in James D. Hart's *A Companion to California* (New York: Oxford University Press, 1978).

13 Hugo P. Frear, "History of Bethlehem's San Francisco Yard, Formerly the Union Iron Works," in *Historical Transactions 1893-1943* (New York: The Society of Naval Architects and Marine Engineers, 1945).

14 The Alaska-Treadwell Gold Mining Company, a conglomerate of four mines located on Douglas Island, across the channel from Juneau, was the first large-scale mining operation in Alaska and also one of the most productive. Between 1882 and 1917 Alaska-Treadwell yielded more than $66 million. At its height, following the 1889 installation of the 240-stamp mill (the largest in the world), the Treadwell mine turned out $70,000 to $80,000 a month. See *The Chicago Record's Book for Gold Seekers* (Chicago: Monarch Book Company, 1897) and *The Alaskans* in Time-Life's "The Old West" series (Alexandria, VA: Time-Life Books, 1977).

15 *A Century of Progress 1849-1949. San Francisco Yard.* (San Francisco: Bethlehem Steel Company Shipbuilding Division, 1949), p. 9.

16 On December 28, 1886, Union Iron Works received its first building contract for a naval vessel, the CHARLESTON. According to the 1893 *Merchant Vessels of the United States*, the CHARLESTON was built between 1886 and 1889. She was 300 feet long by 45 feet wide with a mean draft of 18 feet 6 inches, and displaced 3,730 tons. Her indicated horsepower was 6,493 and she made 18 knots. *Jane's All the World's Fighting Ships, 1898*, recorded her length as 312 feet, her sea speed around 15 knots, and listed two 10 inch, six 6 inch, and six small quick-fire guns as her armament. (See Ruth Teiser, "The CHARLESTON: An Industrial Milestone," *California Historical Society Quarterly*, vol. XXV, no. 1, (March 1946), pp. 39-53.)

17 For a detailed description of the Union Iron Works shipyard, see *Master Hands in the Affairs of the Pacific Coast: Historical, Biographical and Descriptive* (San Francisco: Western Historical and Publishing Co., 1892), p. 262.

18 Although Union Iron Works designed the SILVER GATE and her engines, the company built only her engines. A San Diego ship builder constructed the SILVER GATE and, in the process, increased the size and weight of the ferryboat by lengthening her and building a second deck. Unfortunately, the Union Iron Works-built engine was built to the ferry's original specifications and, therefore, was not powerful enough to adequately run her. The propeller technology also made her difficult to handle. These problems led to her failure.

19 Eight of these ferries operated as part of the Southern Pacific's mighty ferry fleet; three were built for the Richmond-San Francisco ferry system; two for the Santa Fe ferry system; and one for Northwestern Pacific, a joint venture of Southern Pacific and Santa Fe.

20 While the following list of naval and commercial vessels built by Union Iron Works is by no means complete, it does include many of the well known vessels they built: the collier ARAGO (keel laid 1884), the first steel merchant ship built on the Pacific Coast; the cruiser OLYMPIA, Dewey's flagship at Manila Bay; the battleship OREGON, famous for her 14,000-mile record-breaking dash to Cuba in 1898; battleships WISCONSIN, OHIO, and CALIFORNIA; destroyers FARRAGUT, PAUL JONES, PERRY and PREBLE; gunboats WHEELING and MARIETTA; monitors CAMANCHE, MONTEREY, and WYOMING; experimental vessels like the two-man submarines GRAMPUS and PIKE; early tankers GEORGE LOOMIS and WHITTIER; ships for the Japanese and Russian navies; and, of course, the propeller-driven ferryboat BERKELEY.

21 See *A Century of Progress, 1849-1949*, p. 15, and Michael Lang, "Historical Notes, Bethlehem Steel Shipbuilding Collection, P82-12A," San Francisco Maritime National Historical Park HDC 345, Bethlehem Steel Corporation, Shipbuilding Division, San Francisco Collection.

THE DRIVING FORCE

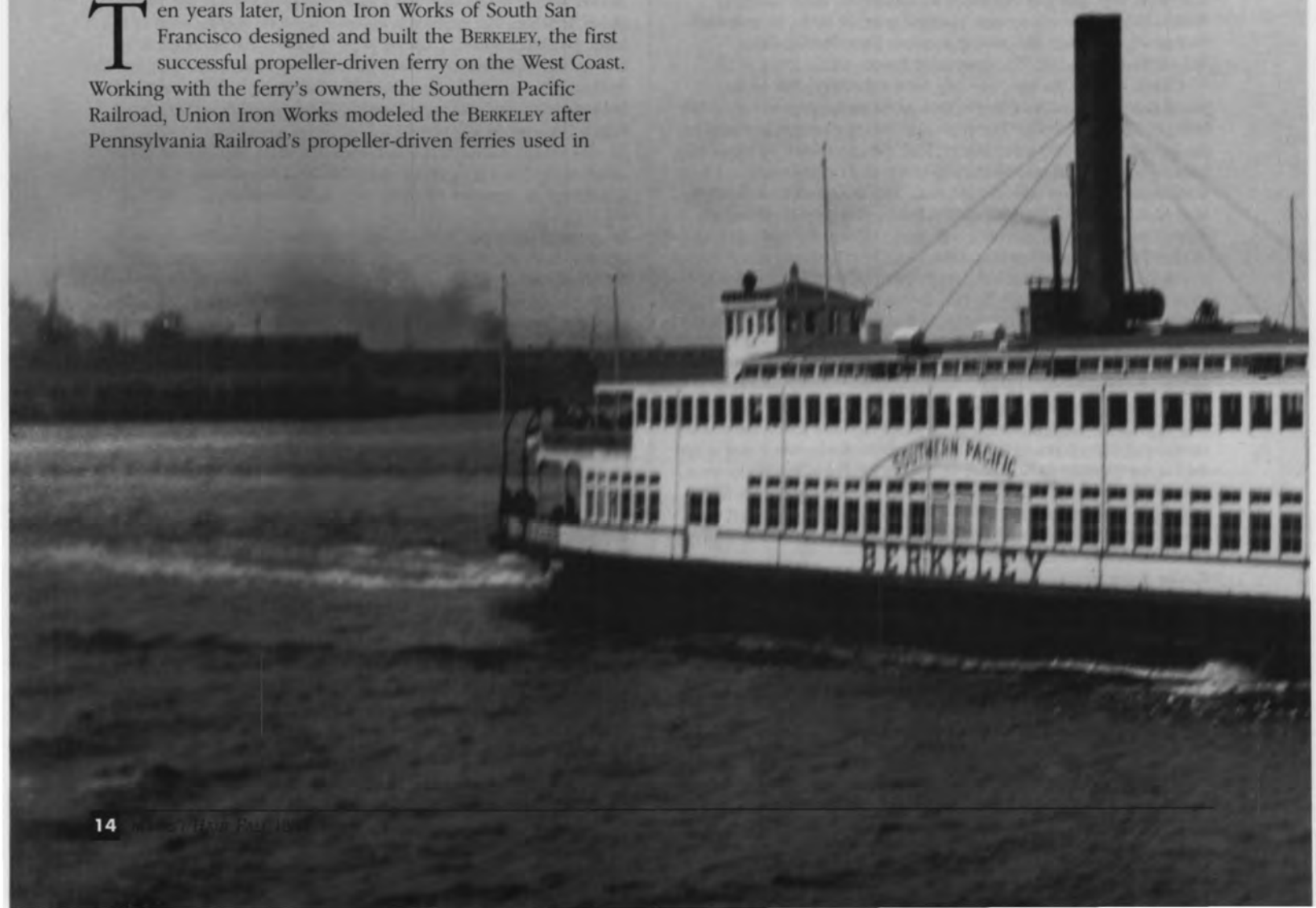
BY POWELL HARRISON

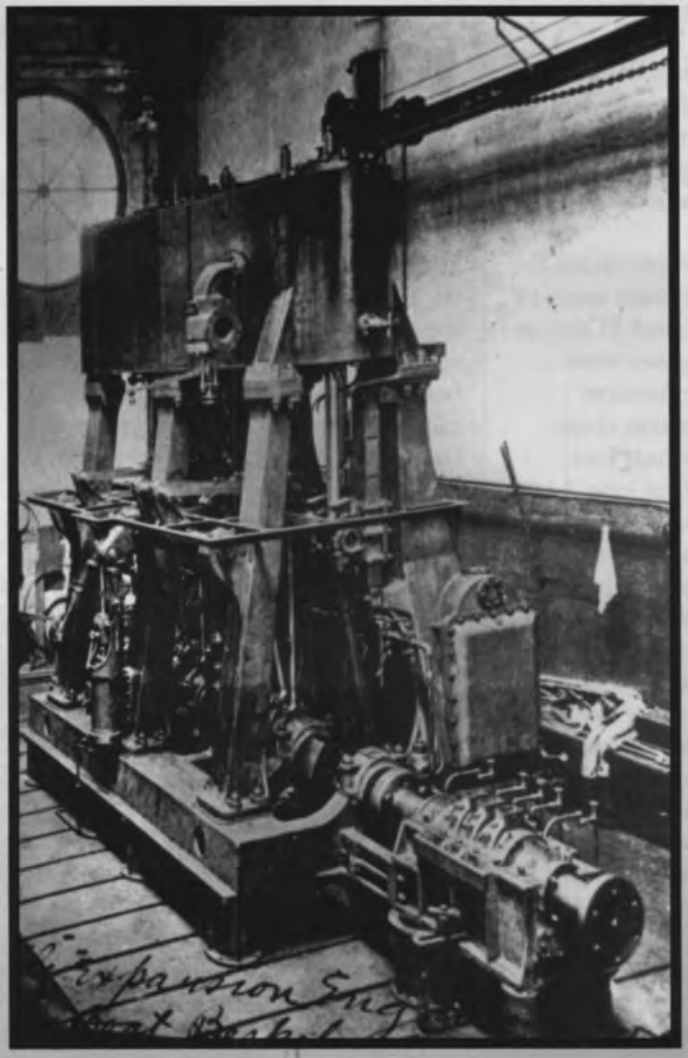
ORIGINS

In the 1840s propeller-driven vessels began appearing throughout the world, and by 1879 a propeller-driven ferryboat worked on Sydney Harbor in Australia.[1] The first propeller-driven ferry on the Pacific Coast made her unsuccessful appearance in 1887 when the San Diego and Coronado Ferry system took delivery of the SILVER GATE. Despite her owners' high hopes and confidence, she was under-powered[2] and employed a technology her operators failed to understand: the screw propeller. During her short time in service she managed to severely damage the ferry slips in San Diego Bay before she was retired.[3]

Ten years later, Union Iron Works of South San Francisco designed and built the BERKELEY, the first successful propeller-driven ferry on the West Coast. Working with the ferry's owners, the Southern Pacific Railroad, Union Iron Works modeled the BERKELEY after Pennsylvania Railroad's propeller-driven ferries used in New York harbor.[4] Compared to the 25-to-60-psi (pounds per square inch) reciprocating engines of her paddlewheel contemporaries, the BERKELEY's triple expansion engine and steam plant was far more complex, capable of operating at a much higher pressure, and infinitely more reliable. Like San Diego's SILVER GATE, she too proved difficult to handle at first, and earned the nickname "the pile driver's friend."

The ferryboat BERKELEY entered service on November 6, 1898 and continued carrying passengers across the San Francisco Bay until March 1958. Although few of her mil-





lions of passengers ever saw her engine room, they came to rely on its power and dependability. BERKELEY was big and fast: she churned along at better than 12 knots with 1,700 passengers plus freight, and could cross the Bay in 20 minutes making a round trip, with load and unload times, once every 50 minutes.

Unlike an economical Eastern practice of the day, BERKELEY's engine wasn't scavenged from a beached or worn-out boat. Union Iron Works specifically designed and built this reciprocating, double-acting, triple expansion, high-pressure (for the time) steam engine for the BERKELEY. The engine drove the ferry at 12.5 knots throughout her career even though, in acceptance trials, she was clocked at 13.66 knots.[5]

STEAM GENERATION/THE BOILERS

The steam cycle begins slightly forward of amidships in the fire room, or boiler room. During her first three years, BERKELEY burned coal and required a boiler room crew of one or two water tenders, who monitored water flow and levels, and four stokers, who fed three furnaces on each end of the two side-by-side boilers. In addition to maintaining the fires during their l0-to-12 hour shifts, which they worked six-and-a-half days a week, the stokers also cleaned out clinkers and ash that they manhandled topside and threw into the harbor.[6] For this they earned

Left: BERKELEY's engine in Union Iron Works' shop before installation. ***(Courtesy San Francisco Maritime National Historical Park, A4.28,862).***

Below: BERKELEY crossing from San Francisco to Oakland, March 8, 1914 before her side stairs and wider smokstack were installed. ***(Courtesy San Francisco Maritime National Historical Park, B7.1109, Louis Weule Collection.)***

The Triple Expansion Engine

A triple expansion engine has three cylinders of graduated sizes. Steam enters the high-pressure cylinder, the first and smallest of the three, with a force that pushes the piston from one end of the cylinder to the other, a distance referred to as a stroke. As the steam "works" to move the piston, it also expands and loses a portion of its heat and pressure. Once the piston stroke is completed, the steam is exhausted from the high-pressure cylinder into the intermediate -pressure cylinder, which is the second and medium-sized cylinder. Here the process is repeated. Again the steam expands and loses some of its heat and pressure. From the intermediate-pressure cylinder the steam is exhausted into the low-pressure, the third and largest, cylinder where it once again forces the piston through its stroke. In order for this engine to power the propeller in a smooth manner, each cylinder must produce the exact same force even though the steam is constantly expanding and cooling. This is accomplished by increasing the size of the cylinders.

The following overly simplified example explains the basic mathematical concept that allows a triple expansion engine to produce a consistent force capable of smoothly powering the ship's propeller.

Let's say we have 100 psi steam pressure available and our engine has a 1 square inch high- pressure cylinder, a 2 square inch intermediate-pressure cylinder, and a 4 square inch low-pressure cylinder. When the available steam enters the first low-pressure cylinder, it exerts 100 psi against the 1 square inch of surface producing the equivalent of 100 pounds of force. In the process of doing its work, the steam gives up some of its heat, energy, and/or pressure as it expands. For simplicity's sake, let us say half of its energy is lost. This means that steam presssure of 50 psi is exhausted into the 2 square inch intermediate-pressure cylinder where 50 psi times 2 square inches of surface area produces 100 pounds of force. Again we lose half the energy and pressure, giving us 25 psi. This steam is exhausted into the 4 square inch low-pressure cylinder where 25 psi times 4 square inches of surface area produces 100 pounds of force. Our single burst of 100 psi steam from the boiler, therefore, produced 100 pounds of force in all three cylinders.

Although the foregoing example relies on a mathematical equation that is extremely simplistic compared to the precise calculations required to design and run a steam engine, it does show the basic concept that allows a triple expansion engine to produce efficient and consistent power.

from 50 cents to a dollar a day. Their duties included breaking down with a hammer the larger chunks of coal into smaller, more uniform sizes, in order to insure adequate air circulation on the furnace grate.

BERKELEY'S two double-ended fire tube or Scotch boilers were 19 feet long and almost 11 feet in diameter. Hot furnace gases were routed from each of the furnaces through separate combustion chambers, which directed the heat into some of the 220 seven foot long 2-1/2-inch diameter pipes, inside each boiler. The hot gases passed through the tubes and transferred heat to the water flowing around the tubes. The steam generated in this manner was then routed to the engines. In spite of the power generated by steam engines, their efficiency seldom exceeded 18% as most of the heat generated in the furnace went up the smokestack.[7]

In 1901, Southern Pacific changed BERKELEY'S plant from coal to crude oil or bunker C and installed four 2,138-gallon fuel tanks in the former coal bunker spaces.[8] This change of fuel reduced the boiler room crew to a water tender and two firemen on each shift.[9] Taking on liquid fuel was quicker, simpler, and cleaner than lading coal, and it left no ashes to throw into the bay.[10]

In 1924, four Babcock and Wilcox water-tube express-type boilers replaced the two Scotch boilers. Using a different principle than their predecessors, each boiler had a bank of water-filled tubes in a brick-lined firebox, which led to a separate steam drum. Heat was transferred as it passed around the water-filled pipes in the furnace. Each bank of tubes was angled at ten degrees.[11] Tubes four-inches in diameter made up the lowest rank with tubes two-inches in diameter making up the remaining ranks (nearly 400 in each boiler) and culminating in the steam drum at the top of the furnace, where the steam itself was generated. All of the sediments and impurities settled in the mud drum at the bottom of the furnace where they were discharged overboard. The lighter Babcock & Wilcox system produced steam quicker than the Scotch boilers.[12]

A "water tender" still oversaw water flow, tank levels, and the 400-gallon fresh water make-up feed water supply. After doing its work in the main and auxiliary engines, this system recycled the steam and condensed it back into feed water, thus eliminating the necessity of carrying large quantities of fresh boiler water. Closed sea water cooling tubes ran through the condenser and back over the side, a marked improvement over systems that sprayed contaminating sea water into condensing steam, which increased system corrosion and boiler scale buildup.[13]

In the boiler room, a "fireman" saw to all steam generating equipment, piping, joints, and seals that handled live steam. He and the engineer were the principal maintenance and repairmen on the steamer.

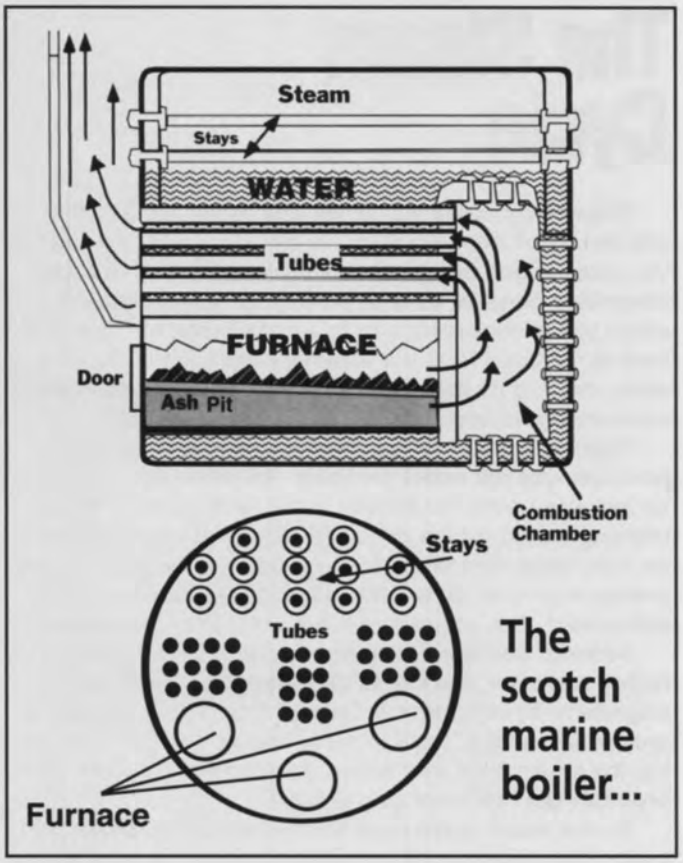
MAIN ENGINES

The principle that steam continually expands until it reaches atmospheric pressure and temperature was what drove BERKELEY'S triple-expansion engine. From the boiler, through high-pressure piping, the throttle and a steam chest (a regulating cylinder or chamber), steam entered the first, and smallest, cylinder. A piston inside the cylinder rode up and down as steam was delivered. In order to do this, the steam chest discharged through a flat, box-like "D-slide valve" or "piston slide valve" that moved back and forth over three ports - two inlet ports and one exhaust port. The valve slid so that it (a) admitted steam to the operating side of the piston, and (b) simultaneously closed the opposite side's inlet and opened its exhaust. As the engine rotated the ports alternated, which pushed the piston in both directions of its stroke. The exhaust from the first cylinder discharged into the second, or intermediate, cylinder, and from there into the third, and largest, cylinder. All three cylinders contained the same steam chest arrangement. These "slide valves"[14] were driven by a set of rods leading from eccentrics[15] on the propeller shaft that were timed precisely to



BERKELEY brick-lined furnace or fire box interior. On the right the three furnace doors can be seen. *(Courtesy of John Wright)*

the motions of its partner piston rod to reverse the steam to the cylinder each 180 degrees of a revolution. All ports in pressure vessels, through which operating rods, arms, and pistons moved, must have had effective gaskets, stuffing boxes, and packing glands and reliable lubrication to allow movement of their respective areas and yet prevent the loss of steam.[16] Spent steam exhausted from the low-pressure cylinder, or the third and largest cylinder, was run



Below: Ken Reynard examines machinery in BERKELEY's engine room, November 1972, before she was purchased by the museum. *(SDMM Collection, P-2028A)*



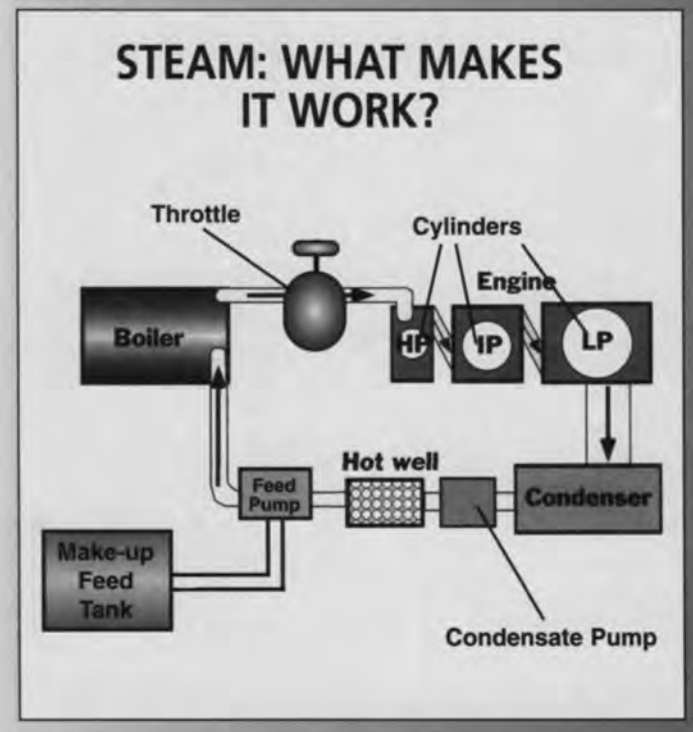
The Steam Cycle

The energy contained in various fuels - wood, coal, petroleum, or even uranium - is transferred to the engine via water, which becomes steam when heated. Once the steam has done its work in an engine, it is exhausted, either to the atmosphere or to a condenser. Any residual heat is removed from the steam by cooling the vapor and returning it to its liquid state, water. This process, called condensing, is beneficial for a number of reasons.

First: The greater the difference between the inlet pressure and the outlet pressure, the more energy can be extracted from the engine in the form of work. By condensing steam, which occupies a large volume (as much as 1600 times that of water), into water, a vacuum occurs making a greater difference in the inlet/outlet pressure differential, thus extracting more work from the steam.

Second: Sea water with its mineral and salt content is highly corrosive and would soon reduce a boiler and engines to a rusty mass if used as feed water. Therefore, only fresh water is used in most boilers and by condensing the steam back into water, you conserve it. This was probably the first recycling program.

So the steam cycle is as follows: water heated in the boiler into steam, out through the main steam stop valve, through the throttle into the engine, exhausted into the condenser and returned to a liquid state – water or condensate. The condensate pump then pumps the water into a "hot well" where filters remove impurities (oil, dirt, etc.). The feedwater pump then pumps the clean water back into the boiler, where it is heated once again to become steam.



through the condenser, cooled and returned to the boiler as feed water.[17]

BERKELEY'S main engine cylinders are 22, 34, and 56 inches in diameter and each had a three-foot stroke.[18] Steam pressures were 165, 105-110, and 30 psi for the high, intermediate, and low-pressure cylinders, respectively.[19] Under full speed, the engine's sturdy piston rods drove the single shaft and both eight-foot propellers simultaneously at 125 rpm (revolutions per minute) with a rating of 1,450 horsepower.[20] A reversing system called Stephenson links allowed the engineer to change the engine's direction by throwing two levers. One lever, the throttle, stopped the flow of steam. The other shifted a quadrant containing the rods that controlled the timing of the steam entering the cylinder, thus sending steam to the opposite side of the pistons when the throttle was opened again, and reversing the rotation of the propellers. The entire reversing process took 10 seconds or less to complete.

Bearings were lubricated constantly from cone-shaped cups on rods or reservoirs containing wool wicking on stationary bearings and through tubing to the connecting rods and other moving parts. Since the bearings lacked heat sensors or thermometers, the fireman or engineer "slapped the bearings" to monitor their temperatures by leaning over and touching the cranks as they passed.[21]

The engine room crew consisted of an "oiler" who kept all moving parts lubricated and oil reservoirs filled, a "wiper" who answered all bells on the engine order telegraph, wrote the rough log and kept the engine room tidy, and a first- or second-assistant engineer who was the engineer-of-the-watch, supervising the engine room and operating the main engine. The Chief Engineer was in charge of and responsible for the entire engineering operation and crew. A Port Engineer, located at the terminal, oversaw the entire ferry system, trotting from one ship to another, checking their crews' work, occasionally pulling an ailing ferry off the line.[22] Orders for engine speed and direction, or "bells", were received from the wheel house and indicated by an arrow on a clock-type enunciator that displayed all possible orders - Ahead Full, Ahead Half, Ahead Slow, Stand By, Stop, Finished with Engines, Back Slow, Back Half, Back Full. The "wiper" confirmed receipt of these orders by moving a handle on the engine room telegraph. This moved an arrow on the wheel house enunciator to match the Captain's handle position and acknowledged receipt of orders. Immediately, the engineer-of-the-watch executed the order. The Captain could confirm engine actions by two methods. One was a "voice tube" configured to allow him to hear the main engine turning or not turning. The other method was an indicator connected to the propeller shaft that spun an arrow in the wheelhouse indicating the direction the propeller was turning. The engine order telegraph was the main means of communication between the engine room and pilothouse. Verbal communication

was also possible by shouting through a voice tube.

In the early 1920s while visiting his father, Chief Engineer Rae P. Barnett, Earl Barnett was startled by some "strange" bells he heard.

> . . .my father had just finished making a landing. We had just received the "Finished with Engine" signal and started walking away when the telegraph started banging recklessly like it was going out of control. I was startled. I looked at my father and exclaimed, "What was that all about?" He turned to me and, with that quiet smile I knew so well, explained, "It's (Captain) Plumgren's way of saying thank you for a job well done."[23]

AUXILIARIES

Steam also drove an array of auxiliary equipment including BERKELEY'S primary electric plant, a compound vertical engine (two cylinders, 7-1/2 and 13-1/2 in. x 6-in. stroke) that powered a generator and 400 incandescent lights and a secondary electric unit that powered 100 lights for daytime service.[24] Frequently, the steam pressure to these electric plants fluctuated causing the lights to dim, flicker, and flare. The conversion[25] to a 25-KW steam-turbine generator on constant 150-psi, mounted in front of the engineer's desk in the engine room, and a second 15KW steam reciprocating generator, mounted aft of the engine casing, amidships on the main deck solved the flickering light problem. Both of the onboard systems produced direct current.

A steam driven worm gear that turned a grooved drum operated the two steering engines, one under and controlled by each pilothouse. Chains wrapped around the drum pulled on steel rods running the length of the ship, supported on hangers and rollers, that connected to an arc or quadrant on the opposite rudder. Once moored in the slip, the captain put his offshore end rudder amidships. He rang a doorbell for a deck hand to drop a four-inch diameter pintle (locking pin) into the offshore rudder, now the forward or leading rudder, and to remove the pintle from the shore-end rudder. He would then transfer to the other pilothouse for the return trip.[26]

All auxiliary equipment - bilge pumps, whistles, freshwater pumps, boiler feed pumps, condensate pumps, seawater cooling pumps, lube oil service pumps, ventilation, fuel oil heaters and pumps, generators, air compressors, fire pumps, steering engine, and both electrical generators - worked on steam. At the turn of the century steam reigned supreme as the proven power source while electricity, an unproven and unreliable power source, remained a distant second.

Passengers and crew enjoyed cool or warm air in the saloon deck, eating areas, and crew spaces, again through the use of steam power. A squirrel-cage blower,[27] steam-driven through a dedicated compound engine,[28] drew air



BERKELEY'S Chief engineer, Ed Paxton, posed with his hand on the engine reverse lever following the completion of the engine's restoration in 1979. Photo by Roscoe Smith. *(SDMM Collection, P-3757C)*

Below: Ed Paxton exiting the low-pressure cylinder of the BERKELEY engine during its restoration. Photo by Roscoe Smith. *(SDMM Collection, P-3755C)*





Three engine room crewmen, Lawrence E. Bulmore, Chief Engineer, Herb Kenyon, oiler, and Lloyd Price, 1st Asst. Engineer, stand by the engine order telegraph in May 1954. *(SDMM Collection, P-3749C)*



from an intake below the ferry's apron, into the engine room, and then sent it upwards. A network of ducts hidden inside structural members supporting the upper decks, delivered fresh air to a column at the end of each outboard set of seats on the saloon deck. Registers at the top and bottom of those columns, which also support the top deck or clerestory deck, could be adjusted manually for airflow. Ducting delivered air to other spaces including the restaurant and crew compartment. In cool weather, the fireman or engineer down below would open a set of steam coils in the uptakes to heat incoming air to a more comfortable temperature.[29]

TODAY'S ENGINE ROOM

One hundred years after her launch and 40 years after the end of her active service, the BERKELEY's engine room remains intact and transports visitors to an earlier time. Due largely to the vision and ingenuity of Ed Paxton, the main engine runs on hydraulics with reversible and speed-control capabilities for visitor viewing. In addition to the engines, most of the auxiliary equipment operates on compressed air from two (one 5 horsepower and one 10 horsepower) compressors in the after fuel bunker. Paxton's foresight, and the efforts of countless dedicated volunteers, allows engineers, aspiring engineers, and the merely curious to view and contemplate the power plant BERKELEY passengers relied on but never saw or understood.

BERKELEY's restored steering engine, San Francisco end. *(Courtesy of John Wright)*

NOTES

1 Richard E. Brown to Harry Cotterell, September 22, 1975, Brown Collection, San Diego Maritime Museum.

2 When Union Iron Works of San Francisco designed the ferryboat SILVER GATE, the plans called for a "modest, rather plain vessel with one deck for both passengers and vehicles and two simple square pilot-houses - which was a long way from the style in which she was completed. By that time her hull had been lengthened by 10 feet, deepened by 18 inches, with two full decks instead of one [because] someone developed delusions of grandeur [and wanted to] make her as lovely and ornate as a Mississippi river steamboat." (See Jerry MacMullen, "The Saga of the SILVER GATE," *San Diego Union*, May 28, 1972, p. C-7.) These design modifications, instituted and carried out by the San Diego based owners and builder, increased her weight and rendered her engine built by Union Iron Works inadequate to power the vessel. When the SILVER GATE proved unmanageable, her owners blamed Union Iron Works and threatened a lawsuit to recoup the damages she'd caused.

3 The SILVER GATE retired to relative obscurity. Following her failure as a regular passenger ferry, she served as a dance hall, 1902-1910, and eventually as the home of the San Diego Yacht Club. By 1920 she had been dismantled. See MacMullen, "The Saga of the SILVER GATE."

4 T.S. Marvel & Company shipyard launched the BERGEN, New York's first propeller-driven ferryboat, in 1888. See Raymond G. Baxter and Arthur G. Adams, *Railroad Ferries of the Hudson and Stories of a Deckhand*, (Woodcliff Lake, NY: Lind Publications, 1987), p. 124, and *Naval and Marine Engineering Journal*, vol. 4, no. 2, August 1899, p. 52.

5 *Naval and Marine Engineering Journal*, p. 53.

6 A clinker is a hard, partially vitrified mass that forms when coal containing impurities is burned in a furnace.

7 *How Things Work*, (Geneva: Bibliographisches Institut, n.d.; Simon & Schuster, Inc, American Edition, n.d.), vol. 1, p. 52.

8 Engineering drawing, "General Arrangement, Tanks and Oil Pipes, SP Co Stmr BERKELEY West Oakland Nov 11, 1901," San Diego Maritime Museum, BERKELEY collection. Nothing on the plan identifies it as a Union Iron Works plan and, to date, the archivists at San Francisco Maritime National Historical Park, the repository for the Bethlehem Steel Corporation, San Francisco Collection, have not located this plan within the Union Iron Works portion of that collection.

9 Although firemen replaced stokers, many of their duties and responsibilities remained the same. The main difference between the two jobs was stokers had to shovel coal into the furnaces while firemen regulated the flow of oil into the furnace's firebox.

10 Oil left a coating of soot on the tubes exposed to the flames, which caused inefficient heat transfer. In the Scotch boiler, this required "punching out" the tubes with a wire-bristled brush, or with rotary tube cleaners, during a maintenance stand-down. In the later water-tube boilers, tubes were "blown" at least once a day, using a steam lance made of piping, inserted into the tube nest and played on the surface of the tubes. This usually caused soot to issue from the smokestack, soiling everything beneath the stack emissions.

11 Installing the ranks on an angle increased efficiency and helped direct impurities toward the bottom.

12 Robin E. Sheret, *Smoke Ash and Steam, West Coast Steam Engines*, (Victoria, B.C.: Western Isles Cruise and Dive Co., Ltd., 1997), p. 35; *San Francisco Chronicle*, December 4, 1926.

13 Alan Osbourne, *Modern Marine Engineer's Manual*, (New York: Cornell Maritime Press, 1941), p. 13-3; George Harlan, *San Francisco Bay Ferryboats*, (Berkeley: Howell-North Books, 1967), p. 81.

14 Although D-valves and piston-valves have different configurations both are forms of slide-valves. The BERKELEY's cylinders used both of these slide valves. The first cylinder used a piston-valve, while the second and third cylinders employed D-valves.

15 Eccentrics are discs mounted off center on a crankshaft upon which shafts are strapped in such a manner (similar to cams) as to translate the rotary action of the crank shaft into the reciprocating motion needed to operate the timing mechanism.

16 Osbourne, p. 9-11, 12.

17 Alan Thewlis, "The Story of the BERKELEY," *Mains'l Haul*, vol. 30, no. 4, Summer 1994, p. 5.

18 A three-foot stroke referred to the distance the steam moved the piston. In this instance, the steam moved the piston 36 inches from the top of its stroke down to the bottom of its stroke and 36 inches from the bottom of its stroke back up to the top.

19 *Naval and Marine Engineering Journal*, pp. 54-55.

20 *Ibid.*, p. 56. "Rated" horsepower is the measure of work or power expected, based on design calculations. "Indicated" horsepower is that observed in underway trials, and may be more or less than the rated horsepower. BERKELEY's mean indicated horsepower was 1163.66, while her rated horsepower was 1,450. (See *Naval and Marine Engineering Journal*, August 1899.) C. E. Ward, a Southern Pacific Transportation Co. vice-president, stated that Berkeley "produced 1125 horsepower." (See C.E. Ward to C. Ray Wilmore, February 1, 1973, MacMullen Collection, San Diego Maritime Museum.)

21 Winn Bagley interview, July 11, 1998. Winn Bagley described the process of "slapping the bearings" and compared it to wetting your fingers and tapping a clothes iron to determine its temperature. The main difference, of course, is the iron is not moving at 125 rpm.

22 *Ibid.*

23 Earl Barnett, "My Father and the BERKELEY," *Mains'l Haul*, vol. 28, no. 4, Summer 1992, pp. 5 and 6.

24 In 1888 the first electric lights were installed on the ferryboat PIEDMONT, five years after her launch.

25 A single sheet description of BERKELEY's equipment, handwritten after 1910, suggests that both generators were replaced in September 1910. (See San Diego Maritime Museum, BERKELEY Collection.) A major engineering renovation occurred in 1924 when the boilers were replaced. The details surrounding these and other major repairs, equipment replacements, and overhauls remain unknown.

26 Museum visitors can walk through the BERKELEY's restored bow pilot house and look at its corresponding steering engine. Before boarding the ferry, visitors can view one of her propellers and one of her rudders displayed on the Embarcadero at the foot of the BERKELEY's gangway.

27 A squirrel cage blower consists of an engine or motor turning a wheel resembling that used by hamsters to exercise. The wheel, similar to a paddle wheel, is perforated in such a manner as to "scoop" air from one source and deliver it to another.

28 A compound engine, the predecessor to the triple expansion engine, operated on two cylinders. After the invention of the triple expansion engine, it was used mainly to power smaller vessels and auxiliaries using relatively low pressure.

29 *Naval and Marine Engineering Journal*, p. 54.

Passing Yerba Buena Island, BERKELEY and ALAMEDA steam together toward San Francisco on August 28, 1938. *(Courtesy California State Railroad Museum, 387-1228, No. 19242)*

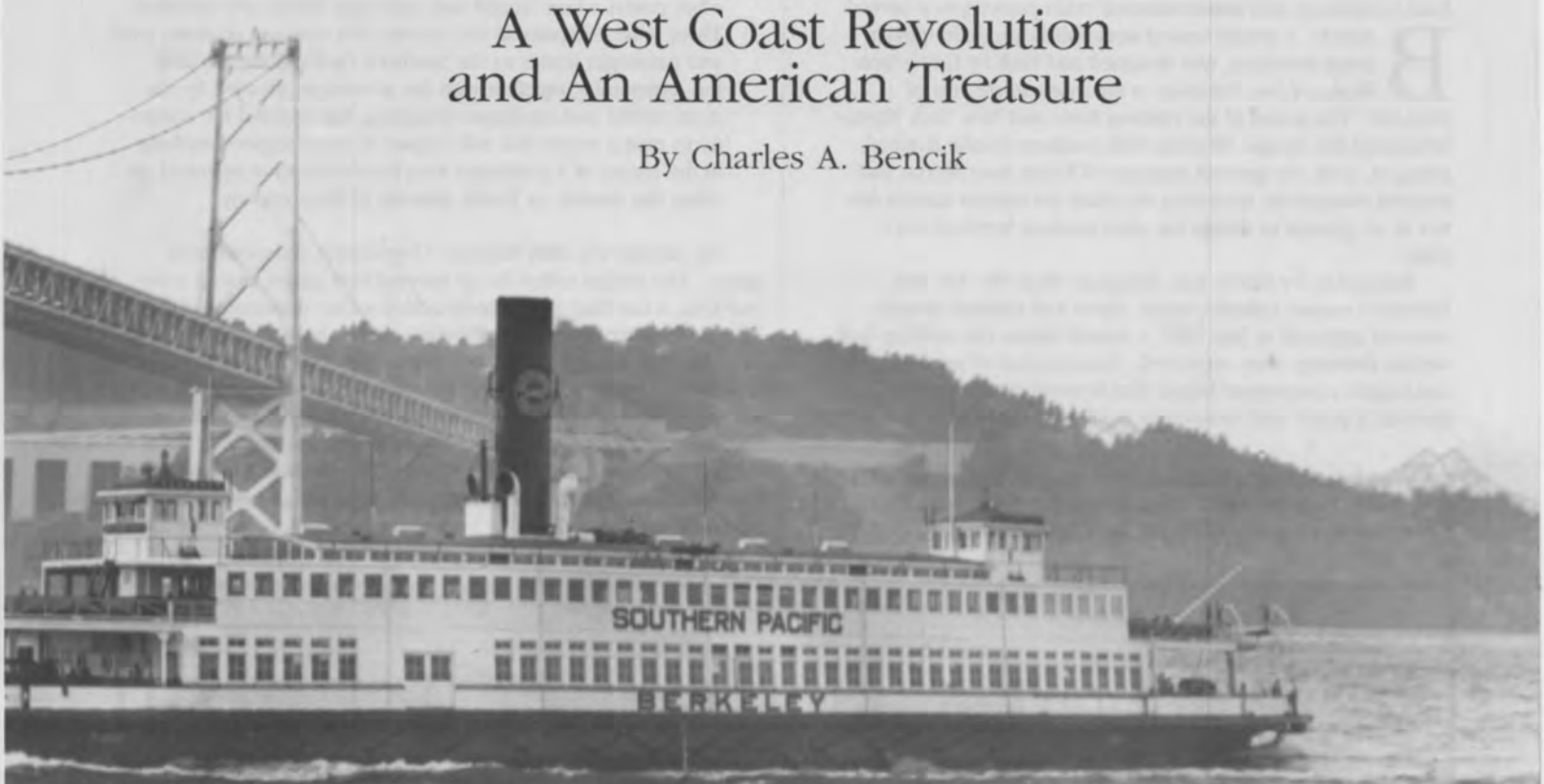
Below Insert: BERKELEY shortly after launching October 18, 1898. Workmen are seen clearing the launch cradle from the water off Union Iron Works Potrero shipyard. Note her white hull. *(SDMM, photo by Kenneth C. Jenkins)*



Ferry Steamer BERKELEY

A West Coast Revolution and An American Treasure

By Charles A. Bencik



When asked in 1894 to comment on the desired qualities of a steam ferry, Col. Edwin A. Stevens, President of the Hoboken, N.J. Ferry Company stated:

> You want, first of all, stopping power, after that some other qualities, such as handiness in steering, quickness in starting, and ice fighting qualities, but above all, and again, stopping power. The man who pays the bill will add economy in first cost and operation. These are the data of the designer. Every one will be perfectly content if the boat can make twelve or thirteen knots on her trial trip and hold the same number of statute miles at full speed on her route. The engineer must have an engine that he can repair quickly and cheaply, and that will do the backing when called on, and not stick on centres or churn up the water uselessly. The hull must be well shaped, so that it will steer quickly and will not sink at the bow when loaded by the head. It must [have] easy lines and, above all, must be staunch and strong and as nearly unsinkable as skill and money can make it.[1]

Ferryboats on both the East and West Coast adhered to these general principals. Throughout the 19th century, builders consistently chose paddlewheel steamers as the best design for ferryboats. In 1887 the San Diego Ferry and Coronado service launched the first West Coast double ended, propeller-driven ferry, the SILVER GATE. Unfortunately for those who sought a reliable, easy to handle, quick stopping ferryboat, she failed miserably.[2] The following year designers Edwin Stevens and J. Shields Wilson, of New York, launched the BERGEN. She proved far more successful and, after numerous trials, was considered a reasonable alternative, on the East Coast, to paddlewheel driven ships.[3] On the West Coast ten years passed before another propeller-driven ferry, the BERKELEY, was constructed.

As the 19th century drew to a close, San Francisco's paddle-

wheel ferryboats, like those that traversed the New York, Seattle, and San Diego harbor areas, carried the city's life-blood – the laborers, secretaries, clerks, craftsmen, sailors, tailors, shopkeepers, and shoppers. New York and San Francisco had even more in common — their railroads. When the transcontinental railroad bore on to San Francisco Bay, the western hub of much of the world's commerce, it met a watery barrier. Ferryboats provided the vital link that allowed railroads to continue across bays and harbors. In the late 1890s, Southern Pacific conceived and ordered the construction of the BERKELEY specifically for that purpose and envisioned the BERKELEY drastically increasing Southern Pacific's trans-Bay carrying capacity, and providing better, more frequent, more comfortable service for the growing number of local commuters and transcontinental train passengers it served.

BERKELEY, a double-ended steel-hulled, propeller-driven steam ferryboat, was designed and built by Union Iron Works of San Francisco at an approximate cost of $122,000.[4] The ferries[5] of the Hudson River and New York Harbor influenced her design. Working with Southern Pacific Railroad, Irving M. Scott, the general manager of Union Iron Works, had traveled extensively, reviewing the plans for various eastern ferries in an attempt to design the most modern ferryboat ever built.[5]

Referred to by Union Iron Works as "Boat No. 55," the BERKELEY's engine cylinder, crank, thrust and tailshaft designs received approval in July 1897, a month before the midship hull section drawings were approved. Construction of machinery and engine components began that September[6] while debate over deck plans[7] and furnishings continued until December 1897, when Southern Pacific's General Manager Julius Kruttschnitt[8] finally reported that the plans were complete.

> The new vessel will be one of the largest and handsomest passenger ferry-boats in the world. In studying up the details of the boat the officials of the Southern Pacific Company have had before them the plans and specifications of the new passenger ferryboats of the Pennsylvania Railroad, and the plans of the vessel now being built by the Union Iron Works call for a vessel that equals in accommodations and exceeds in size those of the Eastern railroad mentioned. The company has also profited by the experience afforded by its present boats, not only at San Francisco, but at Benicia, New Orleans and all other points where freight and passenger ferries are operated. There is no company in the country that operates so many car and passenger ferries as the Southern Pacific Company and this experience, together with the advantage afforded by the most careful and intelligent designing, has enabled the company to plan a vessel that will eclipse in every respect anything in the nature of a passenger ferry-boat heretofore operated on either the Atlantic or Pacific systems of the company.[9]

On January 25, 1898 BERKELEY's keel-laying ceremony took place. Her design called for an internal keel girder, not an external keel, a fact that undoubtedly added to her unmanageability.[10] For the next ten months the BERKELEY slowly took shape alongside the USS WISCONSIN, a Navy battleship under construction at the Union Iron Works yard. While work on the BERKELEY progressed, the new San Francisco Ferry Building opened for passenger service on July 14, 1898, replacing the wooden structure built in 1875. Designed specifically for ferries like the BERKELEY, the new Ferry Building incorporated both main deck and upper-deck ramps to facilitate passenger loading and unloading.

Crowded foredecks of a festive BERKELEY are seen from a pier in the early 1900s. Note the center stairs, double flag poles, and original hull configuration. *(Courtesy California State Railroad Museum, 22393)*



Second story landings are provided and used at both the San Francisco and the Oakland Pier depots, a large portion of the passengers being thus handled to and from the depots on the saloon deck level.[11]

Finally on October 18, 1898, about 2,000 invited guests came to witness BERKELEY's launching. Martin Kelly, president of the State University gave a speech and presented a set of flags from the people of her namesake city. H. E. Huntington of the Southern Pacific Company accepted them. A few minutes after 12 noon Miss Marion Huntington of San Francisco pressed an electric button that loosened the dogs holding the ferry in position next to the still unfinished battleship WISCONSIN. As BERKELEY slid down the ways, Miss Ruby Richards of the city of Berkeley christened her with "the customary bottle of champagne."[12] When she floated free of her launching cradle, her mean draft was found at 7'10 1/2". She had 6 tons of coal, water tanks full, and all else aboard, except for 5 tons of life preservers.[13] At her launch, she was the largest commuter-carrier in the country, with a seating capacity for 1,700 passengers.

On October 22, BERKELEY's boilers were lighted, and she spent the day steaming on the Bay on a trial trip. She logged a speed of 12 1/4 knots.[14] The newspaper said "her naval architect, Irving M. Scott," supervised the trials, and "expressed himself as well satisfied with his latest specimen of naval architecture."[15]

On November 6, 1898, after Union Iron Works finished her construction, outfitting, and basic shipyard trials, the BERKELEY became the first propeller-driven ferryboat on a Bay full of side-wheelers.

With a swift tidal current[16] and frequent near-gale wind conditions,[17] her first three years of service were marked by chaotic efforts to safely enter the ferry landings. Her first pilots found BERKELEY's peculiar handling qualities difficult to master and zealous newspaper writers gleefully reported her unruly behavior at every opportunity. During a ten-day period in December of 1898, reporters filed a series of five stories related to the BERKELEY's inability to behave like a normal ferry. In the first of those articles, dated December 5, they wrote that

> the new ferry boat BERKELEY has not yet been conquered by her navigators, and on Saturday evening while coming from Oakland with a large crowd of race track people tore into the slip on this side and mowed down about a score of stout piles. Nobody was hurt but for a few moments the utmost excitement prevailed. When the boat approached the slip as many as could crowded to the bow of the boat. This threw the after propeller and rudder out of the water, and the BERKELEY took a wild rush at the side of the slip. The boat was damaged very slightly.[18]

On Saturday, December 10, the *Chronicle* reported that the late arrival Thursday night of an unexpected nor'easter prompted Southern Pacific to ensure BERKELEY "was given no opportunity to further distinguish herself [as she] was kept safely moored alongside the Oakland mole all day [Friday]."[19]

Two days later the *Chronicle* proclaimed the BERKELEY's career as a ferryboat was virtually over and, in effect, published her obituary.

THE BERKELEY A FAILURE
SHE IS CONDEMNED AS UNSERVICEABLE
MAY NEVER SEE SERVICE ON THE LOCAL RUN TO OAKLAND

> The Southern Pacific Company's new ferryboat BERKELEY after repeated trials and experiments, has proved herself to be completely unfitted for the service for which she was built. A conference of the officials of the Company was held on Saturday to consider the question of what should be done with the vessel, and at that conference, she was condemned as unserviceable. The BERKELEY is now laid up at the pier and may never run again on the local ferry route across the bay.
>
> Various reasons are assigned by the experts who have attempted to get at the cause of the BERKELEY's crankiness. In a strict sense of the word the boat is not "cranky," and is as well and substantially built as any boat belonging to the company. The trouble is that she is not suited to the service, and her peculiar style of marine architecture does not permit her to be handled with the ease and precision required in a ferryboat that has to make quick stops in a swift tide. Under the most ordinary circumstances the BERKELEY is unmanageable.
>
> To get the necessary speed out of the boat her hull was built on fine lines, and results now prove that this was a service error. It is learned that at the time the plans were originally submitted they were disapproved by an expert on the grounds that the ends would not support the weight of the passengers who crowd forward as the boat approaches the slip. The results of all recent experiments and trial trips prove this and offer a sad commentary on the intelligent designing of General Manager Kruttschnitt of the Southern Pacific, who is being held responsible for the failure.
>
> The BERKELEY, as is probably well known, is propelled by two screws, one forward and one aft, both attached to the same shaft. In approaching a slip the weight of human freight on the forward deck depresses the forward end of the boat from twelve to eighteen inches beyond her water line, and the stem necessarily rises out of the water just that much. This has an astonishing influence on the rudder. The vessel, under these circumstances, fails to respond promptly to her rudder, she becomes unmanageable, and only the greatest good luck saves her from crashing into the end of the pier. When the screw is reversed the rudder becomes utterly unserviceable. The propeller sucks the water away from it, and the boat, failing to respond to her wheel, proceeds in the direction of her own momentum in spite of all protests from her master.
>
> Whether the BERKELEY can be remodeled and made serviceable for the run between here and Oakland is a question. In the meantime the ferry service is badly demoralized and the thousands of commuters who have to patronize the boats to get to and from their daily labors are wondering how soon the promised twenty-minute boats will be put on the run.[20]

The following morning, Tuesday, December 13, an article appearing in the "Ocean and Waterfront" column of the *Chronicle* announced the BERKELEY's return to limited service.

> The wind having died down and the bay being smooth as a mill pond, the ferryboat BERKELEY was used yesterday for a few trips during the daylight in connection with the Southern Pacific ferry system. The fact that she was used at all was chiefly because the peculiarly favorable weather conditions made it impossible for her to get very far astray. The conditions were taken advantage of to divert public attention from the numerous criticisms regarding the boat's crankiness and to make the condemning process as gradual as possible. It is

probable that by building a partition across the boat amidships and preventing any crowding toward the bow when the boat nears the slip the trim of the new boat may be preserved sufficiently well to make her fairly safe in fine weather, but no attempt will be made to use her either at night or when the wind is blowing with any degree of force. The BERKELEY is purely an experiment, and, thus far, an unsuccessful one. Boats of similar design have been successful in the East, but she is larger than any other of her model ever constructed, and seems to have passed the limit in size for boats of her character.[21]

Unwilling to abandon a good story, Wednesday's "Ocean and Waterfront" column addressed the BERKELEY's behavior problems from the viewpoint of the inordinate expenses she'd incurred during her short career as a Bay ferry.

According to records of the Harbor Commissioners the new ferry steamer BERKELEY seems to have been pursued by an evil genius ever since she started in as a regular passenger carrier. When she was first brought to the slip on this side of the bay it was found that she would not fit and extensive alterations had to be made on the boat. Since then she has wrought considerable damage to State property through her eccentric manner of making landings. On November 11th at 1:15 p.m. while entering her slip she struck the dolphin between slips 5 and 6. She struck it with considerable force, and the effects of the blow demonstrated the powerful construction of the vessel. She smashed seventeen piles and utterly destroyed about 6000 feet [of] lumber, and, in addition to creating a panic among her passengers, ran up a bill for her owners of more than $1000. She again ran amuck on the evening of December 3rd shortly before 6 o'clock, when she struck the dolphin between slips 6 and 7, again cutting into sections another cluster of seventeen piles and smashing up a little more State property. Thus far the BERKELEY has to her credit thirty-four piles and a good many thousand feet of lumber in the shape of mangled ribbing, shocks and caps, and the bill that will have to be footed by her owners foots up more than $2200.[22]

During the early years of her career, reports of the aftermath of storms offered the best opportunities for reporters to point out the BERKELEY's shortcomings. As her crew learned to handle her, however, those opportunities diminished even while winter storms continued wreaking havoc on the daily commute across the Bay. When a short-lived southeaster pummeled the Bay with winds of 48 miles per hour and driving rain, it created extremely rough conditions for the morning commute. Between 8 a.m. and 11 a.m. hundreds of seasoned ferryboat passengers suffered severe seasickness "due to the heavy rolling of the ferryboats." Conditions proved so unbearable that at least one commuter determined not to chance a repeat experience that evening and opted to take the train around the Bay to get home.[23]

Sprays from the big seas dashed clear over the BERKELEY, OAKLAND and BAY CITY, and their decks were constantly awash. The BERKELEY had eighteen windows broken on her 10 o'clock trip, one of them being a heavy plate glass port window in the wineroom, which is partially below decks. Half an hour later the passengers on the OAKLAND were thrown into a panic by the smashing of several blades of the paddle wheel by a big wave. [24]

On March 10, 1899 Union Iron Works personnel conducted builder's trial runs while the ship was in service. During six runs between San Francisco to Oakland the BERKELEY recorded a mean indicated horsepower of 1163.66, at a calculated speed of 13.66 knots, and maintained 122.5 revolutions per minute.[25] A rather "annoying circumstance" occurred during her trials when fingerlings from Spring fish spawning nearly clogged the inlet of her condenser tubes. Southern Pacific replaced the strainer to the circulating pump suction with another one having smaller holes.[26] Except for the fish incident, the trials proved successful.

Despite her favorable engineering trials, her large capacity, and her beautiful workmanship, BERKELEY's unmanageable nature while docking earned her the nickname "the pile-driver's friend" and supported those who considered walking beam engines and sidewheel propulsion to be superior, until well into the 1920s.

When asked about her handling problems, retired BERKELEY engineer Lawrence E. Bulmore wrote that the

poor old girl . . . was easily handled under full steam but had a habit of drifting with the tide under a slow bell. That is why she did so much damage to the slips in San Francisco. You will recall that the ferry slips in S.F. were shorter than those at Oakland and Alameda, therefore she could not be eased in to S.F. on a slow bell. If the tide was running out the pilot would bring her almost to the pierhead and then, full astern with a jingle. No doubt saying a prayer.[27]

New ideas for improving BERKELEY's propulsion plant were tried. Early in 1901 Southern Pacific replaced her bronze propellers with iron ones. Sometime before the end of 1901, the owners converted the BERKELEY's boiler from a coal burner into an oil burner.[28] Southern Pacific had begun experimenting with oil-burning locomotives as early as 1879. Over time oil proved a more efficient fuel than coal. Southern Pacific's conversion to oil was completed shortly after the turn of the century.

And all the while, Southern Pacific worked at improving the BERKELEY's public image. In October 1901, a national convention of the Episcopal Church took place in San Francisco. Seeking to ingratiate themselves with the public and show the BERKELEY in a better light, Southern Pacific donated the ferry for a Sunday afternoon tour of the Bay. At 2:30 p.m., "the big ferry steamer BERKELEY, spic and span in a new coat of paint, her brass fittings highly polished, and the decks holystoned until they looked like new planks," left "the lower slip" and spent two and a half hours steaming around the Bay. Their counterclockwise course took them from the Ferry Building south past Hunter's Point, and then around the Bay to Alameda, Oakland, Angel Island, Tiburon, Sausalito, Fort Point, and finally along the City's waterfront back to the Ferry Building. While crossing from Sausalito to Fort Point "the sun was just at the right angle to make the Golden Gate show in all the glory which has made it famous."[29] Doubtless these visitors, like so many before and since, remarked about the church-like appearance of the clerestory's stained glass windows. The trip must also have lent a new meaning to the word "holystoning."

Eventually the novelty of BERKELEY began to wear off. As her crew learned to deal with her idiosyncrasies, fewer and fewer sensational accidents happened to her and the San Francisco papers paid her less attention. In November 1901, three years after her launch, the BERKELEY was officially started in regular service on the Oakland to San Francisco run.[30] For the next 56 years BERKELEY alternated her service time between the Oakland-San Francisco

run and the Alameda-San Francisco run, with an occasional stint as a substitute ferry on the Sausalito-San Francisco route.[51] In 1938 BERKELEY ferried workmen out to the construction site for the upcoming fair on Treasure Island. During the 1939-1940 Golden Gate International Exposition she joined the Key Route system ferrying tourists to and from the fair on Treasure Island. BERKELEY often transferred from one route to another in order to replace a damaged or out of service ferry.[52]

On the morning of April 18, 1906 San Francisco experienced a monstrous earthquake, estimated at 8.3 on the Richter Scale. Southern Pacific's company offices, on soft ground near sea level, collapsed into a pile of bricks.[53] Thousands fled the city's devastating fire and the aftershocks that followed. BERKELEY joined more than 30 other ferries, carrying refugees to Oakland and bringing fire fighting equipment, food, clothing and medicines to San Francisco. Southern Pacific's commissary department began serving free meals to anyone who came to the Ferry Building.[54]

> During the first days of disaster, no one was allowed into the city without a pass. Ferry travel to San Francisco was very slight at first and only persons with authorized credentials or the need to come to the aid of relatives were allowed off the boats ... On April 19, 1906, the Southern Pacific alone transported 1,073 carloads of homeless persons to destinations where they would be safe with relatives and friends.[55]

Throughout the disaster, ferry service remained one of the few familiar things Bay area residents were still able to count on. This was due in part to the survival of the Ferry Building structure both during the initial shock, and during all the subsequent aftershocks. Additionally, when the great fire began to spread, Naval units were detailed to operate fire hoses and prevent damage to the waterfront structures. San Diego's Naval Militia unit was one of many mobilized to service at San Francisco, as a part of the State emergency defense apparatus, and arrived by ferry for duty over a week later.

BERKELEY underwent a number of changes during her career. Around 1917 side accomodation ladders were installed between her main and saloon decks, replacing her central accomodation ladders at both ends. Three matching windows were added on the saloon deck level at each end, to enclose the "veranda" below her pilot houses and give additional protection to the new ladders. Her narrow smokestack was replaced with her present stack, which has greater cross-sectional area. They also added ladders leading directly to each pilothouse from the saloon level, replacing the sole pilot's ladder to the hurricane deck which was located at the site of her present day ladies' toilet.[56] Probably in the early 1930's, BERKELEY had a snack bar installed on her saloon deck.[57]

In 1920, the year that 195,000 passengers traveled by ferries between Oakland and San Francisco (a record number),[58] the Volstead Act went into effect and Prohibition began, closing all the bars on the Southern Pacific ferries.[59] BERKELEY's original design featured a restaurant, with an adjacent bar (or wine room) and a men's toilet on the lower level. Reportedly, not a single bottle of liquor was taken ashore by the Commissary Department. Instead, ferryboat passengers and crew purchased the liquor while the officers received complimentary bottles.[60]

Maintenance of the ferry's machinery was a constant headache. Nuts loosening from bolts and studs were particular concerns.



Postcard view of "San Francisco from the Bay. Damaged by earthquake Apr. 18, 1906." Ferry at slip appears to be OAKLAND. Message to C. Adam Hasson of West Philadelphia, PA, on margin: " Oct 23rd 1906. This is where we landed when we arrived in San Francisco. I wish you coul see the ruins you have no idea what it is like Lili H." *(SDMM, Postcard Collection)*

San Francisco Bay Ferry Lanes (Map). This diagram shows routes of various Bay ferry companies during the 1930s. Greatest portion of traffic was on BERKELEY's routes between Oakland Pier and the Ferry Building, and between Alameda and the Ferry Building. *(SDMM Collection, P-5453C)*





A pleasant sunny day on the upper weather decks as BERKELEY approaches Yerba Buena Island, with a crowd of passengers, in the 1950s. *(SDMM Collection, P-2452C)*

Lawrence Bulmore claimed the following to be a true BERKELEY story:

> The Chief of the crew that relieved us was very strict about having every thing checked as soon as he came on watch. One day my oiler spent much of the watch polishing a 3/4 nut. When we went off watch he dropped it into the crank pit and told me what he had done. There was a crew between us but when we returned there was a l-o-n-g letter waiting for me. The Chief's oiler had found the nut and as it was bright he thought it had fallen from a stud on the main engine and told his Chief about it. The Chief was sure it belonged on the engine some place and had the oiler go over the entire engine looking for a stud without a nut. Of course none was found. When that crew relieved us the next watch I told the Chief what my oiler had done, assuring him it was intended as a joke, but he was not in good humor and his oiler said things to my oiler that cannot bear repeating.[4]

In 1930, Southern Pacific operated 43 ferries on the San Francisco Bay that carried mail, luggage, express, and 40 million passengers a year. The firm's auto ferries also carried an average of 15,875 vehicles per day, a number that increased to 29,400 on weekends and holidays.[42]

On November 12, 1936, Southern Pacific's first profitable year following the onset of the Depression, the San Francisco-Oakland Bay Bridge opened, and automobiles began driving across the Bay. Southern Pacific declared it would not abandon auto ferry service, but it was an empty promise. At 12:50 a.m. on January 15, 1939, the OAKLAND completed the last ferry run between Alameda and San Francisco. At the same time commuter train traffic started on the San Francisco-Oakland Bay Bridge.[43] Southern Pacific Golden Gate Ferries performed the last ferryboat runs to Oakland on May 15, 1939.

MacMullen reported that when the Bay Bridge was new, Captain Lincoln Colcord, author and deep-sea yachtsman, arrived one day at Oakland.

> Friends met him when The Overland Limited got in, and escorted him, aboard the BERKELEY to San Francisco. As they passed under the then-new East Bay Bridge, his friends silently watched the thin-faced man from Maine as he looked aloft at the steelwork of San Francisco's pride and joy – or perhaps "glared aloft" would be the better term. His reaction to the bridge came quickly. "God!" he said, "Why did they let them do that?"[44]

World War II left its mark on the ferry systems. By the end of the War, commuters were still accustomed to using the busses and electric trains. Nonetheless, people began to catch on to transcontinental air travel as the airlines expanded by hiring military-trained pilots and acquiring surplus military transports. By the late 1940s mainline train business fell off as airline travel continued to increase. Tourists, vacationers, and nostalgic ferry buffs started replacing commuters as the regular ferry riders. The SAN LEANDRO became the regular ferryboat assigned to the Oakland-San Francisco commute while the BERKELEY remained on stand-by duty.[45]

While the post-war years brought a decline to the BERKELEY's use, they also brought technological improvements to her equipage. In 1947 Southern Pacific installed the first radar equipment on a ferry. Although the exact date BERKELEY received radar remains undetermined, photo documentation showing radar antennas on both pilot houses suggest it was added in the early

ABOVE: BERKELEY as Trade Fair in Sausalito, seen from the water. She has a new coat of paint, so it is probably in the early 1960's, around the start of this phase in her career. *(SDMM Collection, P-556D)*



RIGHT: BERKELEY, as Conover's Trade Fair, sold glassware, ceramics, candles, etc. This is how her main deck looked in November 1972. *(SDMM Collection, P-2045A)*

1950's. According to one witness on June 15, 1954, BERKELEY became the first Southern Pacific ferryboat with ship-to-shore telephone.[46] Even a 10-cent telescope was mounted at the ends of the saloon deck, for passenger-tourist "looky-loos."

In 1957, BERKELEY's function as a train passenger ferry ended, as the Southern Pacific began transporting its passengers with busses from the 16th Street Station in Oakland.[47] She continued, however, to provide passenger service to the Oakland pier. Sometime in the spring of 1958, BERKELEY went out of commission for needed repairs, denying her the privilege of playing an active role in the final days of the Bay ferries. On July 29, 1958 ferry service on the San Francisco Bay ended as the SAN LEANDRO made the last ferry runs between San Francisco and the Oakland Mole.

> During this last week and a half, traffic on SAN LEANDRO was heavy (BERKELEY had not been running for several months). The newspapers had published the timetable. On some trips people with children were turned back to wait for a later boat if the percentage allowance of children's life jackets was exceeded. Extra trips ran during the early afternoon when the boat was usually tied up. Some people made several trips, with or without cameras, for the Bay is different at midday, twilight and night. Many people discovered San Francisco Bay.
>
> It is ironic that SAN LEANDRO should be the final boat. She was best remembered as one of the rival orange Key Route commuter boats, smooth and fast, with turbo-electric engines, and free from mail and express trucks. Her riders scorned the S. P. "cattle-boats" with their loads of mail and express vehicles. The former S. P. commuters hoped that, since the beam engine boats were gone, BERKELEY might be running at the last, the grand, beautiful old BERKELEY that had carried S.P. commuters and mainline passengers for over half a century. [48]

Following the demise of ferry service on San Francisco Bay, the Golden Gate Fishing Company purchased the BERKELEY on January 26, 1959, with the intention of turning her into a fish reduction vessel on the Oakland estuary. In August Luther Conover declared himself the sole owner of the BERKELEY and for two years he fought Golden Gate Fishing Company for ownership. Golden Gate finally sanctioned the sale of the BERKELEY to him in August 1961.

Conover moved the ferryboat to Sausalito, tied her up at the old Northwestern Pacific ferry pier, and attempted to prepare her for redocumentation.[49] Eventually he opened her as "Trade Fair," a floating gift shop of maritime merchandise. Conover fitted her out with windshelters on the fore and after-decks; the Victorian upper deck and her machinery down below were left alone. With her exposure to occasional heavy weather, now and then a customer became seasick.[50]

In early 1972, the board of trustees of the San Diego Maritime Museum, while looking for a building site ashore, hit upon the idea of a floating museum. The memory of the San Diego and Coronado ferry system, shut down in 1969, was still fresh, and the possibility of getting a ferryboat came to mind. But the old San Diego diesel ferry CORONADO [II] was too small, badly vandalized, and overpriced. They looked for other ships. The Canadian National Railway rail car ferry CANORA and three excursion steamers (one on the East coast and, therefore, too far and too expensive to tow) also proved unacceptable.[51]

That November, Board President Bob Sharp and Ken Reynard, Museum Restoration Director, made some computations of the costs to purchase, restore and maintain the BERKELEY. She promised to provide four times the available space for exhibits and administration. But first they needed to haul her out for a safety and preservation check.[52] At length, the board reached a decision, and "the iron-bottomed BERKELEY, queen of the San Francisco Bay ferry fleet for 57 years and a Sausalito waterfront emporium for 14 more, [was] headed for a new life in San Diego."[53] After months of inspections, drydock work, and other preparations, board member Paul Kettenburg announced that the ferry's hull was judged to be sound and "the $100,000 deal for the BERKELEY was closed."[54]

On May 31, the tug BLUE EAGLE (of Oscar Niemeth Towing) took her in tow, and the two vessels passed around Angel Island and, at 12:44 p.m., they went under the Golden Gate Bridge and headed for sea. A few "rail fans" on an excursion boat and a small coterie of historians captured her departing moments on film. In preparation for the voyage, her forward propeller and rudder were stowed on her stern, and plywood covered her main deck windows, giving her a slight orange tint from a distance. At her stern, a line dragged in the water, with a buoy at its bitter end; a precautionary measure in case her forward tow line broke and the tug needed to regain control of her.[55] Three days later, on June 3 they reached San Diego Bay, and the PacTow tugs CORONADO and PALOMAR brought her to the B Street Pier where restoration work commenced almost immediately.

By mid-1974, exhibits began appearing on BERKELEY's main deck. The first showcased local oceanography and fisheries. Meanwhile the Navy League San Diego Chapter began helping the Museum collect artifacts and materials for a Navy-oriented display and the museum's model makers began working on an exhibit about San Diego ferryboats. Hopes were expressed that the restaurant compartment would be restored some day.[56]

In 1982 the museum mounted BERKELEY's 6,000 pound cast steel propeller – removed prior to her voyage down from San Francisco — and displayed it on B Street Pier, thanks to donations from the Propeller Club and Dobson Welding. Later, in the mid-1980s all three ships shifted from the B Street Pier location to a berth alongside the Embarcadero, south of Anthony's restaurant.

As with humanity, BERKELEY's voice, silenced for nearly two decades, changed with age. Museum staff routed compressed air through her steam whistle in order to allow the BERKELEY to salute passing ships. Unfortunately, the compressed air version of her unique whistle lacked the original's charm.

> The BERKELEY was a boat of great beauty, one of the most distinguished on the Bay for sixty years. Her voice was certainly in a class by itself. To hear it was a memorable experience, evoking emotions akin to those aroused by the sight of a child on roller skates for the first time, or the sound of a 14-year-old boy trying to sing. The whistle started bravely with an earnest hiss of escaping steam; the sound progressed tentatively, hovering between a wheeze and a snore, until it finally reached its triumphant climax in a breathy and uncertain toot![57]

The BERKELEY, a National Historic Landmark, survives as a reminder of a bygone era, one of elegance and style. As the San Diego Maritime Museum's main building, she serves as its principal exhibition hall; the repository for its library, photo and document archives, and artifact collection; as well as its administrative, conservation, and maintenance center. Throughout her first hundred years, the BERKELEY played a number of more-or-less vital roles: in the ferry service on San Francisco Bay, as a commercial outlet, and now, perhaps most appropriately, as a museum and an historic structure. As the BERKELEY celebrates her centennial, she proudly looks forward to her next hundred years, and to the challenges and adventures yet to come.

Chuck Bencik earned a degree in physics; served as auxiliaries, electrical and repair officer and junior watchstander on a Navy steam-powered cargo vessel; and conducted and supervised Naval Reserve training for almost two decades. He is the Maritime Museum's librarian, and has contributed many historical pieces published in Mains'l Haul.

NOTES

1 *Cassier's Magazine*, vol. VI. no 34, August 1894, Col. Edwin A. Stevens, p. 285.

2 Christian Telson, a shipbuilder on the East Coast during the Civil War, had raised the USS MERRIMAC at the Charleston Navy Yard and converted her into the historic Confederate monitor CSS VIRGINIA. At Coronado, California, he proceeded to build the 187 foot long, 528-ton propeller-driven double-ender ferry SILVER GATE at a cost of $400,000, from plans designed by San Francisco's Union Iron Works. Telson installed an engine built specifically for the SILVER GATE by Union Iron Works. By the time Telson's workmen launched her on November 15, 1887, however, the SILVER GATE no longer resembled the ferry designed by Union Iron Works. During construction Telson increased her length and added a second deck, making her too heavy for her engines. Instead of heralding the dawn of a new technological age, and proving the superiority of the design, she failed due to alleged "unmanageability," and "really gave the paddle-wheel set something to crow about." (See Jerry MacMullen, "Paddle-Wheel Sailors Jeered at Propellers," *San Diego Union*, November 26, 1972.) Jerry MacMullen described her as "a ghastly failure; she was hard to start and harder to stop, and she clobbered the ferry-slips on both sides of the Bay, during her brief month of service." (MacMullen, "The Museum That's Coming," *San Diego Union*, May 27, 1973.) Ferry pilots were never able to handle her and she repeatedly crashed into ferry slips until she was finally laid up in the summer of 1888.

3 BERGEN was built in 1888 by the C. L. Delamater Iron Works and launched at the T. S. Marvel & Co. yard in Newburgh, New York. She was a double-ender design, driven by two propellers, one at each end of the same shaft, with a single-deck hull. Her registered dimensions were 200.4 ft. length, 37 ft. breadth, and 16.6 ft. depth; gross tonnage 1120, net tonnage 746. (Raymond G. Baxter and Arthur G. Adams, *Railroad Ferries of the Hudson and Stories of a Deckhand*, Lind Publications, Woodcliff Lake, NY, 1987, p. 124.) Supervisor of her design was a descendant of Colonel John Stevens, a pioneer in eastern railroad and ferry systems, and a competitor of Fulton's. Boat operators had debated the pros and cons of the expected additional expense, the vulnerability of two propellers, the hazards of the higher pressures. Paddlewheels were proved, and had long provided an easily handled vessel. J. Shields Wilson designed the BERGEN's most important innovation: her engine. From two boilers at 175 psi (pounds per square inch) working pressure, three in-line cylinders with heads at the top and crankshaft at the bottom (the "up-and-down engine") took steam into successively larger cylinders, - 18 1/2 in. x

27 in. x 42 in. with a 42 inch stroke length - producing an 800 horsepower output. The triple expansion engine process was a major improvement in the extraction of power by the expansion of high-pressure steam. A shaft running the length of the boat drove identical propellers at both ends. After her breaking-in period on the Hudson, the Hoboken Ferry Company arranged for BERGEN and ORANGE, — a similar steel-hulled, beam-engined, side-wheel ferry built in 1886, — to be exhaustively compared: first, during a 14-hour period in regular service, then over a 120-mile non-stop cruise course. Finally, BERGEN would make several runs over a 2-mile course to measure her performance using only one propeller. Careful measurements of fuel consumption and work output generated a large amount of engineering data. Several technical papers were read at a number of professional maritime organizations for some years, and Stevens was moved to state that BERGEN had proved superior.

4 The exact construction cost of the BERKELEY is still undetermined. The low-end figure appeared on the BERKELEY's earliest Wreck report, dated October 2, 1900, under "estimated value of vessel." The high-end figure appeared on an undated Southern Pacific document with the abbreviation "est." following it. The document had an appended notation, in a different hand, dated September 1910 at the bottom. It is possible this figure is based upon the construction contract base of $122,000 plus all additions and modifications made to her between her launch and November 1901 when she entered regular service.

5 Collis P. Huntington assumed the presidency of Southern Pacific Railroad in 1890 and promptly relocated the headquarters to New York. it is reasonable to assume that Huntington was aware of the BERGEN, her trials and results, and the other propeller-driven ferryboats in use on the New York harbor. When the time came for Union Iron Works and Southern Pacific to design the new ferryboat BERKELEY, Huntington undoubtedly pointed to the New York ferries as a model. At the same time, Irving M. Scott, the president of Union Iron Works, who had traveled around the world studying shipyards and ship designs during the 1880s, was probably familiar with the BERGEN and her design as well.

6 *San Francisco Chronicle*, December 7, 1897.

7 San Francisco Maritime National Historical Park, HDC 345, Bethlehem Steel Corporation, Shipbuilding Division, San Francisco. This undated hold-level plan shows two alternative arrangements: 1) crews' quarters forward of the boiler with the restaurant astern of the engines, and 2) the restaurant forward of the boilers with the crews' quarters astern of the engines. The latter design prevailed. See also Erica Toland to Robert Crawford, June 30, 1997, BERKELEY Collection, San Diego Maritime Museum.

8 At the time of Berkeley's launch, Julius Kruttschnitt served as Southern Pacific's General Manager. He later served as the Chairman of the Executive Committee (1913 to 1925) and, from 1918 to 1920, he was appointed Company President. See Bill Yenne, *The History of the Southern Pacific*, (New York: Bonanza Books, 1985).

9 *San Francisco Chronicle*, December 7, 1897.

10 San Diego's much later-built steel-hulled diesel ferry, the CORONADO, had similar construction, which gave the two of them some startling idiosyncrasies. Jerry MacMullen reported that "out in the middle of the bay the CORONADO was fine, but entering the slip under slow bell, she might at any moment decide to go sideways instead of straight ahead." See Jerry MacMullen, "The Museum That's Coming," *San Diego Union*, May 27, 1973.

11 *Engineering News*,, December 28, 1898, pp. 413-415.

12 *San Francisco Chronicle*, Oct 19, 1898.

13 The amount of equipment and supplies loaded onto a vessel was tracked by weight rather than quantity. The 1,700 life preservers, each weighing just a little less than six pounds, weighed a total of 10,000 pounds.

14 MacMullen, "The Museum That's Coming."

15 *San Francisco Chronicle*, Oct. 23, 1898.

16 Millions of cubic feet of water ebbs and flows through the San Francisco Bay everyday creating a series of rapidly changing currents. Before the construction of the Golden Gate and San Francisco-Oakland Bay bridges, the Coast and Geodetic Survey attempted to clock the maximum ebb and flood tides in the Bay. They recorded the ebb tide past the San Francisco ferry slips at the foot of Market Street at 2.5-3.0 knots. The flood tide currents were clocked at 1.5 knots off the Oakland Mole, 1.9 knots around Goat Island (Yerba Buena Island), and 2.9 knots from mid-channel to the San Francisco Ferry building. See Coast and Geodetic Survey charts, 1930.

17 See Coast and Geodetic Survey, *United States Coast Pilot, Pacific Coast, California, Oregon, and Washington*, (Washington: Government Printing Office, 1926), pp. 98-102; *San Francisco Chronicle*, January 1, 1900; Wreck Reports January 14, 1932.

18 *San Francisco Chronicle*, 5 December 1898.

19 *San Francisco Chronicle*, 10 December 1898.

20 *San Francisco Chronicle*, 12 December 1898.

21 *San Francisco Chronicle*, 13 December 1898.

22 *San Francisco Chronicle*, 14 December 1898.

23 Commuting between San Francisco and the Oakland area by train entailed traveling south along the Bay and passing through San Jose (approximately 45 miles south of San Francisco). The entire trip took approximately two hours and covered nearly 100 miles, compared to the twenty minute, 3.5 mile trip across the Bay.

24 *San Francisco Chronicle*, 2 January 1900.

25 C. E. Ward to C. Ray Wilmore, February 1, 1973, MacMullen Collection, San Diego Maritime Museum. Ward, a Southern Pacific vice-president, stated that the BERKELEY "produced 1125 horsepower."

26 *Naval and Marine Engineering Journal*, August, 1899, vol. 4, no.2, p. 52.

27 Lawrence Bulmore to Jerry MacMullen, June 27, 1973, MacMullen Collection, San Diego Maritime Museum.

28 See engineering drawing "General Arrangement, Tanks and Oil Pipes, SP Co., Stmr BERKELEY West Oakland Nov 11 1901," BERKELEY Collection, San Diego Maritime Museum; 1910 vessel description document included in correspondence, Ward to Wilmore, February 1, 1973; Harry Cottrell to Richard Brown, May 21, 1992, Brown Collection, San Diego Maritime Museum; Bob Crawford, "Steam Engines in the San Diego Maritime Museum," *Mains'l Haul*, (Spring 1994), p. 4.

29 *San Francisco Chronicle*, October 13, 1901.

30 Ward to Wilmore, February 1, 1973. While the *New York Nautical Gazette* reported the BERKELEY's assignment to this regular run in its December 1901 issue, no mention appeared in the *San Francisco Chronicle*. See also Robert Parkinson to Jerry MacMullen, July 9, 1973 and September 12, 1973, MacMullen Collection, San Diego Maritime Museum, wherein Earle Heath's *Bay Memories*, reprint of articles in the *Southern Pacific Bulletin*, was quoted.

31 Richard Brown to Craig Arnold, May 27, 1992, MacMullen Collection, San Diego Maritime Museum.

32 Parkinson to MacMullen, July 14, 1973; Brown to Arnold, May 27, 1992; Bulmore to MacMullen, August 28, 1973; Cottrell to Brown, May 21, 1992.

33 Yenne, *op cit.*, p. 70.

34 Harlan, *op. cit.*, p. 90.

35 *Ibid.*, p. 91.

36 Ev Mills, editor, *Rail and Water* (North Highlands, CA: History West, 1981), p. R&W-13. See also Ward to Wilmore, February 1, 1973 and Brown to MacMullen, November 14, 1973.

37 The exact date is not recorded, though on April 22, 1928 the first soda fountain, or refreshment stand was installed and inaugurated on ALAMEDA. Similar stands were installed on other ferries, including BERKELEY, afterward. According to Lawrence Bulmore, after the repeal of the Volstead Act in 1933, beer was included on snack bar menus, although extant photos of the snack bar, with their menu signs, so not confirm this statement. See *Rail and Water*, p. R&W 56; Bulmore letter to MacMullen, April 28, 1973.

38 *Rail and Water*, p. R&W 11.

39 At the time Prohibition became the law of the land, all Southern Pacific ferries except the TRANSIT were equipped with a bar.

40 Bulmore to MacMullen, April 28, 1973.

41 *Ibid.*

42 Yenne, *op cit.*, p. 91.

43 San Francisco Maritime National Historic Park, HDC 1044, Southern Pacific Co - Register. See also Robert Parkinson, "West Coast," *Steamboat Bill*, December, 1958, p. 103. Ironically, the ferryboats outlasted the bridge commuter trains, which were replaced by busses on April 20, 1958.

44 Jerry MacMullen, "Maritime Museum Companion to the Name Trains," *Bridge and Bay* magazine, Summer 1974.

45 Harlan, *op. cit.*, pp. 117-121.

46 Bulmore to MacMullen, August 28, 1973. If Bulmore was correct, this is a rare exception. According to Harlan, "the radio-telephone was in its infancy when the ferries ceased to ply the waters of the Bay, and no attempt was made to place this facility on board the boats as long as ferry service was maintained." (Harlan, *op cit.*, p. 55.)

47 MacMullen, "Maritime Museum Companion to the Name Trains."

48 Parkinson, "West Coast," *Steamboat Bill*, December 1958, p. 103-104.

49 Although BERKELEY's service officially ended as of September 5, 1958 her license did not expire until November 19, 1958.

50 Harlan, *op. cit.*, p. 161.

51 Robert W. Parkinson, "West Coast," *Steamboat Bill*, Fall 1973, p. 162.

52 Documents on file indicate that costs of the drydocking, preparation and towing were to be shared equally by Conover and the Museum. The Museum was billed $59,140 for its share of these expenses. Willamette Iron and Steel co., invoice no. T 5-30 S-R No. T 2919 dated May 30, 1973, BERKELEY Collection, San Diego Maritime Museum.

53 *San Jose Mercury*, April 21, 1973, cited in Lawrence Bulmore to Jerry MacMullen, April 25, 1973. According to this article, Conover had said, "Just don't ask me what she sold for," and Capt. Kenneth Reynard, when asked about the price, had said, "That's nobody's business but ours."

54 Jerry MacMullen, "The Museum That's Coming."

55 Parkinson to MacMullen, June 1, 1973.

56 MacMullen, "Maritime Museum Companion to the Name Trains."

57 Harlan, *op cit.*, p. 63.

MISHAPS AND TRAGEDIES

BERKELEY and the Perils of Commuting on the Bay

By Mellissa Eddy

Life on the ferry runs criss-crossing the San Francisco Bay rarely ran smoothly. Weather, congested traffic patterns, and unexpected obstacles afflicted all the Bay ferryboats. During BERKELEY's days of operation, certain occurrences often kept her life on the Bay far from ordinary. Whether debris floated into her path, or the high volume of traffic and bad weather conditions resulted in a collision, or an explosion aboard her created a mystery, the BERKELEY, along with her crew and passengers, experienced her share of adventures. On occasions those adventures even included the sad spectre of death.

Problems with debris on the Bay happened regularly, often causing vessels, including the BERKELEY, to require repair work. According to the BERKELEY's wreck reports, "submerged objects" damaged her propellers and rudders at least nine times.[1] Concern over the Bay debris and the destruction it caused, however, was not restricted to ferryboat captains and owners. In December 1914 the local newspaper reported that

> floating debris drifts to and fro within and without the pier slips as regularly as the tide, according to the launchmen who are preparing to protest to the Board of State Harbor Commissioners. The launchmen hope that, by bringing the attention of the State officials to the evil, steps will be taken to force the contractors to hold fast to the numerous old piles and timbers instead of permitting them to float away upon the tide and menace the craft of the launchmen.[2]

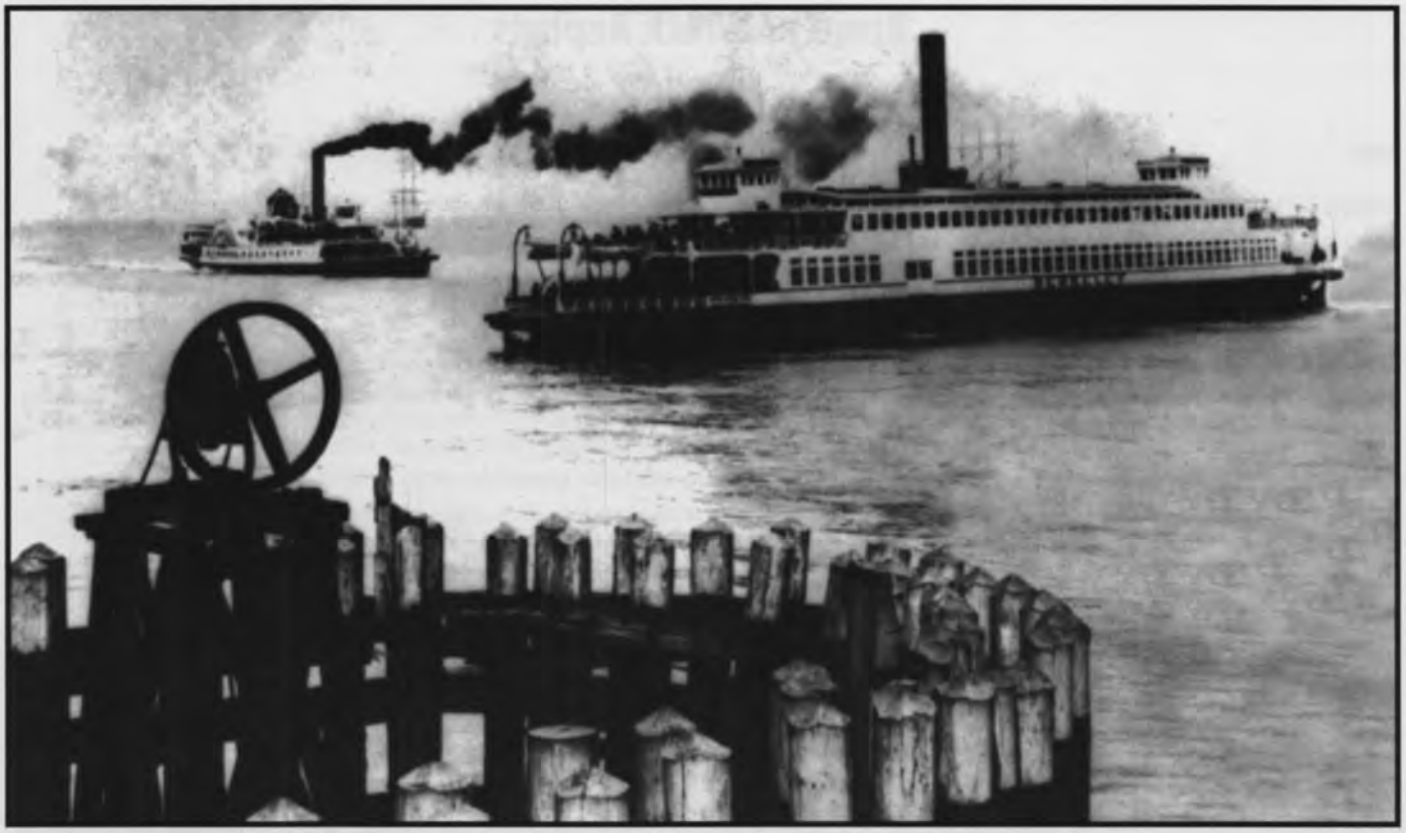
Despite the concern and efforts of the launchmen, debris floating in the Bay continued to plague the BERKELEY. Two decades later, a BERKELEY Wreck Report, dated March 8, 1935, described damage to her rudder frame sustained when she struck a submerged object.

On the evening of April 5, 1911, the BAY CITY departed Alameda at 6:35 and headed for San Francisco. Five minutes later, the BERKELEY left the San Francisco ferry terminal bound for Oakland. Shortly before 7 p.m.,

> several hundred transbay passengers were thrown into a panic . . . when the ferry steamers BERKELEY and BAY CITY of the Southern Pacific Line crashed in midstream near Yerba Buena Island . . . None of the passengers had warning of the collision, and immediately after the two steamers crashed together there was a wild rush for life preservers. Women screamed hysterically, and the crews of the vessels had difficulty restoring order.[3]

Both ferries were taken to Oakland creek for damage assessment and repairs. The steel ribs on the BERKELEY's starboard side were bent and the BAY CITY's front rudder and boat davits were torn away.[4] Since the BERKELEY suffered minimal damage, she returned to her regular run while the BAY CITY's smashed rudder kept her out of service for several days.[5] According to the news report, "just a bit sharper angle and just a little heavier impact, and both probably would have gone to the bottom of the bay." After a preliminary investigation, Southern Pacific officials found Captain Alfred Rogers of the BAY CITY at fault.[6]

In another incident, heavy fog caused the BERKELEY to



Ferry steamers BERKELEY and SAN RAPHAEL cross paths as they near the San Francisco Ferry Building around 1899. SAN RAPHAEL sank November 30, 1901. *(SDMM Collection, P-8314B)*

crash into the piling of the main slip at Oakland pier. Southern Pacific spokesman J.G. Camp, assistant superintendent of ferries, said, "The impact was not very heavy, but owing to the softness of the pier timbers greater damage was caused than would have been possible under other conditions."[7] The collision broke apart the 12 inch piles, tore away a portion of the BERKELEY's starboard side, ripped off the railing back to the lower cabin, cut off the iron davits at deck level, and destroyed the starboard lifeboat. Wreckage covered the partly demolished forward stairs that led to the upper deck.

Passengers, eager to disembark and run for the waiting trains, had crowded the lower deck when the south end of the slip suddenly emerged from the dense fog. Panicked passengers scrambled for the cabin doors and safety. "Shrieking women ran toward the stern of the

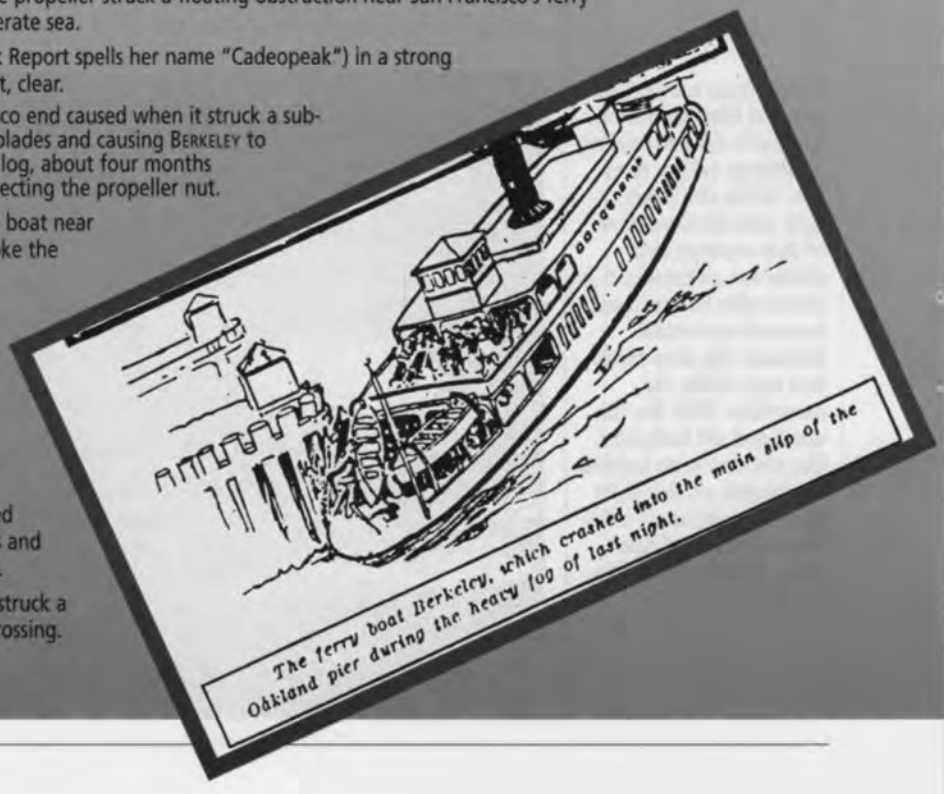


Debris from a smashed slip and lifeboat littered BERKELEY's deck following a collision with a ferry slip. While the exact date and circumstances of this incident and photo are unknown, it is reasonable to assume it occurred sometime between the late 1930s and mid 1950s. By December 1938 the forward and aft bulwarks, like the one seen behind the people on the right of the photo, were solid wood instead of open slats. *(SDMM Collection, P-11719C)*

BERKELEY Wreck Reports

01/22/1898 – 09/19/1935

Date	Nature of Incident and Damage
October 2, 1900	Collision with steamer COLUMBIA. Weather clear but strong tide. Damage estimated at $300.00
February 23, 1905	Struck by schooner POINT ARENA. Hazy weather, no wind, strong tide. BERKELEY had stopped, being just about to enter slip. She reversed engines. POINT ARENA captain was determined to keep his course.
January 10, 1906	Propeller damaged at ferry slip at foot of Market Street, San Francisco. While leaving slip, propeller picked up a piece of timber and broke off one of its blades.
April 15, 1909	Collision with steamer ENCINAL. Smooth seas, no wind, dense fog. Damage to BERKELEY's port quarter.
June 24, 1910	Deckhand Simon Johnson died from work-related injuries. After arriving at the San Francisco slip during a low tide, Johnson began taking aboard loaded express trucks. He lost control of a loaded express truck as he came off the steep apron, collided with a stanchion, and sustained injuries that resulted in his death ten minutes later.
December 12, 1910	BERKELEY struck by Navy tug VIGILANT off Goat Island Lighthouse. Smooth sea, no wind, dense fog.
January 13, 1911	Explosion in gentlemen's room. Fair weather, no wind, smooth sea. One passenger killed and four injured. Toilets were broken, woodwork in room damaged, and hole blown through joiner work on side of vessel.
April 5, 1911	Collided with steamer BAY CITY near Goat Island. Weather clear, smooth sea, no wind. Attempted to swing clear of BAY CITY's course but was struck amidships. BERKELEY's hull plating was stove in slightly, breaking eight frames and five guard braces, and bending seven deck beams.
December 26, 1913	Propeller damaged by floating piles between San Francisco and Goat Island. One blade broke off the Oakland end propeller.
January 5, 1914	Collided with SS UMATILLA off Goat Island. No wind, very dense fog. Collision stove in BERKELEY's port bow and carried away the rudder quadrant and quarter block.
August 23, 1914	An unidentified male passenger committed suicide by jumping overboard near the Oakland Pier. No wind, fair weather, smooth sea. Fairly dark night. Lifeboat lowered and searched unsuccessfully for 15 minutes.
August 31, 1914	Passenger S. S. Bufford, approximately 70 years of age, died from heart disease during Bay crossing.
November 10, 1914	An unidentified male passenger committed suicide by jumping overboard near the Oakland Pier. Fair weather, smooth sea. Lifeboat lowered but could not recover him.
December 2, 1914	Propeller damaged near San Francisco Ferry Building when it came in contact with a floating timber. Fair weather, sea slightly choppy.
January 1, 1915	A female passenger, Mrs. May Devia, committed suicide by jumping overboard. Fair weather, smooth sea, but strong current, clear night. Lifeboat lowered and search made but she was not found.
January 6, 1916	BERKELEY struck end of pierhead at Alameda ferry slip. Rough sea, southeast wind, dark night. Bow of ferry in slack water created by grounded steamer near slip. Flood tide swung stern and she headed for the pierhead.
September 2, 1919	Propeller damaged when it struck a floating obstruction that broke off a blade. Light wind, fair weather and sea, dark night.
November 26, 1919	Broke blade on propeller when the propeller struck a floating obstruction near San Francisco's ferry slip No. 5. Light wind, moderate sea.
February 18, 1927	Collision with SS CADDOPEAK (Wreck Report spells her name "Cadeopeak") in a strong flood tide. Light air, twilight, clear.
July 5, 1931	Loose propeller on the San Francisco end caused when it struck a submerged log, breaking two blades and causing BERKELEY to vibrate badly. Contact with log, about four months earlier, broke the cone protecting the propeller nut.
January 14, 1932	Heavy wave struck the bow of the boat near Yerba Buena Island and broke the sliding forward door and sliding gate.
April 19, 1932	Air pump failed due to broken piston rings and bent valve stem.
April 26, 1933	Propeller blade broken while crossing the Bay due to an unknown cause.
September 23, 1934	Propeller damaged by a submerged object breaking four blades and five or six thrust shaft bolts.
March 8, 1935	Rudder frame broken when ferry struck a submerged object during crossing.





Left: Captain Nicholas B. Nelson was in command of the BERKELEY when she collided with the UMATILLA on January 5, 1914. *(SDMM Collection, P-11716C)*

Below: The *Oakland Tribune* published this diagram on January 14, 1911 to illustrate the article detailing the explosion on board the BERKELEY. *(Courtesy* Oakland Tribune*)*



vessel and only the prompt action of the crew and a few level-headed men prevented several passengers from jumping from the stern deck into the bay."[8] As a result of flying timbers and the falling lifeboat, five passengers were injured, one of whom, Miss Kate Crowley, later died. The fright only ceased after men shouted that the BERKELEY was at the slip, therefore she would not sink.

At the time of the incident, the fog was so thick that the ferry service was carried on "only with great risk of accident." One ferry captain was quoted as saying, "This is the kind of night you like to have a trolley, or follow a cable, it would make crossing easier. [The fog is] as thick as mush, low down over the water, but you can look up and see the moon easily enough."[9] Lights coming from the water front remained obscured to the captains' views until the ferries came within a hundred yards of the waterfront, forcing captains to rely almost exclusively upon the sound of bells and whistles to navigate across the Bay.[10]

Captain C.A. Johnson of the BERKELEY fell off his course and steamed too close to the pier making it impossible to turn away from it in time. Southern Pacific's superintendent William MacKenzie explained Johnson's actions in a statement to the press.

> Allowing for the flood tide, Captain Johnson turned the boat to the north, expecting to float in on the tide as usual. He misjudged the distance and swung his boat too far to the north. I should judge about ten feet. As a result, the forward end of the BERKELEY struck solidly against the nose of the pier.[11]

Arguably the most infamous incident aboard the BERKELEY was the explosion in the men's lavatory during a routine late Friday afternoon trip across the Bay on January 13, 1911. Captain Jones remembered looking at the light on Goat Island at 5:55 p.m. In the next moment, the needle of the compass shook, the vessel rocked, and the pilot-house windows shattered.[12] The captain heard a dull noise, saw a

This illustration appeared in the December 7, 1908 *San Francisco Examiner* and showed the damage incurred when the BERKELEY crashed into the south end of the Oakland ferry slip during the dense fog. *(Courtesy* San Francisco Examiner*)*

flash and, assuming the boilers had exploded, immediately

> telephoned down to Chief Engineer James Peacock to find out if there was any trouble in the engine room. He replied that there was not, and then [Captain Jones] dispatched First Mate E. N. Johnson to ascertain what was wrong. As there was nothing the matter with the ferryboat [he] continued for the pier at full speed.
>
> Naturally there was wild panic as the BERKELEY was carrying a capacity crowd of commuters. The passengers evidently believed that an explosion had occurred in the engine room, and for several moments the great crowds on both the lower and upper decks were in mad disorder. The officers and deckhands quickly assured the passengers that nothing was wrong with the boat, and the word flashed from one to another that the worst was over. In this way the travelers became quiet, although there was still great excitement when they disembarked.[13]

Obviously, something else had gone wrong. In the midst of the ship-wide panic, crew members quickly determined the explosion came from the men's lavatory. This explosion led to speculation over whether it was an accident, a suicide, or murder.

The available evidence indicated that John O. Norbom, a native of Norway, a mining engineer, and owner of the Maddox mine in Shasta county, apparently boarded the BERKELEY with a vial of nitroglycerin in his pocket, which exploded while he was in the men's room.[14] One of the witnesses, State railroad policeman James King, described the blast

> like that of a cannon. The door of the compartment burst out in a hundred pieces and a great cloud of white smoke poured from the interior of the room. When this cleared away I saw the mangled corpse lying in the doorway. One of the injured was evidently leaving the room as the explosion occurred and was struck by the bleeding corpse, which was hurled across the lavatory, striking the doorway.[15]

Norbom died instantly. Four others – Edmund Hoffschneider, Royal Sampson, Louis Faure, A.C. Miller, and Captain William T. Shorey — received injuries.[16] The explosion struck Norbom in the small of his back, disemboweling him and breaking every bone between his hips and his shoulders. Hoffschneider, rendered deaf by the explosion, sustained the most serious injuries including fractured ribs, lacerations, internal injuries, and a concussion. Sampson's "right arm was badly lacerated, and the bones were broken in several places, partly by the weight of the body that fell on him and partly by the force of the explosion."[17] A. C. Miller, Louis Faure, and Captain Shorey received only cuts and bruises caused by flying wood splinters and debris. All the victims and many of the passengers suffered from shock.

In his report to Southern Pacific Dr. Harry East Miller, a noted explosives expert, stated that

> the explosion on the boat was the result of the use of some one of the higher explosives. By that I mean a high grade of dynamite or nitroglycerin. My theory is that it was carried in the man's overcoat pocket, and that when he threw his coat back in the lavatory it exploded from contact with the tiling on the sides of the room. Two facts seem to bear out this theory. One is that the explosion took place several feet from the ground because the flooring of the place was intact. The other is that the man was disemboweled from the back, showing the explosion came from behind. His face and the front portion of his anatomy were intact.[18]

While most viewed the explosion as an accident, some believed it was a suicide. Norbom's family, however, doubted his death was either an accident or suicide. Instead, they believed he'd been murdered.[19] On January 21, 1911, a coroner's jury found the cause of John Norbom's death to have been accidental, the result of a nitroglycerin explosion.[20]

Throughout her career the BERKELEY experienced some rough "steaming" on the Bay. Except for the extraordinary explosion in her men's lavatory, the accidents that plagued the BERKELEY also plagued the other ferries working on San Francisco Bay. Unfortunately, weather, debris, and collisions were not the only mishaps that occurred on ferries. Prior to the construction of the Golden Gate and San Francisco-Oakland Bay Bridges, distraught individuals jumped off the ferries in order to commit suicide. Two unidentified men leapt from the BERKELEY to their deaths in 1914 and on January 1, 1915, twenty-nine year old Mrs. May Devia also jumped overboard and drowned.[21] In all, the deaths of seven individuals – Kate Crowley, deckhand Simon Johnson, John Norbom, May Devia, S. S. Bufford (heart attack victim), and two unidentified suicide victims – were documented in the Wreck Reports or newspapers.

As hazardous as the BERKELEY's career sounded, for sixty years she proved she was as safe and reliable a form of transportation for the 20th century commuter as today's automobiles, buses, and rapid transit. Despite the constant obstacles of transbay service, the BERKELEY managed to survive her collision damage and overcame her reputation as the "pile drivers friend" to become a familiar part of the Bay ferry service until it ended in 1958.

Mellissa Eddy, a graduate student at the University of San Diego studying history, completed an internship at San Diego Maritime Museum where she now volunteers.



Ferry ENCINAL steams past BERKELEY in the 1910s. ***(SDMM Collection, P-3639A)***

NOTES

1 Wreck Reports, Records of the United States Customs Service, NARG 36, National Archives and Records Administration, Pacific Region, San Francisco. The list and nature of incidents that occurred while the BERKELEY served on the San Francisco Bay included collisions with debris, vessels, and ferry slips, mechanical failure, weather damage, an explosion, and six deaths. The Wreck Reports recorded a total of 24 of these incidents during her first 37 year of service. At least one collision with a ferry slip that did not appear in the Wreck Reports received extensive coverage in the San Francisco newspapers. It is reasonable, therefore, to assume the Wreck Reports missed other incidents during those years.

2 *San Francisco Examiner*, December 3, 1914.

3 *San Francisco Examiner*, April 6, 1911.

4 *Ibid.*

5 *San Francisco Examiner*, April 7, 1911.

6 *San Francisco Examiner*, April 6, 1911.

7 *San Francisco Examiner*, December 7, 1908.

8 *Ibid.*

9 *Ibid.*

10 Roughly four hours after the BERKELEY crashed into the piling of the Oakland pier, the ferryboats OAKLAND and NEWARK, both of the Southern Pacific Line, collided. Although both vessels suffered damage, they managed to make port without any assistance. Except for cases of shock and extreme nervousness, the passengers survived the accident virtually unharmed. That same evening, two Key System ferries nearly rammed each other in the same dense fog.

11 *San Francisco Examiner*, December 7, 1908.

12 *San Francisco Chronicle*, January 14, 1911.

13 *Ibid.*

14 *San Francisco Call*, January 22, 1911.

15 *San Francisco Chronicle*, January 14, 1911.

16 See *Oakland Tribune*, *San Francisco Call*, and *San Francisco Chronicle*, January 14, 1911. Due to discrepancies between the accounts in the three papers, it is unclear whether Mr. Hoffschneider's first name was Edward, Edwin, or Edmund, and if Royal Sampson was a doctor or a laborer in the employ of the Board of Health of Oakland. Also see Daphne Lagios, "Bold Lines Connect: the Shoreys, A Unique Maritime Family," *Mains'l Haul*, vol. 34, no. 1, Winter 1998, pp. 28-35, for information on Captain William T. Shorey, the first black whaling sea captain on the Pacific Coast.

17 *Ibid.*

18 *Oakland Tribune*, January 14, 1911.

19 The *Oakland Tribune* (January 16, 1911) reported that the Norbom family doubted his death was accidental since "he was not in the habit of carrying explosives around with him, that he had no use for anything except giant powder, and that he had a great fear of explosives." His son-in-law, Olaf Bals, the superintendent of Norbom's Maddox Mines explained, "He [Norbom] never ordered explosives used by us at the mine. I attended to that myself. The trips which he made to this city and San Francisco were to visit his family and of making a few business arrangements." In addition to the family's testimony, Norbom's old partner, Nelson D. Phelps, told the *San Francisco Chronicle* (January 14,1911) "Never to my knowledge - and I have known Norbom off and on for nearly twenty years - has he ever carried dynamite or any other explosive around with him . . . He was one of the most careful and most sane men and never did anything out of the way." Phelps further stated that his former partner had a fear of powder of any kind. Norbom's family believed someone murdered him. Mrs. Norbom explained to the *San Francisco Chronicle* (January 14, 1911) that three days earlier her husband felt hunted again, like the time in 1908 when someone followed him around Europe intent on killing him. Norbom believed that, once again, assassins had mistaken him for someone else and intended on doing him harm.

20 The *San Francisco Call*, January 22, 1911.

21 BERKELEY's Wreck Reports, August 23, 1914, November 10, 1914, and January 1, 1915.

"There Was No Quick and Easy Way"

Restoring and Preserving the Victorian Ferryboat BERKELEY

By Diane Cooper

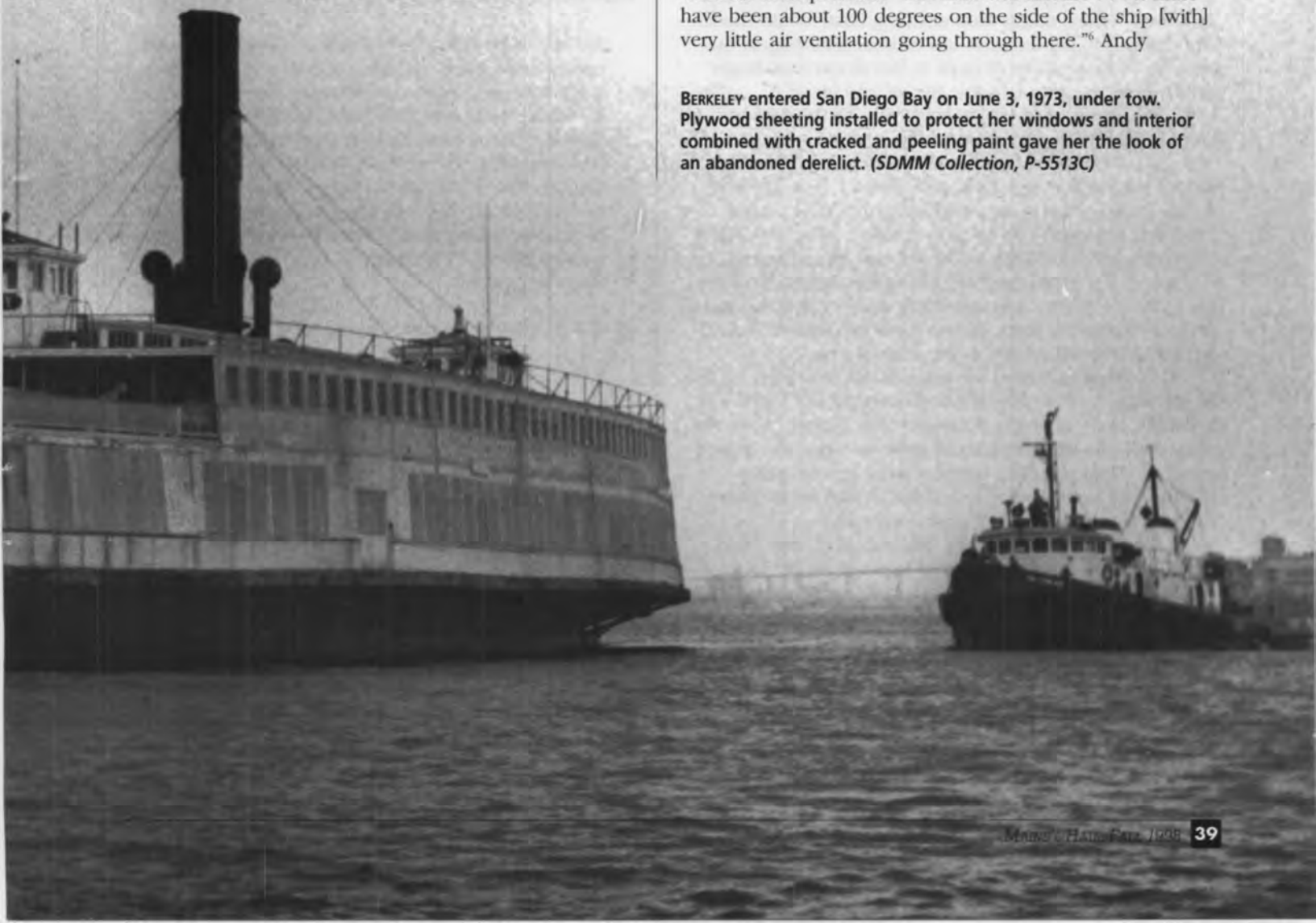


Immediately following BERKELEY's 1973 arrival in San Diego, the museum staff undertook the major task of cleaning, repairing, and repainting the ferryboat. The vessel arrived looking shabby and forlorn with protective sheets of plywood covering her windows and dingy, cracked, and peeling paint covering her exterior. Originally acquired not for her historical or architectural significance, but rather for her spacious decks where the museum planned to install numerous exhibits, house the administrative offices, store artifacts, and relocate the library and bookstore, the museum "thought they could just knock off the loose stuff and paint over it. But . . . the only way you [could] get the job done [was] by taking it down to a solid base."[1] After some intense discussions, the administration determined that painting over rotted wood and layers of unstable paint would actually magnify the maintenance required and encourage the vessel's slow deterioration.[2] As one of the last West Coast ferryboats replete with Victorian appointments, however, the BERKELEY's restoration and preservation presented numerous challenges to her new owners and ultimately required the innovative combined efforts and skills of professional carpenters, painters, welders, electricians, engineers, and stained glass restorers.

Under the leadership of the Museum's Restoration Director, Ken Reynard, the museum staff developed a restoration philosophy that "insur[ed] quality control to the point that when the project [ended] the overall appearance [was] the same, even though the processes were done at a different time by different people [and] insured that all the techniques were done in the same fashion."[3] Reynard also insisted the work on the BERKELEY be more than what he called "paint brush restoration."

One of the first issues facing the museum staff was getting the new facility's doors open with exhibits in place for the public to view. While the curatorial department began developing displays and planning for exhibits, "a four man paint crew, . . .one welder, [an] electrician, [and] about four carpenters"[4] worked simultaneously on a variety of BERKELEY restoration projects.[5] The painters removed layers of old paint throughout the vessel, while the carpenters replaced rot-infested wood wherever they found it, and other members of the crew designed a new accommodation ladder and welded it in place to improve worker and public access to the engine room. At the same time, work began on the passenger deck. Following restoration, this upper level would become a gala party deck available for private individuals or organizations to rent. Less than a year after they began, the staff opened the BERKELEY to the public while her restoration continued.

In an attempt to make the BERKELEY more presentable and to stabilize the superstructure before inclement weather arrived, the restoration of the ship's exterior was one of the first jobs undertaken by the paint crew. Conditions for the men restoring the BERKELEY at her B Street Pier mooring were far from pleasant. "The heat was intense . . . it must have been about 100 degrees on the side of the ship [with] very little air ventilation going through there."[6] Andy



BERKELEY entered San Diego Bay on June 3, 1973, under tow. Plywood sheeting installed to protect her windows and interior combined with cracked and peeling paint gave her the look of an abandoned derelict. *(SDMM Collection, P-5513C)*

Anderson, the paint crew supervisor, recalled working with his crew one "particularly hot afternoon in the scaffolding . . . just sweat from top to bottom [with] paint chunks stuck all over our face and back and our arms."[7] In addition to the unpleasant conditions, the work was anything but easy. Since the vessel's extremely dry condition made her a potential fire hazard, the men worked with hand scrapers, rather than heat guns or torches, to remove the accumulated layers of old paint. By hand they scraped off all the old paint until they reached bare wood in order to insure a solid base for the new paint.

The carpenters worked behind the painters on the Port Orford cedar exterior.[8] When the surface prepping exposed pockets of rot, the carpenters removed the infested wood and replaced it with new tongue and groove planks crafted from Douglas fir. An estimated 40-60% of the ferry's south side required replacement. Staff members applied the wood preservative cuprinol[9] to the exposed interior beams before attaching the new Douglas fir planking.

After the removal of all the rotted sections and the installation of new tongue and groove, the painters returned and sanded everything until it was fair or smooth. The tongue and groove planking required meticulous cleaning and detail sanding of its seams in order to make it fair.[10] The faired surface was sealed with a coat of oil-based primer, which needed a full day to set. The painters then caulked and filled all the seams with a vinyl latex caulking compound that had excellent adhesion and flexibility. "[They] didn't want anything [that] would harden and crack. Boy did the guys use to wear their fingers out, because that's how [we'd] caulk it, [we'd] run [our] finger over it to set it down into the groove and blend it . . . The guy's fingertips would be just worn raw by the time we got done."[11] With the seams caulked the painters applied a second full coat of primer and let it set overnight. Then they sanded the surface and applied the first of three coats of Z-Spar Brolite yacht enamel. While this process proved extremely thorough and time-consuming, the yacht enamel "looked gorgeous, it looked like the side of a refrigerator, . . . it was almost like porcelain."[12] Unfortunately, over time the inflexible enamel became brittle and began to crack and peel. Within seven years, the museum switched to a more flexible acrylic latex paint as the exterior finish.

The painters followed the same basic procedures on the interior spaces. First they wooded down all the bulkheads, bulwarks, and machinery throughout the engine room, the main deck, the lower level restaurant area, and the passenger deck. Then, after the completion of any necessary repairs, they sanded and primed the interior areas before applying the finish coats of marine enamel.[13]

In the passenger deck area, however, the crew faced other problems. While berthed in Sausalito as the Trade Fair, the BERKELEY's passenger deck had become home to numerous pigeons who littered it with excrement and feathers. Before the restoration could begin, the area required a thorough cleaning and sweeping out. Once cleaned, the paint crew moved in to begin wooding down the beautiful Victorian appointments. After years of shipyard maintenance painting, the detailed fine woodworking that bordered the room was hidden under multiple layers of old paint. The poor bond between layers facilitated the wooding down process. By rapping the painted surface of the woodwork with a small hammer, the crew managed to fracture the lead-based paint,[14] which then fell off in thick chunks leaving behind the original finish coat or bare wood. Any paint that remained behind was popped out with careful concentration and an assortment of scrapers. Andy Anderson counted 42 old layers of paint in one such chunk of paint.[15]

When the original finish coat of paint appeared during the wooding process, the museum took samples, matched the colors, and mapped out their restoration paint scheme. The exposed areas also showed signs of extensive gilding,[16] a process the museum was not financially prepared to undertake. Rather than paint all the originally gilded areas, the staff opted to merely suggest that original opulence by highlighting some of the gilded areas with gold paint.

The pewter filigree, installed just below the stained glass windows but above the large pane windows, presented another challenge for the paint crew. Cast and sold in sections, this pattern contained a number of small delicate sections including the wreaths, ribbons, flowers, garlands, and individual berries. This system allowed a contractor to maintain the consistency of a pattern while adjusting it to fit the space available by adding or removing small pieces. In order to remove, clean, prep, and reinstall the filigree without destroying the original pattern, the painters worked very carefully and methodically. Unlike the woodwork, the filigree was unable to withstand the impact of a hammer blow and required a more labor intensive cleaning process.

> We had to go along with a tack probe and pull each one of these pieces off and get it into an envelope [and] number it. [We went] from the flower to the wreath to the flower and that'd be set number one. . . . And after we got ten sets, we would take them down [to the work area], put them in a dip tank with a screen, and set them in this paint stripper. That would loosen up all the paint. Then as the paint became loose, we could take [them], rinse them off with water, and . . . with a little wire brushing you came out with a clear piece of pewter.[17]

While the pewter sections sat in paint stripper, the crew worked on the wood that the filigree had been nailed to, took it down to bare wood, and carefully sanded and primed it. In order to facilitate the reinstallation of the filigree, they took great pains to not fill in any of the nail or brad holes related to the filigree. By reusing those nail and brad holes the painters managed to replace each unit in its exact position. After they reinstalled the filigree, they primed the nails and brads and then applied a finish coat to the entire area.

Since the museum viewed the passenger deck as a potential source of revenue, a few modifications to the deck's original configuration, including the addition of an oak dance floor, were made. In order to create a space for the dance floor, the carpenters removed a number of long center benches located at the ship's stern and the original floor tile. Eventually oak replaced the original Port Orford cedar decking because "people would spin around on that Port Orford cedar and after so many times of impact it just started turning into mulch. It just fractured so badly you

couldn't keep a finish. Even polyurethane wouldn't stick."[18] The oak dance floor's finish stood up to the heavy usage and required less maintenance. The refreshment stand was modernized and outfitted to serve as a wet bar.[19] The museum basically left the forward end intact except for a small portable stage built over the first row of benches and the installation of a projection screen on the forward bulkhead. They also installed audio-visual equipment in the uptake trunk. This created a small theater area now used for special training sessions and membership meetings. By the time the passenger deck opened to the public, the Victorian appointments once again reflected the original elegance and charm experienced by passengers in 1898.

Museum officials also decided to restore the wooden benches to natural wood rather than to preserve the red stained varnish coating originally used to imitate the appearance of mahogany. At the turn of the century mahogany was considered the wood of elegance and style, making it the most desirable material for these benches. Instead, the benches were constructed of teak with laminated black walnut seat panels and then coated in the tinted varnish to give them the rich color of mahogany. The support columns were originally varnished and the wainscot[20] located in the bench areas was wood grained to resemble mahogany.[21] Rather than maintain the dark lines and bulkheads within the bright party area, the museum opted to paint the columns white and the wainscot beige.

Each short bench required approximately 40 man-hours to restore while the long center benches took 80 hours.[22] During restoration at least a dozen laminated black walnut perforated seat panels were replaced by the carpenters. Fortunately, the original Union Iron Works plans for the BERKELEY included a bench plan and perforated seat pattern.[23] Using flat scrapers on the seat panels and bench frames and triangular scrapers and a chemical stripper on the spindles and legs, the crew removed all the old varnish off the surfaces.

> Once we get all of this down, we sand it with 40-grit sandpaper and 60[-grit], and put a coat of varnish on it. [We] let it cure for a week or so and resand it with 100-grit and apply another coat. And a week after that, [we] do the same thing until we build it up to about six coats.[24]

In 1995 the Museum contracted with Artistic Designs of San Marcos, California[25] to restore the BERKELEY's clerestory stained glass windows.[26] California Art Glass Works of San Francisco built these windows out of Kokomo Opalescent Glass in 1898 and included a number of spectacular glass jewels in their designs.[27] After nearly a century, however, the effects of time, weather, and gravity had become obvious.

> The windows were so badly bowed, they looked like they were about thirteen months pregnant. Some were so bad, you could look up and see daylight through them. A lot of the windows had been repaired with any colored glass, that was sort of, maybe, kind of close to the original; not the right texture, not even the right color . . .[28]



An optimistic Ken Reynard talks to dismayed Museum members getting their first look at the newly arrived BERKELEY, June 1973. *(SDMM Collection, P-4868A)*



This view of the upper works of the BERKELEY shows the neglected condition she was in when she arrived in San Diego in June 1973. Note the cracked and peeling paint and the exposed and rotted wood. The missing radar antennae were removed before she became Conover's "Trade Fair." *(SDMM Collection, P-2450C)*

BERKELEY with MEDEA alongside, at B Street Pier, in 1977. Note the scaffolding and other evidence of restoration in progess. *(SDMM Collection, P-2042C)*



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Previous attempts to arrest the bowing of the windows resulted in the addition of three vertical rebars to the exterior of the glass. The installers attempted to solder the rebars to the lead came.[29] The lack of a solid and consistent bond between the rebars and came actually compounded the bowing problem. In addition to the rebars, non-matching glass was used to replace broken or missing pieces during the BERKELEY's first 97 years. Despite these obvious problems, the clerestory windows of the BERKELEY remained awe-inspiring to the museum staff and visitors.

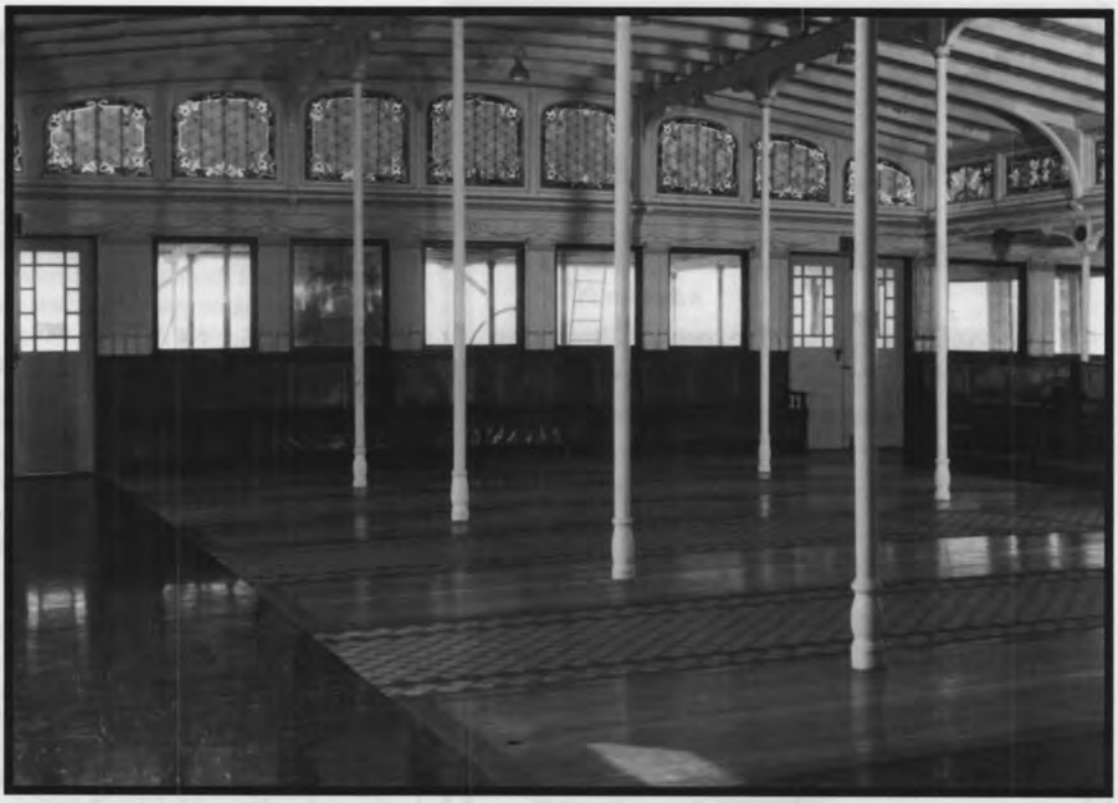
On May 25, 1995, Artistic Designs, owned and operated by Marie Tatina and Elsie Rail, began restoring the windows, a project that would ultimately require three years to complete. In order to repair and replace broken and missing pieces of glass, Marie contacted Kokomo Opalescent Glass Works, the original manufacturers of the glass used in the BERKELEY's windows, and sent them a sample of the required glass. A yellow ripple glass, used extensively in these windows, required a special glassmaking run to reproduce. Over a nine-month period, Kokomo attempted to recreate the yellow ripple glass three times before finally matching the wispy quality of the original. Kokomo could not match one of the reds used in 1898 due to current EPA (Environmental Protection Agency) regulations concerning certain glassmaking procedures. In order to match the color, Marie selected the closest Kokomo red glass, painted the surface with a Fuse Master Mahogany color, and refired the glass in a kiln.

The restoration process entailed a number of steps and required about 40 hours of labor per window. First, Elsie and Marie took reference rubbings of the window designs to use as patterns when releading the windows. Then they placed the window in a mild acid solution of CLR for about three hours to clean off the accumulated deposits of calcium, lime, and rust. This solution also loosened the glazing (putty) making it easier to remove the old lead came and take the window apart. After thoroughly rinsing the window, they then soaked it overnight in a clear water bath. Next they carefully dismantled the window, removed the lead came, and reassembled the pieces on top of the reference rubbing.

When Elsie began releading the windows, a process she likened to working on a jigsaw puzzle,[30] she substituted an H-round lead, a came with a slightly wider channel than the original, in order to secure the edges of the textured glass within the lead. The original leading left many of the textured glass edges exposed. Artistic Designs also decided to install four new 3/8" vertical rebars into each panel. They carefully positioned the new rebar to insure none of the glass or jewels were obscured.

After completing the reconstruction of a window, Elsie glazed it with a 10/12 DAP mixed with whiting and turpentine. This compound, an old glazier's recipe, provided a malleable and resilient cement that filled in any opening between the came and the glass while allowing the glass to breath (expand and contract) within their frames. She then brushed the lead lines until they achieved a rich black patina. The restored window was then mounted in its refurbished frame and returned to the BERKELEY for installation.[31] Artistic Designs installed the last of the port and starboard windows prior to the BERKELEY's centennial anniversary on October 18, 1998.

In the engine room, workers used "a combination



BERKELEY passenger deck after the removal of the center aft benches for a dance floor. This is the original Port Orford cedar with strips of floor tiles. Eventually a solid oak dance floor replaced this original decking. *(SDMM Collection, P-3761-1C)*



Close-up of the filigree located on the passenger deck before restoration with years of maintenance painting covering the fine details. *(Courtesy of Andy Anderson)*



A section of the filigree after restoration. *(Courtesy of John Wright)*



This 1998 view of the forward starboard end of the passenger deck shows the elegance and charm of the BERKELEY's Victorian design. Note the heating vents at the top of the columns and on the ends of the benches. *(Courtesy of John Wright)*

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of needle scalers, chipping hammers, scrapers, knives, [and] picks . . . to get it cleaned out . . .Periodically [they] had to come through and use a solvent of sorts to cut through some of the heavy grease."[32] Andy Anderson estimated his crew removed several tons of paint from the engine room.

Smaller pieces of the engine room machinery were dismantled, marked, labeled, identified, and taken above for cleaning, prepping, and finishing. This process, however, required strict monitoring to insure the pieces worked on out of the engine room matched the larger pieces worked on *in situ*. "A piece of brass tubing [taken] out of the engine room could be put on a buffer and [given] a real high polish, a real high shine. But in the engine room, done by hand, that [was] not possible."[33]

One of the final steps in the engine room prepping involved cleaning the diamond decks. Since using chipping hammers and needle scalers on metal created an incredible racket, the crew was forced to fit this project around visitor hours, so they scaled prior to opening. Working on their hands and knees, the crew used ice picks and toothbrushes with paint thinner to clean the detailed tread. After they applied the thinner to the deck, the crew would "absorb the moisture with sawdust, pack that into a can, dispose of that, and then [they] were down to clean metal."[34] It took a crew of four, assisted from time to time by volunteers, approximately six months to prep the entire diamond deck. Painting, on the other hand, took hardly any time or effort at all.

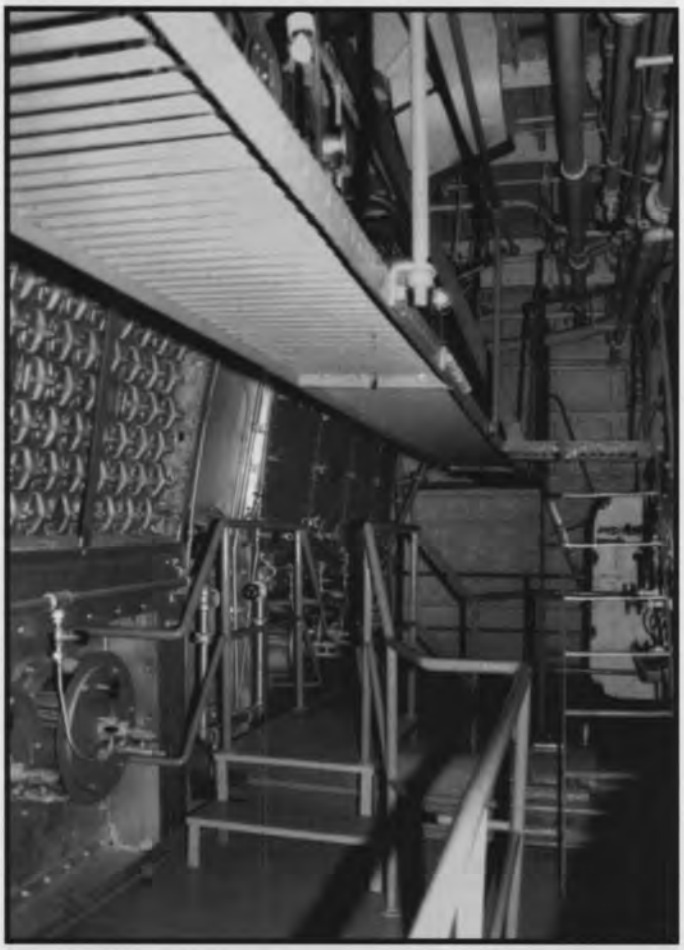
After the crew finished bringing the entire engine room down to bare metal, they went through and masked all the machine surfaces. With the area completely prepped, a coat of damp-proof red Rustoleum 729 primer was applied throughout the room. Next they applied a second coat of "three-quarters [729] primer and one-quarter white primer, which changed the color slightly so [they] could see [it and] tell where [they'd] been. The third coat . . . would have been . . . a white undercoat, [but Andy Anderson] added enough lamp black to tone it down. Then [they] could see the [final] white coat as it went on."[35] Once the finish coat cured enough, the paint crew returned to the now clean and bright engine room, reinstalled all the small engine pieces restored off-site, and did all the detail painting by hand.

Ed Paxton and his crew moved into the engine room after the painters finished and began restoring the BERKELEY's triple expansion engine. Intent on restoring the engine to working condition, Paxton removed "enough of the piston components to reduce the friction [within the cylinders.] The original plan was to use the jacking gear to roll the engine over . . . but the prolonged use of the jacking gear, particularly in her power situation, and rolling an engine over for extended periods of time" would have worn out the gear.[36] Eventually Paxton's ingenuity and hard work resulted in a working triple expansion engine powered by a hydraulic pump system.

After the engine room was restored, the painters, followed by Ed Paxton, began work on the boiler room. Once again they scaled off the old paint, prepped the area, and applied new primer and finish coats. As soon as they completed the job, Paxton and his crew of volunteers moved in to restore the boilers and the fireboxes. With the addition of a forward access door cut into the watertight bulkhead



Above: Greg Eastman of Techmaster applying 4# foam in BERKELEY's boiler room during the 1990-1991 hull restoration project. *(SDMM, Brierly Collection)*



ABOVE RIGHT: BERKELEY's restored No. 4 and 3 Babcock And Wilcox water-tube boilers are shown with the cover for No. 4 boiler (foreground) removed to expose its tube nest. *(SDMM Collection, P-10527A)*

and a number of labels, the boiler room was opened to the public.

Structural repairs and restoration, including modifications to the window mounts and work on the sponsons, occurred during the 1970s and 1980s.[37] By 1990, the major aspects of the BERKELEY's restoration appeared completed, and the museum shifted its focus to preservation. Unfortunately, an inspection of the interior hull the latter part of that year revealed substantial corrosion and the need for immediate action to keep the ferryboat afloat. In 1898 Union Iron Works constructed the BERKELEY of riveted steel plates and gave her a shell 3/8-inch thick with frames on 24-inch centers. The only obvious hull repairs since her construction were some welded insert plates and doublers added to prolong her service life. The museum considered a variety of options to restore and preserve the weakening hull. The cost of a shell plate overlay or a resin and glass external coating proved prohibitively expensive. Such work would also have put the vessel in drydock for many months, greatly reducing the museum's ability to function. After extensive consultation with Campbell Industries, San Diego Shipyard, and A.E. Yale Enterprises and in-depth examination and consideration of all the alternatives available, the museum determined to build an inner bottom of closed cell urethane foam in the bilge spaces. Research



indicated that a system of 1/4" thick "Rim-7" hard urethane sprayed into cleaned bilges would form a strong water-resistant "skin" inside the hull. Then a "grow-foam" of 4# density closed cell urethane would be applied and allowed to reach frame flange thickness (5" above the turn of the bilge and about 22" thick at the centerline). After the 4# foam [was] cured and smoothed, a 1/4" top coat of "Rim-7" [was] applied to connect all the frame bays together and form a continuous surface at frame flange level.[38]

The project began in November 1990 and was completed the following July. Workers removed an estimated six tons of rust and scale from the bilge spaces. Approximately 67,000 pounds of urethane foam was used to create the inner lining for the hull. Storage shelves, racks, and lighting were also installed in these spaces, creating storage for artifacts, maintenance supplies, and bookstore stock.[39]

Once an area was restored, the crew began the unending task of preservation. Chuck Thomas, the paint crew supervisor since 1977, adopted a philosophy of "don't paint, clean." During the last 25 years of active restoration on the BERKELEY, many enthusiastic workers became frustrated by the overwhelming task before them and their piteously slow progress. "Restoration takes a lot of time because you have a tendency to want to get more done than you realistically can . . . it takes a lot of patience and a lot of guys just don't have that patience."[40]

Time and the elements still work against the BERKELEY, requiring strict vigilance by her crew, on-going preservation, and, when needed, more restoration work. When the museum purchased the BERKELEY, the crew recognized the importance of the task they undertook and the level of commitment it demanded. Chuck Thomas credited the 1973 museum staff with incredible foresight, courage, and the wisdom to see the BERKELEY as an historical treasure. He reflected on the maintenance crew's charge and noted that the task of restoring and preserving the BERKELEY, then and now, would be a lot simpler if

> we [got] rid of all this Victorian archaic stuff, [did] the whole side of the boat [in] vinyl siding, [got] rid of the four pane windows and put sliding aluminum windows in [their place]. We can pasteurize this thing to the point where we don't have to do so much maintenance. But then if we do that, we've eliminated what our goal is - to preserve the vessel, not to make it affordable . . . We're here to preserve it, to make it last as long as we can during our tour of duty and hopefully somebody will take the initiative the next tour of duty and put the amount of effort into it that we did.[41]

For 100 years various people have dedicated the amount of time and effort needed to maintain, restore, and preserve the BERKELEY. Undoubtedly many more await their "tour of duty" and opportunity to see her through the next hundred years.

Diane Cooper received her MA in Maritime History and Nautical Archaeology from East Carolina University. She currently serves as one of the editors of the Mains'l Haul *and is the Curator of Collections at the Maritime Museum of San Diego.*



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NOTES

1 Andy Anderson oral history, June 11, 1998.

2 The cracked and peeling paint that covered the BERKELEY's exterior exposed the wood siding to wind and rain. Once water got beneath the paint it began rotting the wood. If the museum chose to paint over wood infested with rot or an unstable surface, like old paint, they would have sealed the rot and the moisture next to the good wood and encouraged the rot to spread. Neither the old unstable paint nor the rot would have offered a sufficient bond for the new coat of paint, which would have quickly flaked off, possibly taking some of the infested wood with it. In order to maintain a cosmetically appealing appearance, the museum would have been forced to repaint the exterior, in whole or in part, approximately once every six months. By opting to restore the BERKELEY, rather than merely maintain her, they actually saved the museum excessive labor and eventual structural deterioration.

3 Anderson oral history.

4 Chuck Thomas interview, September 17, 1998.

5 At the same time, this crew was responsible for maintaining San Diego Maritime Museum's flagship, the STAR OF INDIA, and the newly acquired steam yacht MEDEA, which arrived in July 1973, one month after the BERKELEY.

6 Thomas interview.

7 Anderson oral history.

8 The BERKELEY's original tongue and groove planking fashioned out of Port Orford cedar was of such high quality that only two or three small knotholes were found on either side of the ship. Union Iron Works probably used Port Orford cedar throughout the BERKELEY because it tends to resist rot better than Douglas fir.

9 The wood preservative cuprinol, copper naphthenate, is a surface active rot inhibitor. Once this surface coating is breached by a nail hole, a gouge, or a crack or check due to weathering, the cuprinol's ability to protect the wood is compromised. Cuprinol, a green liquid, is generally applied like paint and leaves a dark green coating on the wood's surface. Since this coating bleeds through primer and finish, cuprinol is generally used only on interior structural wood beams and supports.

10 Thomas interview.

11 Anderson oral history.

12 *Ibid.*

13 The painters chose enamel for the interior since it was easy to clean and maintain.

14 During the 1970s the Department of Housing and Urban Renewal banned the use of lead-based paints in the housing industry. Prior to the BERKELEY's 1973 arrival in San Diego and subsequent restoration, all coats of maintenance paint on board the ferry would have been lead-based. During the restoration process, San Diego Maritime Museum personnel adhered to the safety standards of the day that regulated the removal and disposal of the lead-based paint. The museum never applied lead-based paint to any structure or surface on board the BERKELEY or its other vessels. A small number of paint manufacturers still supply lead-based paints for industrial usage only.

15 Anderson oral history. See also Thomas interview, and Chuck Thomas oral history, March 5, 1998.

16 The application of gold leaf to architectural details creates a gilded surface. During the Victorian era gilding was extremely popular and required a skilled craftsman to properly apply the fourteen carat gold sheeting. In some instances gold paint was used in place of gold leaf. The paint, however, never matched the shine of the gold. Southern Pacific installed an inordinate amount of gold leaf gilding on the BERKELEY's passenger deck when she was built. Much of that gilding was later painted over during routine maintenance.

17 Thomas interview. See also Anderson oral history.

18 Thomas interview.

19 Anderson oral history. When the old icebox was removed from the refreshment stand, Andy rescued it from a trip to the dump. He still owns and uses the BERKELEY's refreshment stand icebox.

20 Wainscot refers to a facing or paneling, usually made of wood, applied to the lower portion of a room's wall.

21 As the painters removed layers of maintenance paint from the wainscot, small patches of the original wood graining appeared. In 1898 artisans carefully painted the surface of the wainscot to perfectly match the grain patterns and coloration of mahogany. Unfortunately, only small irregular patches of the original hand grained wainscot survived, making it impossible for the museum to try and preserve any of it. During the BERKELEY's 60-year career as a ferryboat, her interior stairwells, wainscot, and railings were painted a variety of different colors. Chuck Thomas remembered removing old layers of red and green paint as well as various shades of white and beige.

22 Restoration of the benches became a fund raising project that allowed individuals to "purchase" a bench in their own name or in memory of someone else. An engraved plaque at the end of each restored bench identifies the "purchaser" and serves as a perpetual expression of the museum's appreciation for their gift.

23 See San Francisco Maritime National Historical Park, HDC 345, Bethlehem Steel Corporation, Shipbuilding Division, San Francisco.

24 Salvatore Bompensiero interview, September 18, 1998. To date, eight long benches and four short benches still await restoration.

25 This two person operation is one of a handful of certified glass restoration companies in the United States. Marie Tatina started the company in 1980 when she began a home industry making sun catchers. Three years later Elsie Rail joined the business and evenually became Marie's partner. Requests for repair and restoration projects redefined the company's focus. Marie's specialties include designing and engineering windows as well as painting glass, while Elsie concentrates on leading the windows. They have restored numerous stained glass windows throughout the country based solely on their reputation for excellence and the power of word of mouth.

26 The BERKELEY's clerestory windows, though referred to as stained glass, are actually opalescent glass windows. Strictly speaking, stained glass is achieved by painting, or staining, and then baking transparent colors onto a glass surface. Mixing colored metallic oxides into the molten glass before it is poured, rolled, and cooled, on the other hand, creates opalescent glass. An American glass type, opalescent glass is opaque with variegated colors in which light is held and refracted internally. Also referred to as "art glass" and "American glass," it is considered the antithesis of antique glass and was denounced by traditional religious window artists. The windows commissioned for the BERKELEY in 1898 used glass manufactured by the Kokomo Opalescent Glass Company and did not require any painting or staining.

27 The San Francisco based California Art Glass Bending and Cutting Works, established in 1879 and incorporated in 1893, was located at 103-105 Mission Street in 1898. During the next two decades the company relocated a number of times. The last city directory entry for the company under this name appeared in 1911. Between 1911 and 1916 California Art Glass Works appeared in the city directories, but the company did not have an entry after that year.

Kokomo Opalescent Glass Works, established in 1888 in Kokomo, Indiana, still manufactures glass in their original factory. Except for the mechanization of their rollers, they have not modernized the operation.

28 Marie Tatina, as quoted in Joe Porcelli,"The BERKELEY Ferry Restoration," *Glass . . . Craftsmen*, no. 142, June/July 1997, p. 18.

29 Cames are the strips of metal, in this case, lead, used to hold together the various pieces of stained glass. These strips have an appearance somewhat like an I-beam or a sideways "H" allowing the edge of the glass to fit into the came and under its protective edge. Cames come in a variety of shapes and sizes. The term is derived from the Greek word for reeds (*kalmus*), which in the Middle Ages were bound together and used as crude forms for casting lead.

30 Elsie Rail interview, August 6, 1998.

31 Marie deepened the rabbet in the frame to improve the way the windows fit.

32 Anderson oral history.

33 *Ibid.*

34 Thomas interview.

35 Anderson oral history. See also Thomas interview.

36 Anderson oral history. Engineers used the jacking gear to roll the engine over by hand in small degrees in order to get it off dead center or to get it into a specific position. It was not designed for prolonged repetitive usage.

37 The BERKELEY windows were originally installed in a manner that made it impossible to remove them without first removing all the millwork surrounding them. A slight modification allowed the staff to remove the windows from the interior. The sponsons were taken down to bare metal and then brought back up with three coats of paint. Following the 1987 storm damage to the BERKELEY's starboard side, extensive work on her sponsons took place in Campbell Shipyard.

38 Ken Franke, "Bilge Preservation in the BERKELEY," *Mains'l Haul*, vol. 27, no. 4 (Summer 1991), p. 19.

39 At the time, the installation of the urethane skin appeared to transform the damp bilge space into a comfortable and dry storage area. Instead, it transformed the area into a hot and humid space.

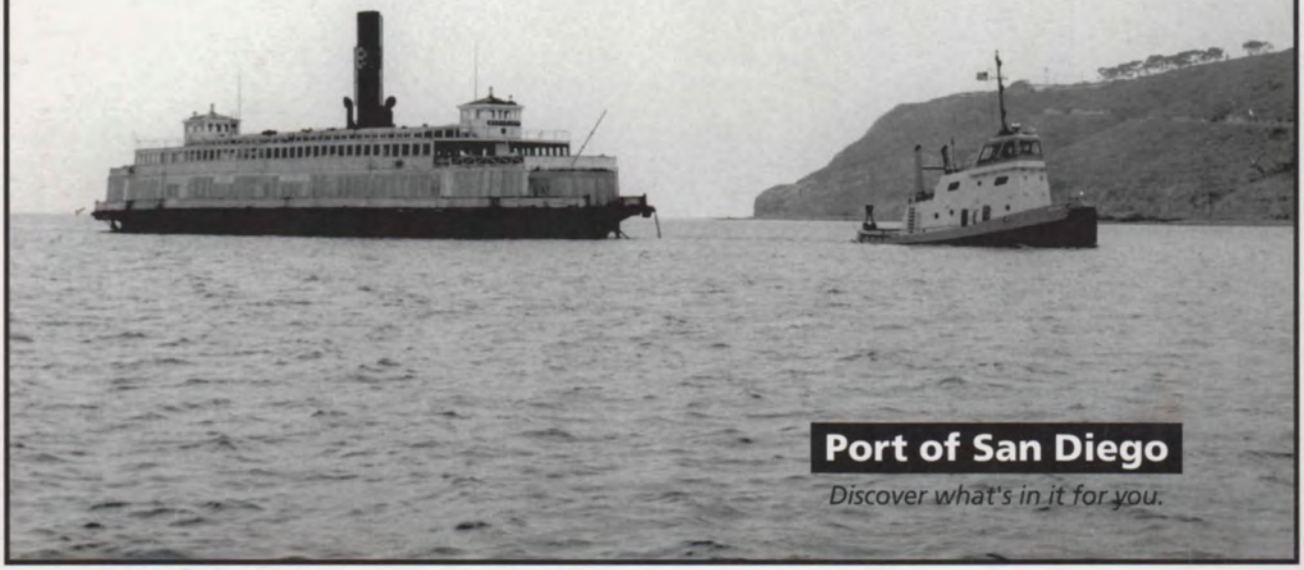
40 Thomas interview.

41 *Ibid.*

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