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A JOURNAL OF MARITIME HISTORY

*"I whose ambition
leads me not only
farther than any other
man has been before
me, but as far as I
think possible for
man to go..."*

*The Journals of Captain James
Cook, Volume II, 1774*



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ENDEAVOUR ON HER FIRST VOYAGE
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as one of the finest
replica's in exis-
tence, carries a
crew of 15 full-time
professional
sailors as well as
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crew needed to
sail her.

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And Her Times, **Antonia Macarthur**

On the cover ...

The HM Bark *Endeavour*, running before the wind, sets out on her world tour. Nearly six years a-building, she is the Australian-built replica of the vessel commanded in 1768-1771 by explorer and surveyor Captain James Cook. She'll be visiting San Diego February 6-21, then go in for a shipyard refit, and in April begin a tour of West Coast ports, terminating in Vancouver in October 1999.



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



In August of 1768, the *Endeavour Bark* of 366 tons (formerly the collier *Earl of Pembroke*) departed England for Madeira. For the 94 persons in her bluff, commodious hull, she would be the entirety of their world for months at a time. In addition to the normal shipboard specialties, her complement included an astronomer, naturalists, servants to the above, and artists plus all of their varied assortment of equipment and baggage. Loaded with provisions and livestock, including a goat that had already once circumnavigated the world (an irresistible fact to all her historians), she was expected to sustain herself independently for a voyage lasting more than two years. She raised Madeira on September 13, encountering her first fatality in the process of dropping anchor. After augmenting provisions, *Endeavour* made for Rio de Janeiro, where she received lukewarm hospitality from the Portuguese authorities, who were skeptical of an apparent British merchantman claiming to be a naval vessel on a scientific mission.

From Rio, *Endeavour* sailed for Cape Horn, her seamen celebrating a very traditional (which is to say very inebriated) Christmas en route, the first of three they would share. Standing south, *Endeavour* found anchorage in Tierra del Fuego so as to provide the naturalists a chance to "botanize" ashore (more accidental fatalities here) and then doubled Cape Horn (at one point under stuns'ls), passing into the Pacific on January 24, 1769. She made Tahiti on April 13, eight months out from England. (At that moment, far to the northeast, the Spanish ships *San Antonio* and *San Carlos* were in route from La Paz to found San Diego). After conducting assigned astronomical observations in Tahiti with disappointing results, *Endeavour* carried on to the west. She cast about, finding islands instead of the continent she was looking for, until she reached the east coast of New Zealand, discovered by Abel Tasman 126 years previously and until then, never revisited by Europeans.

Endeavour sailed the coastline of New Zealand for many weeks conducting thorough surveys, and then pressed on to the east coast of Australia for more of the same. In threading the treacherous waters of the Great Barrier Reef, *Endeavor* nearly came to disaster when she ran onto coral the evening of June 11, 1770. She got off with great effort and effected temporary repairs at the mouth of a nearby river. Her voyage then continued to the north, tortuously for a while, as she extricated herself from the Great Barrier Reef, and then west to Batavia for more complete repairs of the damage done to

her bottom in the grounding. Until then, *Endeavour's* crew had been remarkably healthy, but once diseases rampant in Batavia took hold among them, they began to suffer a fearsome mortality that extended across the Indian Ocean to Cape Town, and even into the South Atlantic.

During the passage home, her captain confided in his journal concerns that his voyage would not be remembered, or if so, remembered only for the sensation of near catastrophe or the grievous loss they sustained from the diseases of Batavia. *Endeavour* was home again in July of 1771, just one month shy of three years after her departure. The world, and especially the Pacific, has never

been the same since, and Captain James Cook has become the most respected seaman of all time.

February 1999 will mark a special moment in the history of another circumnavigation when the physical reincarnation of *Endeavor* lies moored next to another former British merchantman, also once a typical nondescript vessel of her age. During her life, *Star of India* sailed a rough approximation of *Endeavour's* voyage in reverse, not once but twenty-one times. She also carried floating communities around the world, raised landfalls in New Zealand and Australia, and had her own encounter with a South Pacific reef (she still carries the scars of that century-ago episode, evident in her recent drydocking). In 1923, at the end of her great voyages, it would have seemed very unlikely indeed that *Star of India* would be remembered.

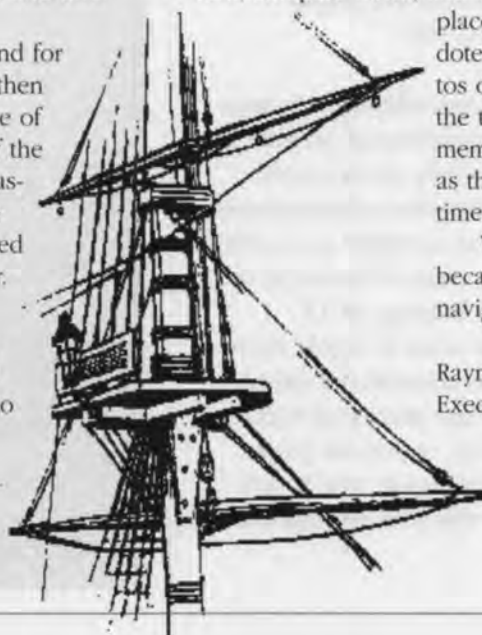
As the year begins, we celebrate the unique ability of ships to link peoples across time as well as across space. For a few weeks *Endeavor* will become a temporary exhibit at the Embarcadero, and San Diego Maritime Museum members will act as interpreters of her history, just as they do for *Star of India*. Our staff, crew, and volunteers will assist with her refit, compare notes, and swap sea stories. In years and places hence, small stories and anecdotes, perhaps recalled in fading photos of personal scrapbooks, will recall the time in San Diego when two very memorable sailing ships crossed tacks as they worked their way through time.

Which calls to mind: what ever became of *Endeavour's* circumnavigating goat?

Raymond Ashley
Executive Director

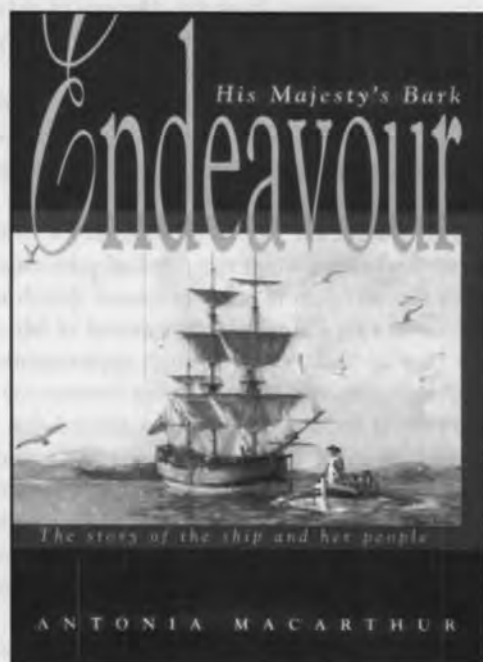
FROM THE HELM

A Worthy *Endeavour*



Left: HM Bark *Endeavour*
[Courtesy John Longley]

The CABIN BOOKSHELF



THE THREE-DIMENSIONAL ENDEAVOUR

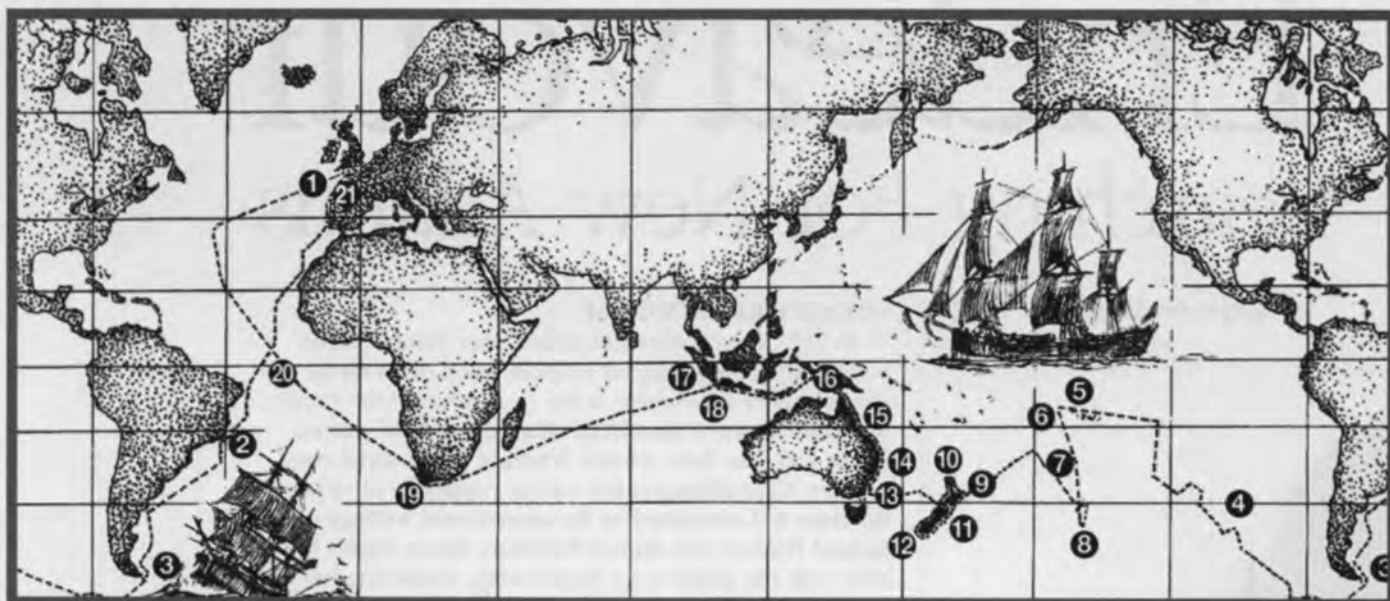
Antonia Macarthur, *His Majesty's Bark Endeavour: The story of the ship and her people*. Sydney: HarperCollinsPublishers, 1997.

Historians are perpetually faced with the inherent need to balance detail against significance in weaving their narratives, a problem especially pronounced when one is also dealing with the three-dimensional reconstruction of a past object as complex as a sailing ship. One need only peruse the mass of material on Cook's voyages available in the writings of J.C. Beaglehole alone to realize how easy it would be to lose one's narrative thread in an enormity of detail. Fortunately, Antonia Macarthur has managed such a balancing act in the space of only eighty-six pages, both to reconstruct *Endeavour* in words and to tell this important ship's story in a way that is fresh and engaging.

She does this by taking the reader on a tour of the physical ship, where we learn how, when, and where she was built, encounter the various objects and equipment in their natural setting as we roam her decks, and meet her people along the way. As we learn how they lived and what they experienced, their individual stories merge into hers and we are presented with *Endeavour* as her people knew her, a living being constituted of wood, fabric, metal, personality, and culture: "disciplined efficiency combined with large elements of the playground, the farmyard, and the travelling circus."

Macarthur asks the questions any visitor to *Endeavour* from our own time might ask: "What did they eat, how did they organize their work and leisure time, how much were they paid, and even, how did one attend to the calls of nature?" These questions, and dozens of others, are part of the reason why the *Endeavour* replica has been such a success at every port she has visited thus far on her world voyage. She is a perfect fragment of a world endlessly alien and endlessly fascinating, that changed our own in profound ways. Everyone who possibly can should visit the three-dimensional *Endeavour*, but for those who are unable (or those who wish figuratively to return), Antonia Macarthur's exquisite ship biography is the next best thing.





The voyage of HM Bark Endeavour

KEY	DATE	POSITION
	1768	
1	August	Sailed from Plymouth
2	December	Rio de Janeiro
	1769	
3	January	Cape Horn
4	March	South Pacific
5	April	Arrived Tahiti
6	June-July	Observed transit of Venus at Tahiti and explored Society Islands
7	August-October	Searched westwards for Great Southern Continent, results negative
8	September	Latitude 40 S
9	October	Arrived New Zealand, Young Nick's Head
10	October -December	Charting North Island, New Zealand
	1770	
11	January	Refit in Queen Charlotte Sound
12	February-April	Charting South island, New Zealand
13	April	Arrived east coast of Australia
14	May	Botany Bay
15	June	Endeavour repaired at Enclaveur Reef
16	September	New Guinea
17	October	Batavia
18	December	Sailed for England
	1771	
19	March	Cape Town
20	May	South Atlantic
21	July	Arrived the Downs



Endeavour

Searching For New Atlantis

By Raymond Ashley

VOYAGE FROM BENSELEM

In 1624, the courtier and philosopher Francis Bacon published *New Atlantis*, his utopian vision of an idyllic island located somewhere in the far reaches of the Pacific. *New Atlantis* was a post Elizabethan example of science fiction and, like most science fiction, it was a social commentary. Capitalizing on the current popularity of voyage literature and stimulated by the promotional writings of Richard Hakluyt and Samuel Purchase, Bacon begins his story with the plight of an English ship, wandering lost and suffering from the ravages of scurvy. At the edge of their endurance, the English mariners unexpectedly raise the uncharted island of Benselem, which is inhabited by an exotic, technologically advanced civilization. In Benselem, all human needs are accommodated by the relentless growth of scientific knowledge, as pursued through experimental research and exploration applied to technological advance and social engineering. Science, everywhere in



Voyage literature stimulated interest in distant lands and provided navigational information. Incidents in Shelvocke's account later inspired Coleridge to compose "The Rhyme of the Ancient Mariner."



evidence, is not merely supported by the state - science has *become* the state, and is magnified to the ultimate arbiter of all human activity and belief.

While the notion of science as a social force and contributor to progress in technology does not sound especially odd to our ears, in Bacon's day it was an outlandish concept, and with few exceptions, completely unsubstantiated by experience. Yet little more than two and a half centuries after Bacon's proposal, a small and unassuming English ship named *Endeavour* sailed to the South Pacific on a scientific research mission, under the combined auspices of the Royal Navy and the Royal Society (the latter institution partially inspired by Bacon's vision). On April 5, 1769, *Endeavour* dropped anchor at newly discovered King George's Island (Tahiti). *Endeavour* was the first ship in history given sailing orders that specified her distant objective in confident terms of longitude as well as latitude. When she arrived after a voyage of seven months, including a passage around Cape Horn, incredibly, she had lost no men to scurvy and none were incapacitated by it. Her mission was to conduct astronomical research, search for undiscovered continents, and test new methods in navigation and preventative medicine. *Endeavour's* mission also

included discovering, identifying, and collecting specimens of flora and fauna, and gathering ethnographic data. It is an ironic measure of how far things had come from *New Atlantis* that ever afterward it would be *Tabiti* and its people, a society utterly without the appearance of science or the technological products of it, that Europeans would think of when they imagined paradise. And it would be *Endeavour* we remember, above all the other ships that ever sailed, as the quintessential expression of the Enlightenment.

THE ENGLISH IN THE PACIFIC

Until the mid-eighteenth century, when English ships sailed to the Pacific it was usually with one object in mind - to raid Spanish shipping and possessions. This was certainly the case in the semi-officially sanctioned expeditions of Francis Drake (1577-1580), Thomas Cavendish (1586-1588), Richard Hawkins (1593 until his capture in 1594), the third voyage of William Dampier (1703-1706), Woods Rodgers (1708-1711), George Shelvocke and John Clipperton (1719-1722), and George Anson (1740-1744).¹ In addition to these formal visitors, the Spanish colonies also enjoyed the frequent attentions of outright pirates, who spilled into the Pacific as an exuberant English deluge between periods of declared war.

There were, however, notable exceptions to the English pattern of world-encompassing klepto-navigation. The voyage of Sir John Narborough to the coast of Chile (1669-1672) combined hydrographic survey with a peaceful effort to open up new trade connections in the Pacific. The second voyage of William Dampier (1699-1701), though unsuccessful, constituted a serious attempt to determine the extent of Australia and survey its coast. Likewise, the three voyages of astronomer Sir Edmond Halley in the *Paramore Pink* (1698-1701), combined the efforts of the Royal Society with the Royal Navy to conduct long range hydrographic surveys, specifically to map the earth's magnetic field as a means to determine longitude, and to search for the fabled undiscovered southern continent in the far South Atlantic. Halley's voyages were the first oceanographic expeditions in the modern sense, and they were the last to place a civilian scientist in command of a naval expedition.²

When the concluding terms of the Seven Years War (1756-1763) left England in possession of a vast overseas empire, a correspondingly enlarged world view stimulated both an interest in establishing a more permanent presence in the Pacific and support for systematic investigation of its geography. In addition, the spectacular intellectual achievements of Isaac Newton, Robert Boyle, Edmund Halley, Robert Hooke, and their colleagues in the Royal Society, had

laid the philosophical groundwork for the English Enlightenment, elevating natural philosophy to the stature of a national ethos. This ethos proposed that all observable phenomena might be reduced to a set of elegant equations and rational constructions.³ Long voyages and new discoveries provided the means to determine the shape of the world, uncover its governing natural laws, and take inventory of its mineral wealth, plants, animals, and peoples. Both as a pretext and a means, scientific voyages offered the opportunity to rationalize geographical space and intellectual space at one stroke, turning both of them into particularly English space.

Two voyages of exploration quickly ensued. In 1764 John Byron (future grandfather of the poet), having sailed in Anson's expedition twenty years before, assumed command of the 24-Gun frigate *Dolphin* supported by the 14-Gun *Tamar*, to embark on a voyage for objectives utterly unlike those of his earlier foray.⁴

Among Byron's instructions were ambitious directives to explore the South Atlantic, survey the Falkland Islands to assert the English claim for them made by John Davis in 1592 and Richard Hawkins two years later, and then find the rumored "Pepys Island," reputed to lie in the South Atlantic east of the Falklands (which turned out not to exist). After completing these tasks, Byron was to continue through the Straits of Magellan and stand north to survey New Albion so as to reestablish Drake's claim of this territory. He was then to locate the Pacific entrance to the Northwest Passage and proceed by that route home to England.⁵

Byron chose discretion in the interpretation of his orders, probably wisely. *Dolphin* and *Tamar* sailed for the South American coast, searching for Pepys Island along the way. Byron failed to find the Island but afterward he did curiously establish to his own satisfaction that Patagonia was indeed a land inhabited by giants as the old tales described. After a partial survey of the Falklands, the two ships made the transit of the Straits, but instead of sailing north, Byron continued right across the Pacific, hoping to find the mythical *Terra Australis Incognita* or, failing that, at least raising the island of New Guinea and determining its questionable position. Standing diagonally across the Pacific, he missed both the imaginary objective and the real one. By the time he raised Tinian (the nearest known landfall west of the Straits), his crew were suffering from scurvy and the provisions were almost exhausted. Once Byron's sick had recovered at Tinian, *Dolphin* hastened home in record time for a circumnavigation of twenty-two months. Other than his Patagonian giants, Byron had few discoveries to boast of, except for two Pacific atolls, which he named the

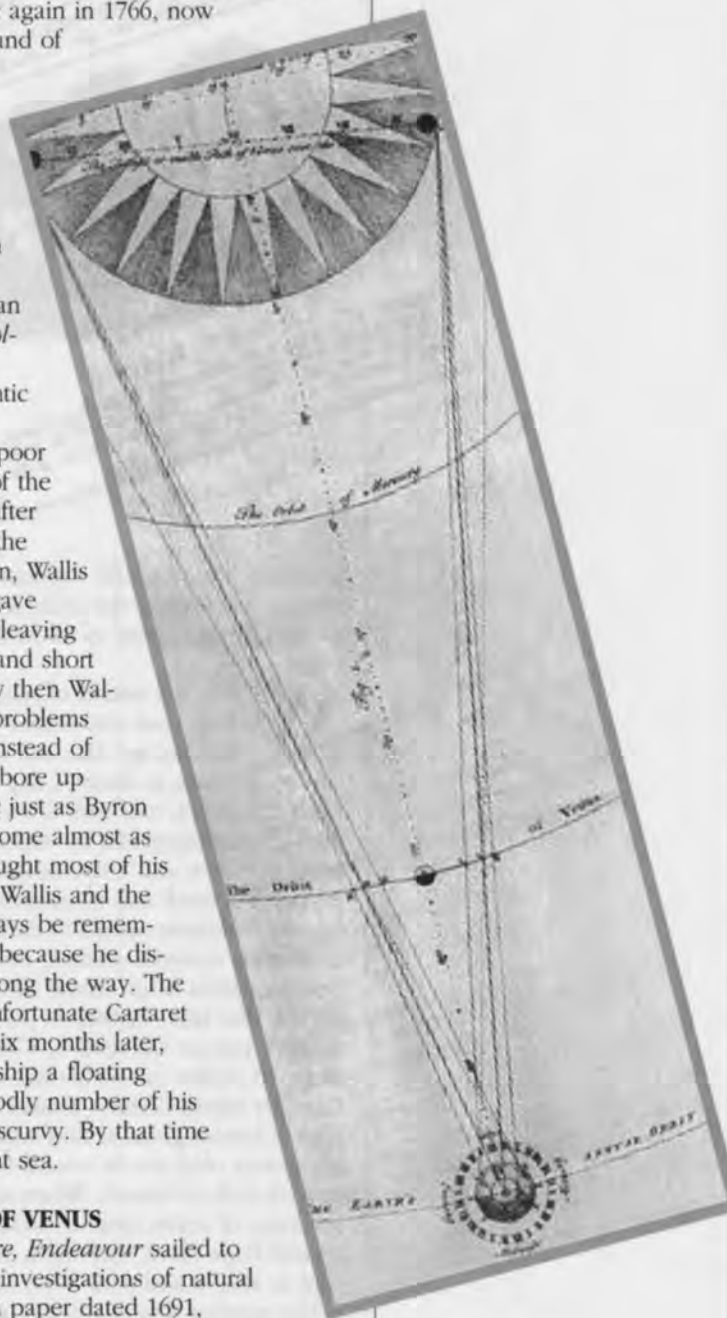
Islands of Disappointment. Byron's penchant for the direct route had caused him to be criticized by some historians as temperamentally unsuitable for exploration. Given his experience with scurvy as a young man during Anson's voyage, however, one may credit him with good reasons for a reluctance to tarry long at sea with a crew growing sicker by the day. Proud of his low mortality rate during the voyage, Byron himself boasted that more men would have died if they had remained in England.⁶

The Admiralty was not content with this performance. They sent *Dolphin* back to the Pacific again in 1766, now

under the command of Samuel Wallis, with the small and elderly sloop *Swallow* as a consort, commanded by Phillip Cartaret (a captain several years younger than his ship). The *Dolphin's* progress through the Atlantic was constantly hindered by the poor sailing qualities of the older vessel, so after beating through the Straits of Magellan, Wallis set full sail and gave Cartaret the slip, leaving *Swallow* behind and short on provisions. By then Wallis had his own problems with scurvy so, instead of sailing north, he bore up across the Pacific just as Byron had, and came home almost as fast. He also brought most of his crew back alive. Wallis and the *Dolphin* will always be remembered, however, because he discovered Tahiti along the way. The persistent and unfortunate Cartaret straggled home six months later, barely alive, his ship a floating wreck, and a goodly number of his crew dead from scurvy. By that time *Endeavour* was at sea.

THE TRANSIT OF VENUS

Like *Paramore*, *Endeavour* sailed to perform specific investigations of natural phenomena. In a paper dated 1691, Edmond Halley had proposed a means to establish the size of the universe, or at least the solar system, by observing and timing the transit



**Right: Replica of
Endeavour's portable
observatory.**

of Venus across the sun's face from two widely separated points on the earth's surface. Applying the known distance between observation points to the measured angles, parallax, and timing of conjunction would, in theory, produce values for the size of the sun, Venus, and the distances between those bodies and the earth. Halley predicted transits of Venus for the years 1761 and 1769. Knowing he would never live to see the phenomena, he urged that the scientific establishments of the European nations unite to further the project, calling it, "by far the noblest astronomy affords."⁷

The 1761 transit was observed by 120 astronomers in various places around the globe but with disappointing results.⁸ Subsequently, a sense of urgency attended the approach of the 1769 transit. This would be the last time for 104 years that the opportunity would arise again, and a suitable location in the South Pacific with clear skies was deemed an extremely important ingredient for the success of what would be an even larger international effort. When Captain Wallis returned in 1768, his reports of Tahiti seemed to describe just the place the astronomers were looking for. In consequence, *Endeavour* sailed with a portable observatory designed by John Smeeton, England's first civil engineer, to be erected at a suitable place ashore on the island. Once in place, the portable observatory would contain the finest examples available of the necessary instruments, including several fine telescopes, a regulator clock by John Shelton, and an astronomical quadrant by John Bird. Deploying this equipment would be astronomer John Green and assistant, appointed by the Royal Society. Backing them up would be *Endeavour's* captain, James Cook, as second astronomer. Cook's prior well established reputation as a surveyor and



astronomer well qualified him for the undertaking and had helped to win the opportunity to command the expedition. Unfortunately, as in the 1761 project, the impressive battery of equipment and expertise would not be enough. The observers found that the fuzzy halo or "penumbra" of the planet interfered with their ability to gauge the exact conjunction of its limb with that of the sun.⁹ However, *Endeavour* provided the most significant example to date of a ship sailing in support of astronomical research. It is no coincidence that in recent times, one of the space shuttles most often called upon in support of astronomical research is named *Endeavour*.

TERRA AUSTRALIS INCOGNITA

Since the time of the ancients, geographers such as Pomponius Mela and Claudius Ptolemy had reasoned that the southern hemisphere must contain sufficient land mass to balance that of the northern hemisphere in order to preserve a symmetry observable everywhere in nature, or even just to sustain the stability of the earth in space. Fifteenth century maps based on Ptolemy depicted this mass extending around the bottom of the earth, sometimes (prior to Vasco Da Gamma's voyage) closing off the Indian Ocean. The geographer Gerardus Mercator speculated that "under the Antarctic Pole is a continent so great that, with the southern parts of Asia, and the new India or America, it should have a weight equal to other lands."¹⁰ Mercator depicted it so on his famous "straight loxodrome" world projection of 1569, which became the basis of modern nautical chart projections and the projection we most commonly use today in representing a spherical earth on a flat sheet.¹¹

As the map of the known world gradually filled in through exploration and trade, there became less and less unknown area for a massive continent to hide. Still, by the mid-eighteenth century there remained one great area in the South Pacific, between the coastlines

**Byron's
Patagonian giants.
(From Byron's
*Journal of His
Circumnavigation,
1764-1766*)**





of New Zealand and South America that could shelter a *Terra Australis*. If the missing continent were not here, then it would lie so far south as to be useless to anyone. In 1767, a prominent Scottish geographer employed by the East India Company named Alexander Dalrymple declared *Terra Australis* "was wanting on the south of the Equator to counterpoise the land to the North, and to maintain the equilibrium necessary for the Earth's motion."¹² Dalrymple, aggressively promoted himself as an ideal candidate to command the expedition to observe the transit of Venus, emphasizing his unique ability also to produce the undiscovered continent as an embellishment to the new British Empire. With his lobbying, Dalrymple achieved the endorsement of the Royal Society for command of the expedition, but the Royal Society itself had no money to contribute to the project and therefore little say over who would be in charge. The cost for the expedition would be largely underwritten by the Navy. The First Lord of the Admiralty, Sir Edward Hawke, advised "that he would suffer his right hand to be cut off rather than sign such a commission as had gone to Halley in the *Paramore*," given the embarrassing personnel problems Halley ran into decades earlier.¹³

The command of the expedition was offered to Captain John Campbell, regarded as the most

experienced and capable scientific naval officer available. Campbell was a prominent astronomer, inventor of the sextant, member of the Royal Society, a veteran of numerous sea battles including Quiberon, a survivor of Anson's expedition and a protégé of both Anson and Hawke.¹⁴ Campbell chose not to go, but recommended in his stead a naval master apparently possessed of many of Campbell's same qualities, James Cook. As a bonus, Cook was intimately familiar with Whitby colliers like the *Endeavour* (formerly *Earl of Pembroke*), having learned his profession in them in the North Sea coal trade. Heretofore a warrant officer, Cook was now commissioned as a lieutenant in order to provide him a social standing sufficient to conduct negotiations and claim undiscovered continents for his king.

The part of Cook's instructions pertaining to *Terra Australis Incognita* were delivered in a sealed packet, to be opened at sea. These asserted:

Whereas there is reason to imagine that a Continent or Land of great extent, may be found to the Southward of the Tract lately made by Captn Wallis in His Majesty's Ship the *Dolphin* (of which you herewith receive a copy) or of the Tract of any for-

Above: World map, Abraham Ortelius of Antwerp, 1586. Note the extent of *Terra Australis Incognita*.

Opposite Right: Edmund Halley, isogonic magnetic chart of the Atlantic, 1702

mer Navigators in Pursuits of like kind ... [on leaving Tahiti] You are to proceed to the southward in order to make discovery of the Continent abovementioned until you arrive in the Latitude of 40° , unless you sooner fall in with it. But not having discover'd it or any evident signs of it in that Run, you are to proceed in search of it to the Westward between the Latitude before mentioned and the Latitude of 35° until you discover it, or fall in with the Eastern side of the Land discover'd by Tasman and now called New Zealand.¹⁵

There is, of course, a great southern continent: Antarctica. On his second voyage, Cook almost found it, penetrating further south into the ice than anyone had thus far gone. However, the rich and fertile land Marco Polo referred to as Locac, and which Europeans fantasized into the empty places of their maps, turned out to be geographical wishful thinking.¹⁶ If it had existed, however, the English certainly may have wanted to claim it as their own, and for that they would have had to define exactly where it was. The search for *Terra Australis*, and the deployment of surveying technique to chart every island, coastline, and reef she would find along the way rendered *Endeavour* into the world's most effective producer of geographical information.

LONGITUDE

While it is possible to determine one's latitude from the measured altitude of a celestial body at its highest point in the sky (for the sun, this is local apparent noon), determination of longitude by celestial navigation requires an accurate assessment of time at the instant of an observation. From almost the earliest days of the age of exploration, longitude was a defining problem in more ways than one. Claims for ownership of newly discovered territory rested on the claimant's ability to define it in space objectively and accurately. Inability to determine longitude not only made it difficult for European powers to substantiate their claims of ownership, it also seemed to interfere with their ability to exploit new territories through maritime enterprise. The location of ports, headlands, islands, straits, reefs, shoals, and various dangers could not be established precisely, a problem made worse for navigation by perpetual uncertainty about the position of the ship itself. With so fundamen-

tal of an impediment to the aspirations of so prominent a set of potential patrons, longitude also soon became a prestigious field of inquiry. The discovery of a solution would constitute a defining achievement.

Suggestions for discovery of longitude were not long in coming, and for two and a half centuries they flowed in a steady stream. Some techniques, in fact, predated the Colombian voyages. Hipparchus and Ptolemy had each proposed the use of lunar eclipses to mark precise moments in time from which to derive longitudes of places.¹⁷ In his Atlantic voyages of 1494 and 1504, Columbus tried to use eclipses to determine longitude, relying on ephemerides¹⁸ compiled by the astronomer Regiomontanus (Johan Mueller) in 1474 for the period 1474 to 1506. The 1494 eclipse provided the first occasion for an attempt to firmly establish the position of a location in the New World through astronomy.¹⁹ In a similar vein, Amerigo Vespucci claimed to have determined longitude through conjunction of the moon with Mars during an ocean passage in 1499.²⁰ In 1514, Johann Werner, a priest and mathematician who lived most of his life at Nuremberg, proposed in a collection of works on mathematical geography to use the movement of the moon across the field of background stars as a celestial time keeper, a ready method of observation more practicable than the infrequent eclipses. In 1530, Ranier Gemma-Frisius (John Dee's mentor) suggested the use of a good mechanical clock at sea to determine longitude in *De Principiis Astromoniae et Cosmographiae*.²¹ Finally, by the late sixteenth century when the accumulated experience of voyaging indicated that the earth's magnetic field varied considerably over its surface, natural philosophers began to propose dispensing with time altogether in favor of magnetism as a means

of determining location.²²

In succeeding years, all viable proposals for discovering the longitude would take one of the above three forms: the celestial clock, a mechanical replica of it, or geomagnetism. Other than the observatory regulator clock, which was set and rated by observation of the moons of Jupiter and could only be used ashore, *Endeavour* carried no mechanical means at all to determine longitude.²³ Such means might have been made available to her, but at the time *Endeavour* sailed, three of the four chronometers in existence were imprisoned in storage at the Greenwich observatory, more or less as hostages of the public squabble between John Harrison and the Astronomer Royal, Nevile Maskelyne. The fourth, John Harrison's masterpiece machine H4, was in pieces at the shop of horol-



APRIL 1767.				
Distances of the Sun's Center from ☉, and from Stars west of her				
Stars Names.	12 Hours.	15 Hours.	18 Hours.	21 Hours.
1 The Sun.	40. 59. 11 53. 32. 7 65. 39. 18 77. 22. 36 88. 45. 20 99. 52. 6 110. 47. 42	42. 34. 44 55. 4. 24 67. 8. 27 78. 48. 58 90. 9. 27 101. 14. 34 112. 9. 6	44. 9. 51 56. 36. 16 68. 37. 14 80. 15. 1 91. 33. 21 102. 36. 52 113. 30. 25	45. 44. 35 58. 7. 45 70. 5. 39 81. 40. 46 92. 57. 0 103. 52. 1 114. 51. 40
2 Aldebaran.	50. 36. 10 62. 17. 43	52. 4. 5 63. 45. 10	53. 31. 57 65. 12. 34	54. 59. 44 66. 39. 57
3 Pollux.	31. 25. 48 43. 7. 5	32. 53. 11 44. 35. 4	34. 20. 40 46. 3. 8	35. 48. 12 47. 31. 15
4 Regulus.	27. 51. 57 29. 45. 36 41. 48. 49 54. 2. 11 66. 26. 28	19. 20. 36 31. 15. 26 43. 19. 55 55. 34. 36 68. 0. 18	20. 49. 26 32. 45. 26 44. 54. 10 57. 7. 12 69. 34. 20	22. 18. 27 34. 15. 35 46. 22. 36 58. 39. 59 71. 8. 33
5 Spica ♀	25. 4. 34 37. 49. 37 50. 48. 40 64. 1. 2	26. 39. 23 39. 26. 14 52. 26. 59 65. 41. 3	28. 14. 26 41. 3. 5 54. 5. 31 67. 21. 18	29. 49. 44 42. 40. 8 55. 44. 15 69. 1. 48
6 Antares.	31. 37. 14 45. 18. 29 59. 14. 6 73. 23. 37	33. 19. 7 47. 2. 10 60. 59. 31 75. 10. 43	35. 1. 13 48. 46. 5 62. 45. 11 76. 58. 2	36. 43. 32 50. 30. 12 64. 31. 2 78. 45. 31
7 Capri- corni.	33. 17. 26 47. 41. 9	35. 4. 38 49. 29. 53	36. 52. 4 51. 18. 44	38. 39. 45 53. 7. 40
8 Aquila.	65. 57. 35 78. 24. 51	67. 29. 54 79. 59. 9	69. 2. 36 81. 33. 29	70. 35. 39 83. 7. 45

Left: sample page from the Lunar Distance tables of the 1767 Nautical Almanac.

ever, Halley's lines of constant variation in the earth's magnetic field do not remain stable over time, they are not at all symmetrical (indeed at some places they run east-west), there are many local anomalies, and they are generic over areas too large to be useful for longitude. All of these problems are even more pronounced for magnetic dip. Such difficulties were known long before *Endeavour* sailed but the geomagnetic solution seemed so promising that it continued to assert itself, always turning out to be useless in practice. *Endeavour's* voyage produced no exception to the contrary.

However, thanks to enormous collective effort on the part of the international scientific establishment spanning generations, *Endeavour* was able to deploy the celestial clock, and this provided her with unprecedented capabilities. The method used was the vaunted "lunar distance" mea-

surement between the moon

and background stars (or the moon and the sun) for universal time, combined with a measurement of the moon's altitude for local time. Use of the celestial clock requires several ingredients. The periodic conjunction of celestial bodies or the distances between them must be predicted accurately and in absolute terms of time and position, requiring a comprehensive system of celestial location compatible with the system used to define geographic location. The events must be observable and recurrent with convenient frequency. The events must be measurable by instruments of sufficient power, resolution, and accuracy, sometimes from the pitching deck of a ship in a heavy sea. Finally, the observer must be able to reduce the data from the measurements to a geographic position through a manageable mathematical process, factoring in corrections for such things as height

ogist Larcum Kendall while he labored in the midst of his two-and-a-half year effort to reproduce it. The result of Kendall's work would be K1, the "faithful guide through all vicissitudes of climates" that accompanied Cook later on his second and third voyages in *Resolution*.²¹

Endeavour did carry compasses, azimuth rings, and "dipping needles" for experimental efforts to determine position through cross-referenced values of magnetic variation and magnetic "dip."²² This method had been Halley's choice of longitude project as a young man and the purpose for his voyages in *Paramore*. How-

**Wedgewood cameo
of Captain James
Cook, The British
Museum**

of eye above the horizon, semi-diameter of the body, parallax, and refraction of the body's image as it enters the earth's atmosphere. The body of prime choice, naturally, was the moon.

But the motion of the moon is complicated by the conflicting influences of the earth's gravity and that of the sun, so that predicting its position to the accuracy necessary required elaborate refinement and application of Newton's principles, confirmed by thousands of painstaking astronomical observations. This process had been the purpose for the founding of Greenwich observatory in March, 1675, as history's first example of "big science." The observatory's in-residence Astronomer Royal, John Flamsteed, became the first full-time professional research scientist, enjoined:

Forthwith to apply himself with the utmost care and diligence to the rectifying the tables of the Motions of the Heavens and the places of the fixed stars so as to find out the so-much-desired Longitude of Places for the perfecting the Art of Navigation.²⁶

Flamsteed's assignment took much longer than anyone thought it would, but by the time Wallis sailed in the *Dolphin*, instruments had become accurate enough to make the necessary observations, and the mathematical tables and technique were sufficiently worked out to try the method in a voyage around the world. The problem was that the mathematical manipulations were so complex only astronomers knew how to do them. Fixing the position of the newly discovered Tahiti, Wallis described "taking the Distance of the Sun from the Moon and Working it according to Dr. Masculines Method which we did not understand."²⁷ Even so, Wallis' results for Tahiti's position were deemed good enough to find their way into Cook's orders. With a far greater depth of astronomical experience, *Endeavour* was expected to find her way about much more readily. As a test bed for the technique, *Endeavour* sailed with the Maskelyne's Nautical Almanac, in print since 1766, and upon his return Cook reported:

It is only by such means that this method of finding Longitude at sea can be put into universal practice - a



method that we have generally found may be depended upon to within half a degree; which is a degree of accuracy more than Sufficient for all Nautical purposes. Would Sea officers once apply themselves to the making and calculating these observations they would not find them so very difficult as they at first imagine.²⁸

However, *Endeavour* carried the issues for the years 1768 and 1769 only, since that was as far as the printing went. After that, *Endeavour* sailed out of her data, an experience which led Cook to observe with some irritation, "... but unless the Ephemeris is published for some time to come more than either one or two Years it can never be of general use in Long voyages and in short Voyages it is not so much wanting."²⁹ Indeed, once Cook no longer had the Almanac, he simply ran down his latitude, just as mariners had learned to do for more than two centuries, and as almost all of them would do well into the nineteenth century, long after the lunar distance method had been made simpler to use and chronometers were widely available.³⁰ Until that point however, *Endeavour* performed as a laboratory for the testing of new techniques in navigation that might find every-day application.

SCURVY AND PSYCHOLOGY

The Elizabethan sea rover, Richard Hawkins, called scurvy "the plague of the sea, and the spoil of mariners," holding it responsible for tens of thousands of deaths by his own time.³¹ It imperiled ships by eating away at the strength of their crews, sometimes to the point of no return.³² The danger they all faced was perhaps exemplified in the case of the hapless Manila Galleon *San Jose*, found drifting off Acapulco in 1657, months after her departure, manned by a crew of dead men; all victims of scurvy.

Today we think of scurvy as a dietary deficiency of vitamin C (ascorbic acid), but in Cook's day and before it also consisted of other deficiencies, such as thiamin, niacin, and riboflavin, a mixture produced by the conditions of seafaring that confounded efforts to isolate cause. Furthermore, a great many foods contain some vitamin C, and even in those that contain a lot of it, the stability of ascorbic acid is volatile and it will begin to ebb away with time, heat, sunlight, and contact with copper, as found in the cooking pots of all Royal

Navy vessels. This made it difficult to determine the specific factor of deficiency. From the fifteenth century, it was commonly known that fruits and vegetables or their juices could reverse the disease, but these foods do not keep well at sea and do not always work even when fairly fresh (given that scurvy was at that time a disease of multiple cause). With the diet of seamen in the eighteenth century, symptoms could begin to appear after as little as six weeks at sea. As early as 1497, Vasco Da Gamma reported on his voyage to India that his men:

... suffered from their gums, which grew over their teeth so that they could not eat. Their legs also swelled, and other parts of the body, and these swellings spread until the suffered died, without exhibiting symptoms of any other disease.³³

Two and a half centuries later Pascoe Thomas, a schoolmaster in *Centurion's* crew during Anson's circumnavigation, found himself suffering first the tempestuous weather off Cape Horn and then what seemed to be a bout of desperate and aimless wandering as they tried to find the island of Juan Fernandes. To his horror he discovered that:

... several hard nodes now began to rise in my legs, thighs, and arms, and not only many more black spots appeared in the skin, but those spread till almost my legs and thighs were as black as a Negro; and this accompanied with such excessive pains in the joints of the knees, ankles, and toes, as I thought, before I experienced them, than human nature could never have supported. It next advanced to the mouth; all my teeth were presently loose, and my gums, overcharged with extravagated blood, fell down almost quite over my teeth ... I believe, one week more at sea would have ended me; and less than a month all the rest.³⁴

At the same time *Centurion's* chaplain Richard Walter reported what seemed an even more incredible symptom:

... a remarkable instance in one of the invalids on board the *Centurion*, who had been wounded above fifty years before at the Battle of the Boyne, for though he was cured soon after, and had continued well for a great number of years past, yet on his being attacked by the scurvy, his wounds, in the progress of the disease, broke out afresh and appeared as if they had never been healed: nay, what is still more astonishing, the callus of a broken bone which had been completely formed for a long time, was found to be hereby dissolved, and the fracture seemed as if it had never been consolidated.³⁵

Human metabolism requires vitamin C to produce collagen, a protein that helps bind cells together, particularly scar tissue. When the body's store of vitamin C is depleted, it begins to come apart on the cellular level, first through recent wounds that never heal and then through all the injuries ever sustained coming back with a vengeance. Understandable then, is the associated psychological symptoms reported in virtually every account of scurvy: depression and creeping

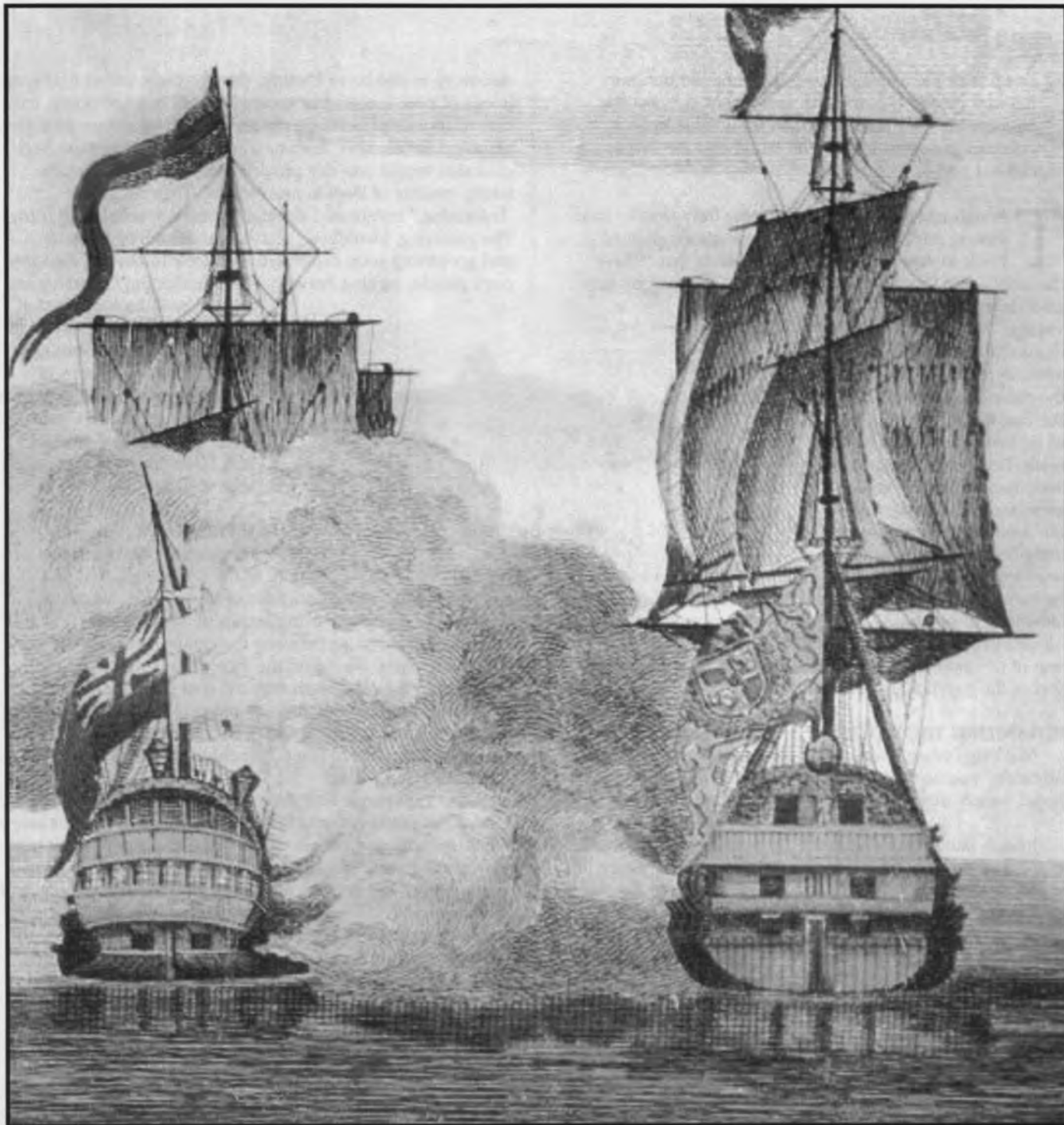
horror. The effect is mirrored in the definition of scurvy found in Samuel Johnson's Dictionary of 1756: "covered with scabs, vile; bad; sorry; worthless; contemptible; offensive." So common were the psychological symptoms, that some (including Richard Hawkins) believed them to be a contributing cause to the disease, and that seamen who kept their minds constantly occupied by work were less susceptible.

Anson sailed with 1939 men in his squadron to raid the Spanish Pacific; 1057 of them never made it home to England. Except for the four who died in action with the Acapulco Galleon *Nuestra Senora de Cobandonga*, an event that made all the survivors rich for life, almost all of the remainder were victims of scurvy.

Faced with such horrific personal experience, a big crew, and short provisions, Byron was loath to wander about in the *Dolphin* looking for a Northwest Passage and made his voyage as short as possible. Wallis sailed with specific preventatives believed to contain the vital element that would prevent scurvy, among them portable soup (a type of bouillon), a boiled down concentrate of lemons called the "rob," a material called "saloop" (a powder made from orchid roots), dried malt (from which to make sweet wort), and pickled cabbage (sauerkraut).³⁶ As it turns out, among these preventatives, pickled cabbage was one of the few preserved foods that not only possessed ascorbic acid in useful amounts, but retained it well. In fact, it had long been used among the Dutch. Unfortunately for Cartaret, *Dolphin* took the *Swallow's* supply of pickled cabbage with her when she left the slower ship behind. Even so, Wallis had cases of scurvy on his list when he raised Tahiti, and again upon his arrival in the East Indies, where he took on 500 limes per man.³⁷

Endeavour took with her the same array of preventatives that Wallis had in the *Dolphin*. Unlike Wallis, however, Cook intended to spend indeterminate periods at sea in search of new territories, an enterprise that would put the dietary supplements to the test. It would not be the first systematic test for scurvy, however. In 1747, James Lind, surgeon in H.M.S. *Salisbury*, ran an experiment on twelve patients affected with the disease during a cruise in the English Channel. Each was treated with a different variant of contemporary cures thought at the time to be effective, including the ingestion of salt water and of sulfuric acid. Lind had a few oranges available and these were administered to a control group. Consequently, Lind did not prove that fruits can cure some cases of scurvy, which everyone already knew, but that sulfuric acid, salt water, vinegar, hard cider and herbal paste could not.³⁸ Lind's experience is often cited as the first clinical medical experiment in history.³⁹

Cook was unfamiliar with Lind and his experiment, but faced with the grim experience of his predecessors, he declined to take chances with his crew in clinical trials and decided to use every remedy at his disposal. In consequence, he could never be certain of what factor to attribute his success. Later, after his second voyage when he presented his methods in a paper to the Royal Society, Cook described a systematic application he called "certain rules of living." Among his rules were morale building activity, ventilation, cleanliness of ship and crew, keeping his people warm and dry, a three watch system that allowed sufficient rest, frequent replenishment of water, and ceaseless foraging for greens of any and every description for the table, everywhere the ship called.⁴⁰ Cook's voyages became, in fact, vast foraging expeditions.



HMS Centurion in action with the Acapulco Galleon.

The new preventatives, added to the constant array of strange plants, fruits and vegetables that Cook wanted his men to eat did not always sit well with a class of people who took comfort from established routines and habits. Cook's solution for this proved to be an apt experiment in psychology.

The Sour Krout the Men at first would not eat until I put in practice a Method I never once knew to fail with seamen, and this was to have some of it dress'd every

Day for the Cabbin Table, and permitted all the Officers without exception to make use of it and left it to the option of the Men either to take as much as they pleased or none atall; but this practice was not continued above a week before I found it necessary to put every one on board to an Allowance, for such are the Tempers and dispoissions of Seamen in general that whatever you give them out of the Common way, altho it be ever so much for their good yet it will not go

down with them and you will hear nothing but murmurings gainst the man that first invented it; but the Moment they see their Superiors set a Value upon it, it becomes the finest stuff in the World and the inventor a damn'd honest fellow."

Though traces of scurvy did appear from time to time among *Endeavour's* people, his methods allowed Cook to report upon reaching Batavia that "I have the satisfaction to say that I have not lost one man by sickness during the whole voyage."¹² Alas, with fifty thousand deaths recorded annually, Batavia was possibly the most dangerous place on the face of the earth for him to be making such a statement. Fevers and dysentery soon took hold among the crew and by the time *Endeavour* made it home to England, thirty-four of the ninety-four who had sailed from England had succumbed. *Endeavour's* mortality was a tremendous blow to Cook.¹³ However, in his lamenting of her losses during the return voyage, he allowed himself to forget that she had functioned as the laboratory for one of the most successful medical experiments of history, and of the psychology of command.

BOTANIZING THE WORLD

Not long before *Endeavour's* departure from England, The Admiralty was unexpectedly solicited by a request from the Royal Society that:

Joseph Banks Esqr Fellow of this Society, a Gentleman of large fortune, who is well versed in natural history, being Desirous of undertaking the same voyage the Council very earnestly request their Lordships, than in regard to Mr Banks's great personal merit, and for the Advancement of useful knowledge, He also, together with his Suite, being seven persons more, that is, eight persons in all, together with their baggage, be received on board of the Ship, under the command of captain Cook.¹⁴

History does not record what Captain Cook thought of this new development. The *Endeavour* was already quite full and Cook would have to share his quarters with a wealthy young socialite and his retinue. Whatever Cook's opinion, the crucial issue for the Admiralty in this potential enhancement of *Endeavour's* mission, was that Banks agreed to pay for the additional expense out of his personal fortune. In the end, the society of *Endeavour* profited enormously by the additions, and when we now think of *Endeavour* it is Banks, "the young scientific gentleman" who embodies our perception of her philosophical soul. Banks and his naturalist assistant, Dr. Daniel Solander, were devotees of the great contemporary botanist Linnaeus and his classification systems for describing the hierarchical organization that links all forms of life. While *Endeavour* sought new continents, the naturalists method of

discovery would be to identify, classify, draw and collect specimens of new species that would help fill this taxonomy, indicate relationships between classes of life, and define their geographical distribution. It was a kind of "taking inventory" science that would one day provide the basis for the breathtaking insights of Darwin and Mendel. Their mania for "botanizing," constituted a search for new species in all forms. The gathering, identifying, classifying, describing, drawing, and preserving soon captivated and drew in most of *Endeavour's* people, turning her into a giant collecting apparatus and

repository of biological information. When she returned to England, *Endeavour* brought home 30,000 specimens of plants (more than 3,600 known species and 1,400 new ones), 1,000 specimens of animals, and 1,240 drawings and paintings of living things.¹⁵



Sydney Parkinson

ETHNOLOGY

Endeavour was a product of the early industrial revolution, of the textile mills and factories, rapidly growing cities, enclosure of the agrarian landscape, depletion of forests, growing armies of wage earners and artisans, sharper divisions between the circumstances of the very rich and the very poor, and the incessant demands for coal. Even before the eighteenth century, coal filled the English skies with clouds of pollution.¹⁶ Coal determined the scope of *Endeavour's* life as the *Earl of Pembroke*, a life she and her people had seemed to leave far behind when she dropped anchor in Matavai Bay.

When *Endeavour* returned to Europe, she carried Sydney Parkinson's paintings, which illustrated a plethora of fantastic plants, animals and people. There were also stories from her crew about Pacific islanders, an attractive people that seemed to live simply and without effort in a land of blue lagoons and rivers, without extremes of poverty and wealth, the horrors of organized warfare, or the constraints of sexual repression. In the contemporary social commentary of Rousseau, Tahitians seemed to validate his assertions about the goodness of man in a natural state, as noble savages. If the human condition could appear to change so fundamentally from a natural state in Europe, then perhaps the cultures of other peoples were not simply a collection of curiosities, but a database of information about social adaptation to different environments. Cultural information could be collected, as could plants and animals.

Pacific islanders were ever a source of fascination to *Endeavour's* people. They found friends and lovers among the Tahitians, gave them nicknames out of Greek mythology, drew upon them as a source of technical and geographical information, and sought to learn and record their language. When *Endeavour* sailed from Tahiti, she carried on board two Tahitians: Tupaia, navigator/priest from the island of Raitea, and his servant Tarheto. Until his death in Batavia, Tupaia sailed with them as a guide and interpreter, while *Endeavour* wandered through Polynesia. At first the English found it surprising to learn how far the same cultural stock of people had spread themselves over the vast ocean,

Joseph Banks as President of the Royal Society, with trophies from his voyage, painted by Benjamin West.

and then, when they began to realize the full magnitude of the distribution, it was a never ending source of awe. In the journal of *Endeavour's* voyage Cook wrote:

... these people sail in those seas from Island to Island for several hundred Leagues, the Sun serving them for a compass by day and the Moon and Stars by night. When this comes to be prov'd, (which I have now not the least doubt of), we shall no longer be at a loss to know how the Islands lying in those seas came to be people'd.⁴⁷

Not all relations with Pacific peoples went smoothly. Even in Tahiti, *Endeavour* experienced serious problems with theft, in New Zealand the Maoris often proved too fierce and aggressive to be won over, and Australian Aborigines were often fearful of approach. Often when relations turned sour, Cook found himself conducting a kind of precursor to "gunboat diplomacy," combining demonstrations of superior weaponry with its occasional use, flattery mixed with coercion, and offers of gifts tempered with taking of hostages. Ultimately, (on his third voyage) it was a combination he misapplied once too often and it got him killed.

Whenever possible, *Endeavour's* people avoided recourse to violence, something heretofore rare in the conduct of European relations with native peoples.⁴⁸ When violence did break out, and it often did, *Endeavour's* people took it to heart as personal failure. When *Endeavour* was coasting New Zealand, the English were provoked to a violent response in an altercation with confrontational Maoris, and this resulted in the deaths of two or three of them. "I can by no means justify my conduct" Cook wrote, "in attacking and killing the

Below: "Tahiti Revisited" by William Hodges.



people in this boat who had given me no just provocation..." Banks wore his heart more easily on his sleeve than the Captain when he described the incident as "the most disagreeable day My life has yet seen, black be the mark for it and heaven send that such may never return to embitter future reflection."¹ These sentiments sound very sensitive and modern to our own ears, but we should not be overly quick to confuse such feelings with late twentieth century sensibility. When Banks first requested of Cook that Tahitians be taken aboard, Cook was against it, since he could not personally guarantee their eventual return to their homes. Banks complained petulantly: "I do not know why I may not keep him as a curiosity, as well as some of my neighbors do lions and tygers at a larger expense than he will probably ever put me to. The amusement I shall have in his future conversation and the benefit he will be of to this ship ... will I think fully repay me."² In the end Cook found Tupaia's knowledge of the local waters too compelling to refuse. Thus, in addition to her role as a platform for collecting ethnographic information, *Endeavour* became, for a while, a multicultural society.

All ships are inevitably a reproduction in microcosm, if skewed, of the societies that produce them. Other ships of her time, especially the one used by Cook in his subsequent voyages, were able to match *Endeavour's* mix of personality and expertise, class structure and experience, size and performance. But *Endeavour* was unique. She sailed to a point in the development of our own culture that no other ship has ever been able to return to. Upon her departure, the world was a highly subjective place, the geography of the oceans a mix of conjecture and terror, every seaman's body a biological clock ticking down the fatal minutes to a possible encounter with scurvy. As *Endeavour* circled the earth, she spread across it a net of rationality, linking the heavens to the earth, and the peoples on it to one another in ways they had never been linked before. *Endeavour* set a pattern for exploration and intellectual inquiry that would produce astonishing change, and though not all of it was for the good, the world has long come to accept *Endeavour's* guiding premise, expressed by Captain James Cook. "Such risks as these are the unavoidable Companions of the Man who goes on Discoveries."³

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NOTES

1 Anson's is perhaps the strangest of voyages for its merging of spectacular success in capturing the Acapulco galleon with horrendous catastrophe in the form of scurvy.

2 Halley's chart of magnetic variation appears to have been the first instance in cartography where measurements were expressed as lines of constant value (isogones), a method widely used today to designate contours of altitude or depth (as well as magnetic variation) in charts and topographic maps. The voyage also produced a court martial. Halley's officers resented his appointment as a post captain without prior naval experience, and on the first voyage he was forced to return early in order to dispose of an uncooperative first lieutenant. See Norman J.W. Thrower, ed. *The Three Voyages of Edmond Halley in the Paramore 1698-1701*. (London: The Hakluyt Society, 1981).

3 This argument is persuasively developed in Margaret C. Jacob, *The Cultur-*

al Meaning of the Scientific Revolution (New York: Alfred A. Knopf, 1988).

4 The *Dolphin* was a thirteen-year-old ship of 511 tons, served by 150 men. She was supported by the *Tamar*, a 311 ton sloop of 16 guns and 100 men. J. Colledge, *Ships of the Royal Navy* (Annapolis, Md: Naval Institute Press, 1897) and L. Withey, *Voyages of Discovery: Captain Cook and the Exploration of the Pacific* (New York: William Morrow and Company, 1987), 46.

5 The voyage's mission was secret and Byron's orders sealed. Foreign governments were told that its intention was a trip to the West Indies to test the value of copper sheathing in tropical waters. (The first naval vessel to be copper sheathed was the frigate *Alarm* in 1761, but there were problems with the concept and more testing was certainly in order. *Dolphin* was the first copper sheathed ship to engage in a long voyage.) There was good reason for the secrecy. The Falkland Islands were regarded as a potentially valuable base, described by the Earl of Edgemont (then First Lord of the Admiralty) as "the key to the whole Pacific Ocean," including perhaps the yet to be discovered *Terra Australis Incognita*. In fact, the French were already there; a small party of colonists was left by Bougainville in 1763. Spain claimed them as well, and in 1770 very nearly went to war with England after an attack on the small English colony established in the Falklands in 1766. Withey, *Voyages of Discovery*, 51-53. England had competition in Nova Albion as well. Juan Rodriguez Cabrillo had claimed it for Spain in 1542 (well before Drake) and this claim was reinforced by Viscaïno's expedition of 1602. By 1769 a combined land and sea expedition brought the disputed territory firmly within Spanish control, founding the village of San Diego in the process.

6 Lloyd and Coulter, *Medicine and the Navy 1200-1900*, III (Edinburgh: E. & S. Livingstone Ltd., 1961), 305.

7 Thrower, ed., *The Three Voyages of Edmond Halley in the Paramore*, 26.

8 The list of astronomers included Nevil Maskelyne, who observed the transit from St. Helena. Maskelyne would go on to become Astronomer Royal and supply the Nautical Almanac that Cook would take with him in *Endeavour* for use in determining longitude. He would also engage horologist John Harrison and his chronometer in a dramatic and public battle for priority of recognition in the discovery of a solution to the longitude problem.

9 See J.C. Beaglehole, *The Life of Captain James Cook*. (Stanford, California: Stanford University Press, 1974), 182-183.

10 John Noble Wilford, *The Mapmakers*. (New York: Random House, 1981), 139.

11 As did Abraham Ortelius of Antwerp in his commercially successful atlas *Theatrum Orbis Terrarum* of 1570.

12 Ibid., 140.

13 Beaglehole, *The Life of Captain James Cook*, 125.

14 See John Campbell, *Dictionary of National Biography*.

15 Beaglehole, *The Life of Captain James Cook*, 148-149.

16 Ibid., 108. It is now believed that Marco Polo meant the Malay Peninsula when he referred to Locac.

17 William Andrews, "Translations of the Earliest Documents Describing the Principal Methods Used to Find Longitude at Sea," *The Quest for Longitude: The Proceedings of the Longitude Symposium Harvard University*, Cambridge, Massachusetts November 4-6, 1993 (Cambridge Massachusetts: Collection of Historical Scientific Instruments, Harvard University, 1996), 376.

18 Ephemerides are tables giving the coordinates of one or a number of celestial bodies at a number of specific times during a given period.

19 Charles Bricker, ed. *Landmarks of Mapmaking* (New York: Dorset Press, 1975), 60. The technique consists of measuring the difference between the actual observation of the event by local time (determined by altitude) and the time predicted for the event at an index longitude. However, an eclipse is a long drawn out event, and the precise moment of occurrence difficult to determine for purposes of measurement. Columbus' first attempt was about 18° in error.

20 According to Vespucci as quoted by Boorstin: "As to longitude, I declare that I found so much difficulty in determining it that I was put to great pains to ascertain the east-west distance I had covered. The final result of my labors was that I had nothing better to do than to watch for and take observations at night of the conjunction of one planet with another, and espe-

cially of the conjunction on the moon with other planets, because the moon is swifter than any other planet ... After I had made experiments many nights, one night, the twenty-third of August, 1499, there was a conjunction of the moon with mars, which according to the almanac [for the city of Ferrara], was to occur at midnight or a half-hour before. I found that when the moon rose an hour and a half after sunset, the planet had passed that position in the east." Daniel J. Boorstin. *The Discoverers* (New York: Random House, 1983), Vol. 1, 357.

21 Eric G. Forbes, Greenwich Observatory, 1: *Origins and Early History* (1675-1835) (London: Taylor & Francis, Ltd., 1975), 12. It is perhaps also worth noting that three years later, the same German mathematician published a treatise on the principles of triangulation, still used in survey. He is better known for this work: *Libellus de locorum describendorum ratione*. Charles Bricker, ed. *Landmarks of Mapmaking* (New York: Dorset Press, 1975), 35. See also Derek Howse, *Greenwich Time and the Discovery of the Longitude*, (Oxford ; New York : Oxford University Press, 1980). The first astronomer to use a clock in making a celestial observation seems to have been Bernard Walther in 1484. Waters, "Nautical Astronomy and the Problem of Longitude," 149. Waters cites D. de B. Beaver, "Bernard Walther: Innovator in Astronomical Observation," *Journal for the History of Astronomy* 1, pt. 1 (Feb. 1970): 40-41.

22 English instrument maker Robert Norman made such a proposal in his 1581 *The neue Attractive, Containyng a short discourse of the Magnes or Lodestone*. Similar proposals followed by William Gilbert, Thomas Blundeville, Edward Wright, and Henry Briggs. Norman J.W. Thrower, "Longitude in the Context of Cartography," *The Quest for Longitude: The Proceedings of the Longitude Symposium Harvard University*, Cambridge, Massachusetts November 4-6, 1993, 57.

23 The use of Jupiter's moons as an astronomical clock to derive longitude occurred to Galileo shortly after he discovered them in 1610. This method proved useful to establish the "rate of going" of astronomical clocks, but the magnification required to observe them through a telescope prevented effective use at sea, though many people tried.

24 From letter of Cook to Stevens, Secretary of the Admiralty, March 22, 1775. J.C. Beaglehole, ed. *The Journals of Captain James Cook, Vol. II, The Voyage of the Resolution and Adventure, 1772-1775*. (London: Cambridge University Press for the Hakluyt Society, 1961), 691.

The praise was certainly merited. William Wales, for instance, recorded that between June 1773 and June 1774, the Kendall chronometer varied in measurement of time by only an incredible 1.7 seconds. Beaglehole, *Journals*, II, 845 (Journal of William Wales).

25 Cook was issued two dipping needles to attempt the correlation of position by this method compared with results from meridian passage and lunar distance. Very little came of it, for reasons mentioned. To his irritation, he was given the dipping needles once more and told to try them again on his second voyage. Beaglehole, *Journals*, II, 831. (The very same instruments went out on loan with La Perouse in *La Boussole* and *L'Astrolabe* in 1785, and vanished along with the entire expedition.)

26 Francis Baily, ed., "Warrant for the payment of Mr. Flamsteed's Salary" *An Account of the Revd John Flamsteed, the First Astronomer Royal* (London: Lords Commissioners of the Admiralty, 1935), 111-112.

It should be noted that the observatory was insufficiently equipped with instruments to accomplish its task. Flamsteed was forced to purchase instruments out of his modest salary, and later justified the claim that the observations he made were "his" data on the grounds that they had been made with "his" instruments.

27 Wallis himself did not even attempt the calculations, which he readily admitted were beyond him. Rather, they were performed by his astronomically inclined purser who was named, oddly enough, John Harrison.

Though able to follow directions, Harrison lacked the theoretical background to feel confident in his results. J.C. Beaglehole, *The Life of Captain James Cook* (Stanford, California: Stanford University Press, 1974), 133. Beaglehole cites a note by Wallis, in a copy of his Journal, August 20, 1766.

28 J.C. Beaglehole, *The Journals of Captain James Cook, I, Voyage of the Endeavour, 1768-1771* (London, Cambridge University Press for the Hakluyt Society, 1955), 392.

29 Ibid., 392.

30 See R. Ashley, "The Search for Longitude" *American Neptune*, Vol. 51, No. 4 (Fall 1991), 264-266.

31 C.R. Markham, ed., *The Hawkins Voyages during the Reigns of Henry VIII, Queen Elizabeth, and James I* (London: The Hakluyt Society, 1878), 141-142.

32 According to Christopher Lloyd, "Half the shipwrecks in history have been due to crews enfeebled by scurvy." Christopher Lloyd, *The British Seaman 1200-1860: A Social Survey* (London: Collins, 1968), 45.

33 E.G. Ravenstein, ed., *A Journal of the First Voyage of Vasco da Gama, 1477-1499* (London: The Hakluyt Society, 1898), 87.

34 Pascoe Thomas, "True and Impartial Journal, 141-144, in Glyndwr Williams, ed., *Documents Relating to Anson's Voyage Around the World 1744* (Greenwich, UK: Navy Records Society, 1967), 86.

35 Richard Walter, *Lord Anson's Voyage Round the World 1740-1744*, S.W.C. Pack, ed. (London: Penguin Books, 1947), 70-71.

36 Stewart and Guthrie, eds., *Lind's Treatise on Scurvy* (Edinburgh: University Press, 1953), 148.

37 Carpenter, *The History of Scurvy and Vitamin C* (Cambridge: Cambridge University Press, 1986), 68.

38 Lind did not try one of the more creative empirical remedies then popular. Reasoning that scurvy victims often recovered upon reaching land, some captains buried their ill seamen up to their necks in tubs of dirt. Baugh, *British Naval Administration in the Age of Walpole*, 380.

Baugh cites R.M.S. Pasley, ed., *Private Sea Journals, 1778-1783*, kept by Admiral Sir Thomas Pasley, Bart. (1931) 228, 216-217. If an experiment, it was not without precedent. Lloyd and Coulter report this treatment as an "old buccaneer remedy," and a Captain Knox reported seeing a scorbutic seaman buried up to his neck in the Quebec campaign during the Seven Years' War. Lloyd and Coulter, *Medicine and the Navy*, 118. The authors cite Knox, *Narrative of Campaigns in North America*, II (Champlain Society), 16.

39 Later, James Lind would become a physician, Director of Haslar Naval Hospital, medical reformer, and publisher of a learned treatise on scurvy that failed to identify a cause or a cure for the disease. See Louis H. Roddis, James Lind, *Founder of Modern Medicine*. New York: Henry Shuman Inc. 1950.

40 James Cook "The method taken for preserving the health of the crew of His Majesty's ship the Resolution during her late voyage round the world," *Philosophical Transactions of the Royal Society*: 66 (1776), 402-406.

41 Beaglehole, *The Journals of Captain James Cook, I: The Voyage of the Endeavour* (Cambridge: Hakluyt Society, 1955), 74.

42 Ibid, 259. Beaglehole cites *Journals*, I, 499-501. This was not entirely accurate. A young seaman named Foreby Sutherland became the first Englishman to be buried at Botany Bay, having died of tuberculosis. In Cook's parlance, however, "sickness" generally always meant scurvy. Cook may not have been the only one of his time to use this convention.

43 Beaglehole, *Journals* I, 460-461

44 *Royal Society Council Minutes*, 9 June 1768.

45 Antonia Macarthur, *His Majesty's Bark Endeavour: The Story of the ship and her people* (Sydney: Harper Collins Publishers, 1997), 80.

46 John Evelyn, "That Hellish and Dismal Cloud," 1661 in Mary-Lou Jennings and Charles Madge, ed. *Pandemonium: The Coming of the Machine as Seen by Contemporary Observers* (New York: The Free Press, 1985), 8-9.

47 Beaglehole, ed. *Journals* I, 154.

48 Cook also recognized the effect that venereal disease might have on peoples never previously exposed, and made serious effort to see that *Endeavour* would not be the cause of an epidemic among them.

49 Beaglehole, *The Life of Captain James Cook*, 200.

50 Lynne Withey, *Voyages of Discovery. Captain Cook and the Exploration of the Pacific*. (New York: William Morrow and Company, 1987), 124-125.

51 J.C. Beaglehole, ed. *The Journals of Captain James Cook, Vol III The Voyage of the Resolution and Discovery 1776-1780*, parts one and two. (London: Cambridge University Press for the Hakluyt Society, 1967), 119.



The Construction of ENDEAVOUR

By John Longley

When I was asked to build *Endeavour* in 1987, I had no idea what I was taking on. I had very little idea of eighteenth century vessels, ship-building, or even wooden boat building. I was a schoolteacher, whose pursuit and love of sailing resulted in competitive ocean racing around the world and several America's Cup campaigns. I was project manager for the construction of a couple of large ocean racing yachts and four 12-Meter yachts, including *Australia II*, the first yacht to win the America's Cup after 132 years of US dominance. I knew nothing of the ways of museums and little of historical research. In short, I was totally under-qualified to take

on this massive project.

What I was asked to do was to reincarnate Captain James Cook's famous ship of discovery, HM Bark *Endeavour*, to a standard of authenticity that would be acceptable to the Australian National Maritime Museum, so that the vessel could eventually be the centerpiece of their floating collection. This is the paramount fact of the *Endeavour* project. She was built as a museum piece, not for a film or as a flight of fancy from someone who had read too many Patrick O'Brian novels. Not only did she have to be as authentic as possible, given that we were building the ship over two centuries later than the original and on

The *Endeavour* replica, her "red duster" flying, and sporting her royal livery, surges into Fremantle's Fishing Boat Harbour on December 9, 1993, nearly six years after the project commenced. (Courtesy HM Bark *Endeavour* Foundation).



The massive lower stem dwarfs a workman posing below the hull of the *Endeavour* replica. Her bottom planking has been attached up to the level of the wales. (Courtesy HM Bark *Endeavour* Foundation).

the other side of the world, but she also had to be able to pass twentieth century safety standards and be built to a survey standard that would allow her to undertake unlimited, unaccompanied international voyages and be insurable on these voyages.

In a way, the two demands of being an authentic eighteenth century vessel and being able to operate to twentieth century standards are mutually exclusive. However, we had a couple of things going for us. The original HM Bark *Endeavour* was originally a commercial vessel, a collier, and was hence enormously strong. In addition, her almost box-like sections provided sufficient form stability to allow her to pass modern stability criteria. If we had been asked to build an eighteenth century warship to pass those stability criteria, the resultant ship would have had to be so different from the original that the ship would most likely have ended up being a replica in name, but not in form.

My first task was to see what information was available on the original vessel, so I flew to London to visit the National Maritime Museum at Greenwich. There I was taken to

the draft room and introduced to David White, an employee of the museum, who had spent a large part of his life studying the construction of eighteenth century English naval vessels.

David showed me that there was a wealth of information available. The original ship was built as a Whitby Cat, called the *Earl of Pembroke*. She was three years old when the Navy bought her out of trade and took her to Deptford on the lower reaches of the Thames and dry-docked her. While she was in the dock, the Navy took off her lines and developed a general arrangement and deck plans that contained an enormous amount of information.

The *Earl of Pembroke* needed to have significant alteration made to make her suitable for the intended voyage to the South Seas, so a copy of the original draft was made that had HM Bark *Endeavour* returned to London after her three year circumnavigation, the Navy once again surveyed her and effectively developed an "as built" set of drawings. All of these drafts had survived and were kept safely at Greenwich.

In addition to these drawings, the jour-

nals written by Captain Cook, his officers, and Sir Joseph Banks (the gentleman botanist who accompanied Cook), contained considerable information on the ship, often quite by chance referencing some detail about life on board the ship. For example, Charles Green, the official astronomer on board, wrote in his journal that one day while he was working in the great cabin a flying fish flew in the quarter window and hit him on the head. To Green this was an interesting anecdote; to us it was a vital piece of information which showed that the quarter windows were able to be opened at sea.

The last sources of information were records from various British archives. In a meticulous and exhaustive search, historians from the National Maritime Museum scoured the Public Record Office and Admiralty papers of the period. This work turned up new information that had not previously been available and which gave further vital details. For example, a quote was found in the Deptford Letter Book by a shipwright to do considerable work on a warship that was currently in the yard. Tacked on the bottom of the quote was an additional quote to build four stern sash windows, a new companion with vertical sashes and settle lockers in the Officers cabins. This piece of information settled the question of whether *Endeavour* had four stern windows with a mock one in the middle or five operating windows, a question that students of the ship had been arguing over for many years. As a result of all this information, we were able to piece together a picture of *Endeavour* that we are confident is very close to the original ship.

From Greenwich, I returned to Fremantle, Western Australia, where we intended to build the ship, confident

that we could indeed do so. This confidence was boosted by the fact that I had been able to convince David White to take early retirement from Greenwich and move to Fremantle to head up the design team.

Having made the first moves to ensure that we would be able to meet the criteria of building the ship to a high standard of authenticity, the next step was to approach the issue of survey and passing the safety standards of the twentieth century. To see us through this complicated task, I appointed as our naval architect, an old friend with whom I had worked during the 12-Meter projects, Ken MacAlpine, who is currently the head technical officer for the America's Cup Class. Ken developed a complete analysis of the likely stability of the ship and a comprehensive plan for meeting the modern safety standards of a sailing cargo ship. This information was submitted to the Australian Maritime Safety Authority,

who not only approved the approach we were taking, but also agreed to survey the ship through the construction period.

It was time to start cutting wood, but before we started on the actual ship, we decided to build a trial mid-section of the ship to test and develop our construction techniques. SE Ward & Company, with whom I had worked on all my America's Cup projects, were appointed as the shipwrights for the project and built the trial piece off-site, while the ship's shed was built on the shores of the Fremantle Fishing Boat Harbour. The original ship was built of English oak, elm and Baltic pine. None of these timbers were available in the sizes or





Above: After the ship shed was assembled, the prefabricated keel, stem post, stern, and floors were transported to the shed and set up. (Courtesy HM Bark Endeavour Foundation).

Opposite Left: In this view looking toward her stern, the laminated jarrah wood frames have been joined to the keel of Endeavour. Her transoms are attached to her sternpost. The photo was taken mid-1989, inside the building shed. (Courtesy HM Bark Endeavour Foundation).

shapes required and, even if they had been, it would have been economically impossible to have imported them. Fortunately, Australia is rich in excellent hard woods and so the decision was made to build the ship from "jarrah," a eucalypt native to the south-west corner of the continent. Although a good shipbuilding timber from a longevity point of view, jarrah is not a good steaming timber and would present considerable problems when it came to getting the massive planks around the bow. Also the typical eucalypt grows with a thick straight trunk but the boughs of the tree tend to be comparatively thin. It was from the boughs of the mighty English oaks that the shipbuilders were able to get the curved sections, so they could fashion the frames of the ships by building up each bend with a number of small overlapping pieces of timber called futtocks. This clearly was not possible with jarrah and so we laminated the frames from one inch planks using West System epoxy. The laminations were further supported by a series of small galvanized bolts so that the resultant frames were immensely strong. The

floors, which were to cross the keel, were also built this way.

The keel on the original ship was built from three massive pieces of oak scarfed together. Unfortunately, we were unable to find pieces of jarrah large enough, so we built each of these pieces up using three smaller pieces that were bolted together vertically and then scarfed as per the original ship. In other words, our keel was built up from nine pieces of timber, whereas the original was from three.

The stem was built out of two pieces of jarrah, coaked together,¹ and the stern post made from a single piece as per the original ship.

All of this work was done off-site while the ship shed was being constructed in Fremantle. The shed was specifically designed for the project with a concrete floor set at the launching angle of 17 degrees and with walkways around the construction area, so that the ship could be built in full view of the public.

As soon as the ship shed was complete the prefabricated keel, stem post, stern, and

floors were transported to the shed and set up.

The keel was then chocked out² to take the floor. The upper and lower keelsons, which locked the floors into place, were fitted and the deadwoods laminated into position, rather than being built up with a number of separate pieces of timber, as would have been the case with the original.

To preserve the integrity of the construction, the laminated bends were chocked on to the end of the floors as in the original method of construction. Although this seemed the appropriate thing to do at the time, it was a costly exercise and the ship certainly would have been stronger if the bends and floors had all been built in one piece.

As soon as the last of the square frames was in position, we commenced developing the stern and the bow. This involved setting up the bow and stern cant frames³ that were simply chocked into the keel, rather than crossing it, as is the case with the square frames.

As the bow and stern were being developed, the massive (13" by 13") lower deck beams were being fitted to beam clamps that were then bolted to the inside of the frames. The wale was also being fashioned and trunnelled, and bolted into position, so that the lodging knees⁴ that hold the lower deck beams in position could be bolted through the wale.⁵

With the fitting of the lower deck, the planking below the wale could commence. This was an immense task, as the planking on *Endeavour* is three inches thick on the bottom of the hull and in the ends, and rises to four inches after the turn of the bilge as the corresponding framing begins to get a little lighter. There is also an enormous amount of shape in both the bow and stern, so enormous flitches of timber had to be cut, most over three feet wide, so as to be able to cut a piece of timber that would end up as a 10 inch plank. This was heavy and exasperating work. Often a plank, which had taken so much time in preparation, would fail as it was being forced around the severe curves of the bow and stern.

On the original ship these planks were largely fastened off with trunnels (tree nails or wooden pegs) and iron spikes at the

butts. However, because the ship has no internal subdivision, a sprung plank would most likely sink her. Consequently, it was decided to use large threaded bolts to secure the planking.

An interesting problem developed as the lower planking neared completion. Jarrah shrinks across the grain by up to 11% from green to dry. As the long hot West Australian summer started, the planks started to shrink alarmingly. A phone call to a local irrigation specialist solved the problem with the construction of an inverted irrigation system that was turned on every night to spray the planking with salt water from the harbour.

As the lower planking was nearing completion, work was going on with the fabrication and fitting of the weather deck beams and their associated lodging and hanging knees. For the lower deck, we had laminated the knees from veneers of jarrah, but although the resultant knees were immensely strong, they were, to my eye, too perfect. They were also very expensive and as the project had fallen on hard times financially, we opted to try and get grown knees cut from the forest. This was achieved and the end result was very satisfying. We ended up with some white and red mahogany knees, some from tallow wood and others from jarrah and tuart. They were all a slightly different shape and certainly looked the part.

On the original ship, the knees were fastened off with iron "bolts." These were simply bars of soft iron that were driven through holes drilled by the auger men and riveted off over clench plates. We used exactly the same technique but replaced the iron with copper.

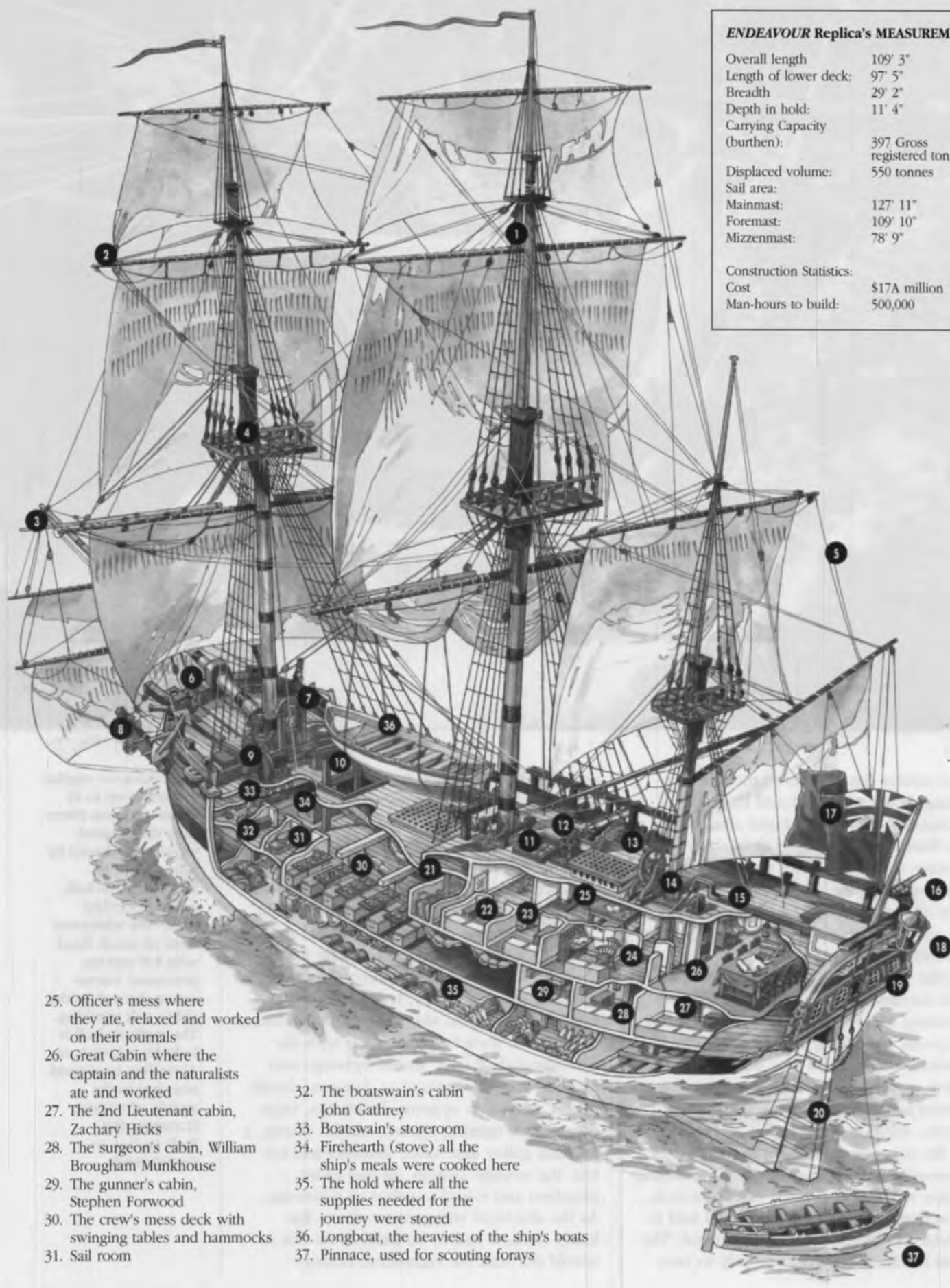
For the topside planking and the planking of the decks, old growth Douglas Fir was employed. We were able to get some amazing timber from a timber merchant in Portland, Oregon, that had originally been earmarked for the construction of mine sweepers by the US Navy.

Large pieces of recycled jarrah were used for the deck hardware (gallows, belfry, jeer bits, mast partners, windlass, capstan, etc.) with most of it coming from an old traffic bridge that had been dismantled at a river crossing in the hills behind Fremantle.

Internally, the lining of the hull, which

Endeavour had four decks; the weather deck on top; below this the after-fall deck running half the length of the ship from the stern; then the lower or mess deck; and finally the hold.

1. Mainmast
2. Yard
3. Bowsprit
4. Tops
5. Blocks
6. Seats of ease - two wooden lavatories for the seamen
7. Ship's bell marks the rhythm of shipboard life
8. Best bower anchor
9. Windlass used to raise and lower the anchors
10. Companion (ladder) to lower deck
11. Companion to after-fall deck
12. Capstan, a winch to move heavy gear and the ship in anchorage
13. Carriage gun, fired four pounder shot. Six on board
14. Wheel connected by ropes to the tiller
15. Tiller with kick-tip to clear the cabin stove chimney
16. Swivel gun to repel boats and boarders, 12 on board
17. The 18th century Red Ensign, with the Queen Anne Union flag
18. Stern lantern
19. Stern windows
20. Rudder, connected by chains and ropes to the tiller
21. Pantry stored provisions for the people on the after-fall deck
22. The naturalist's cabin, Dr Daniel Carl Solander
23. The artists' cabin, Sydney Parkinson & Alexander Buchan
24. The captain's cabin, 1st Lieutenant James Cook



ENDEAVOUR Replica's MEASUREMENTS

Overall length	109' 3"
Length of lower deck:	97' 5"
Breadth	29' 2"
Depth in hold:	11' 4"
Carrying Capacity (burthen):	397 Gross registered tonnes
Displaced volume:	550 tonnes
Sail area:	
Mainmast:	127' 11"
Foremast:	109' 10"
Mizzenmast:	78' 9"

Construction Statistics:	
Cost	\$17A million
Man-hours to build:	500,000

25. Officer's mess where they ate, relaxed and worked on their journals
26. Great Cabin where the captain and the naturalists ate and worked
27. The 2nd Lieutenant cabin, Zachary Hicks
28. The surgeon's cabin, William Brougham Munkhouse
29. The gunner's cabin, Stephen Forwood
30. The crew's mess deck with swinging tables and hammocks
31. Sail room
32. The boatswain's cabin John Gathrey
33. Boatswain's storeroom
34. Firehearth (stove) all the ship's meals were cooked here
35. The hold where all the supplies needed for the journey were stored
36. Longboat, the heaviest of the ship's boats
37. Pinnace, used for scouting forays



was of similar dimensions to the outside planking, was completed and fastened off with trunnels, the forward and after-fall decks fitted and the simple bulkheads for the cabins installed. Decks were caulked and payed using traditional materials of oakum and pitch, and windows manufactured and fitted, using traditionally-made eighteenth century glass.

As the launch date approached, the list of jobs seemed to grow rather than shrink. The cutting and fitting of the external ventilation ports, the fitting of lead scuppers, the construction of the elm tree pumps and the ventilation well around the main mast remained to be done. Companions, sash windows, settle lockers and, down in the hold, the massive mast steps to transfer the compression of the masts to the surrounding structure was in the process of completion. The carvings that decorated the hull had to be designed, carved, fitted and painted. The endless blacksmith work, not only to pro-

duce all the iron work for the hull, but also the lamps for the accommodation area and the huge stern lantern needed to be done. The hull had to be caulked and payed using a modern sealant (3M 5200) so as to bridge some of the rather large caulking seams left by the drying jarrah. Would we ever finish!

Of course, we also had to fit, and where necessary, hide the twentieth century equipment that was required to pass survey. In what was the hold of the original ship, main engines were installed on their beds, together with the associated shaft logs, shafts, bearings and exhaust system. Generators, freezers, desalinators, hot water systems, fuel tanks, bilge pumps, fire fighting system, smoke alarms, a modern galley and mess, showers and toilets, the sewage system, all had to be plumbed and wired together as necessary. As the electrical wiring went above the lower deck, it had to be hidden, so that it would not ruin the eighteenth century

The Endeavour replica can travel up to 10 knots – 3 knots faster than the original, which was slowed by pine sheathing attached to its hull. called “sacrificial pine,” the additional layer of wood, lined with felt and tar, prevented worms eating through to the ship’s oak planking. The replica’s hull is built from jarrah, an Australian hardwood resistant to the attacks of worms. (Courtesy HM Bark Endeavour Foundation).

ambiance of the ship when she was placed on display. A locker space for the crew to store their modern clothing out of sight and storage for all the gear that would be needed to take the ship to sea, including over 20 large sea chests, had to be provided. Arrangements also had to be made to fit the 150 tons of lead ballast, the majority of which would be installed after the launch.

As the pace rose from hectic to frantic, the added pressure of building the launching ways under the ship and out into the Fishing Boat Harbour took away key shipwrights just when they were needed most. The ship was to be launched traditionally down greased ways. It was the cheapest and easiest way to get the ship into the water but was hugely labour intensive. Unfortunately, Fremantle has little rise and fall in tide, so the launch ways had to be completely prepared out of the water and then lowered into place with a 400 ton crane and concreted onto a previously prepared limestone ramp. All this had to be completed within the space of two weeks prior to the launch of the ship, so that the launch grease on the ways did not deteriorate underwater.

During the five-year construction period, another team of tradesmen was building the massive spars together with their standing and running rigging, using a mixture of synthetic and natural fibre cordage. The same team was also building one of the ship's five boats, the 23-foot pinnacle that was the boat that Cook used whenever he went ashore.

Another small team of sailmakers was building the ship's wardrobe of 27 sails from Duradon, a synthetic material that has the same feel and character as canvas but has a longer projected life than the heavy flax that would have been on the original.

Finally, historian Antonia Macarthur carried out a separate research program to learn all that was known about the men who sailed the original ship and what their possessions might have been. The materials and furniture of the period were researched and antiques of the period acquired and replicated. Other artifacts were researched and manufactured so that when the ship was displayed, she would appear as if Cook, Banks and the ship's compliment had just gone ashore.

At 1723, at the top of the tide, on Thursday, 9 December 1993, in front of approximately 200,000 people crammed on every vantage point in the Fremantle Fishing Boat Harbour, four of our most senior shipwrights wheeled four gleaming axes and cut four very tight ropes. The levers they were attached to threw out the final "dogs" that were holding the ship on her ways. *Endeavour* surged down the ways, reaching a maximum speed of 11 mph before she plunged off them, curtsied, and moved astern across the harbour, chased by two Navy tugs whose task was to get lines on her before she hit the far seawall!

Four months later, *Endeavour* was fully-rigged and went to sea for the first time. Everything worked. We had never tried to second-guess the eighteenth century designers of this magnificent craft - we simply built her as she was.

Since that time, *Endeavour* has virtually never stopped sailing. By the time she arrives in San Diego in early February, she will have sailed two-thirds of the way around the world. She will have survived several considerable storms, including a full hurricane; been visited and admired by hundreds of thousands of people; and had countless sailors sign on board, sail and fall in love with her. She is truly a unique vessel and all those associated with building and sailing her are enormously proud of her.

John Longley, former schoolteacher, is the Chief Executive Officer of the HM Bark Endeavour Foundation. He worked for Perth businessman Alan Bond, overseeing construction of five yachts, including Australia II, on which Longley also crewed in 1983 when she took the Cup away from the US's Dennis Conner. In 1987 Bond asked Longley to supervise the construction of the Endeavour replica. He persisted, and after nearly six years, she finally slid down the ways.

NOTES

1 *Webster's Third New International Dictionary*, Unabridged (Springfield, MA: G. C. Merriam and Co., 1981), gives the following definition: "Coak: 1 a. : a projecting tenon connecting the face of a scarfed timber with the similarly scarfed face of another timber - compare SCARF JOINT. b. : a dowel of hard wood or metal let into timbers to unite them or keep them from slipping - compare COG."

2 To chock is to provide, fit, stop, or make with or as if with chocks - often used with "off." To raise or support with chocks - wedges or blocks (wood or metal) for steadying a cask or boat and holding it motionless, or for filling in an unwanted space. See *Webster's Third New International Dictionary*, Unabridged.

3 Cant frames are frames that are not set up at right angles to the keel. See Walter J. Eddington, *Glossary of Shipbuilding and Outfitting Terms*, (New York: Cornell Maritime Press, 1943).

4 A lodging knee is a horizontal wooden knee for securing a deck beam to a ship's side. See *Webster's Third New International Dictionary*, Unabridged, p. 1329, and *The Visual Dictionary of Ships & Sailing* (Dorling Kinderly, New York, 1991), page 17.

5 In a wooden vessel, a wale is a strake of outside planking broader and thicker than the others, and extending along the sides at different heights from stem to stern. The beam knees and futtocks were bolted to them and they were the main strength members in the ship's sides. See Rene de Kirchove, *International Maritime Dictionary*, (New York: Van Nostrand Reinhold Co., 1961), page 896.

LIFE BELOW DECKS

Reconstructing *Endeavour* And Her Times

By Antonia Macarthur





Above: Crew's mess deck area on *Endeavour*, with swinging tables and hammocks. Eighty seamen ate and socialized here. Installed at Deptford on the existing beams already in the Whitby coal ship, it resulted in unusual deck heights - over six feet forward, giving the seamen roomy living spaces. (Courtesy HM Bark *Endeavour* Foundation).

Left: Looking forward in the Great Cabin of *Endeavour*, where Captain (1st Lieutenant) James Cook and the naturalists ate and worked, during the 1768-1771 voyage. Door at left leads to Captain's cabin. Door next to it (right) opens on passageway to officers' mess. (Courtesy HM Bark *Endeavour* Foundation).

The *Endeavour* journals of James Cook tell the exciting story of the first voyage of 1768 to 1771. Cook writes of finding new lands and people, their agriculture, environment, canoes and weapons, *Endeavour's* near wreck on the Great Barrier Reef off the Australian coast, of disease, food, plants and animals. He says the *Endeavour* is ideal for the purpose of exploration. All the officers had to keep a journal in which they recorded the daily routine, weather, position, punishments and events, and as Admiralty property these were all handed in at the end of each voyage. James Cook's journal stands out amongst all the others in its breadth and depth of comment; however, nowhere does he mention his living conditions. And why should he? *Endeavour* was fitted out in the normal way and there is little to comment about the normal.

When the *Endeavour* Foundation decided to build *Endeavour* and recreate living conditions below decks, hundreds of questions arose: what did the cabins look like, what were the bulkheads made of, what were the designs of the doors, windows, hinges, hooks, firehearth, stove, tables, chairs, hammocks, swinging cots, personal items? We needed accurate information on

eighteenth century ship interiors.

Early Admiralty documents relating to shipbuilding have the frustrating habit of noting anything to do with interiors: "as is usually done in HM ships," which tells us nothing. Evidence for the "usually done" aboard *Endeavour* was found in a few remaining *Endeavour* sources, supported by many general eighteenth century sources including ship models, paintings, plans and drawings, documents and letters, journals, artifacts, wrecks, as well as styles and fashion on land. It was rather like fitting a giant jigsaw puzzle together.

The original ship was built in Whitby, Yorkshire, England, as a coal carrying ship named the *Earl of Pembroke*. The Admiralty purchased her for the voyage around the world and she was fitted out at Deptford Dockyard, on the Thames in London, in August 1768, and renamed *Endeavour*. A final deck plan of that date¹ provided the complete deck layout, giving the size and placement of every cabin, mess and storage area over the three internal decks - the after fall, the lower deck and the hold.

THE AFTER FALL

The after fall is at the stern and comprises the great cabin, cabins for James Cook

and the gentlemen, as well as an officers' mess.² The great cabin, stretching right across the width of the ship, was the largest and best-ventilated space aboard. It was there that Captain Cook, astronomer Charles Green, Joseph Banks, Dr. Solander and their group of natural scientists and artists ate, worked, and relaxed.

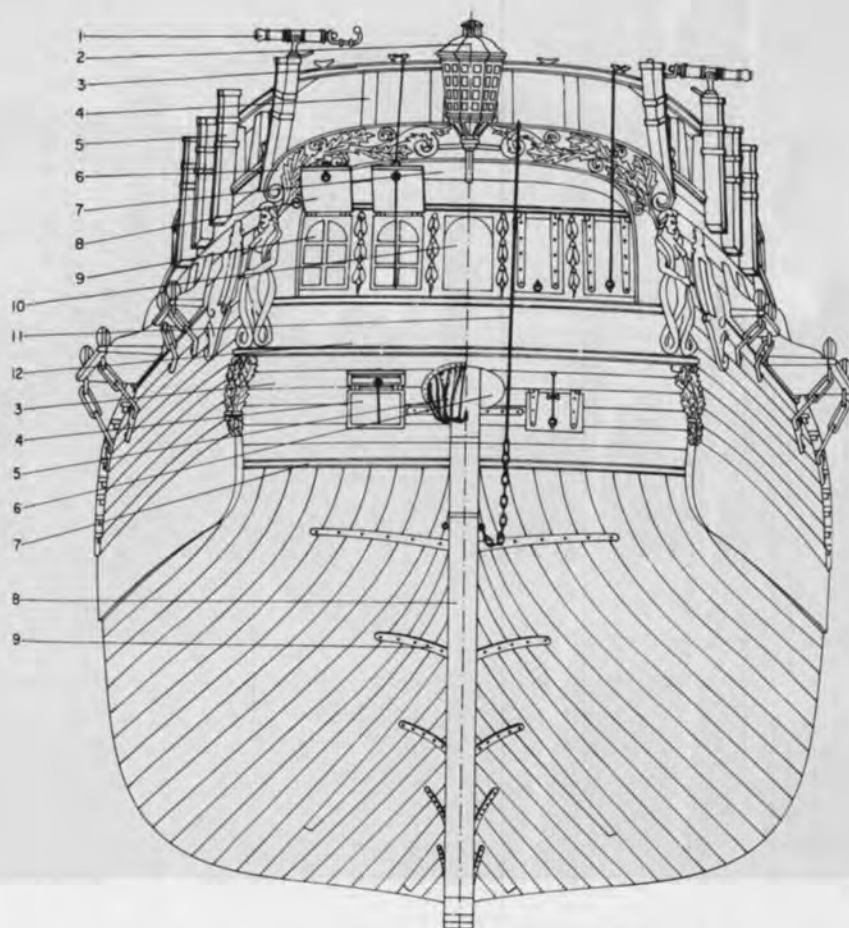
LOWER DECK

The lower deck was added during refit at Deptford to accommodate an extra 70 people. As this deck rested on the existing beams already in the coal ship, it resulted in unusual deck heights - over six feet forward, giving the seamen roomy living space, and under five feet at the stern, where in contrast the officers had to bend double to get into their tiny cabins. Between these cabins the midshipmen and mates had a mess area where they slung their hammocks, ate and relaxed. Forward is the large iron firehearth on which all the meals were cooked, and the cabins and storerooms for the boatswain John Gathrey and the carpenter John Satterley. Both Gathrey and Satterley died of dysentery during the voyage. The seamen also lived on this deck, slinging their hammocks just 16 inches apart, and messing in groups of six around their swinging tables.

THE HOLD

Below the lower deck was the huge hold, filled with casks of water, beer, salt beef and pork, dried fish, bread, suet, wheat, oatmeal, dried peas, flour, raisins, sugar, vinegar, salt, mustard seeds, and extra supplies of sauerkraut to try as an anti-scorbutic (a preventative for scurvy). Two flats (small decks), were added here: the flat aft carried the slops room (clothing store), the steward's cabin and captain's store room. The fore flat had the magazine and its store of gunpowder.

When *Endeavour* set sail at 2 p.m. on Friday, 26 August 1768, she had 94 people aboard. She carried provisions for 18 months, 10 carriage guns, 12 swivel guns, and many other stores, as well as live bullocks,

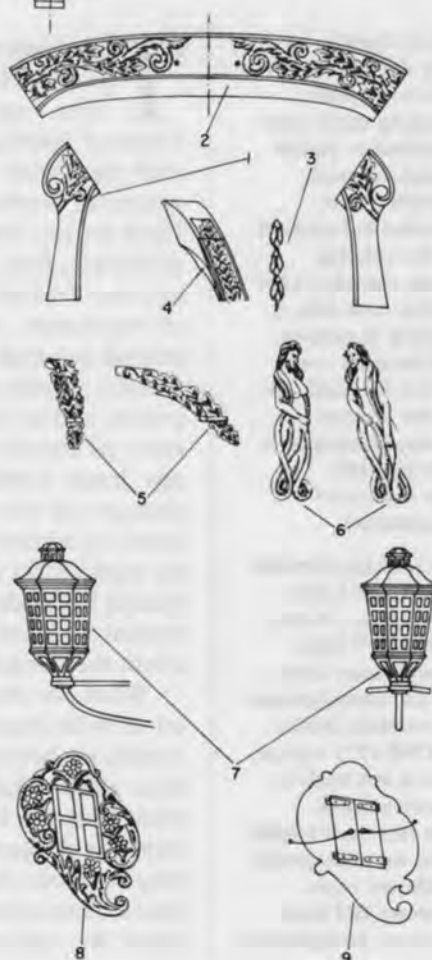


Stern (scale $\frac{1}{16}$ in = 1ft)

1. Swivel gun
2. Lantern
3. Roughtree rail
4. Stern timber
5. Gun stock
6. Taffarel
7. Taffarel cove
8. Dead-light
9. Stern window
10. Sham window
11. Rudder pendant
12. Upper counter
13. Lower counter
14. Stern loading or lighting port
15. Rudder coat
16. Helmport
17. Counter-ledge
18. Helm (Rudder)
19. Gudgeon or rudder brace

Details of decoration and lantern

1. Taffarel leaf decoration (side)
2. Taffarel leaf decoration (main piece)
3. Window mullion decoration
4. Taffarel edge decoration
5. Counter decoration
6. Figurine
7. Lantern with bracket (side and aft)
8. Quarter badge decoration
9. Quarter badge dead-lights





A swinging cot, desk, and chair furnished the cabins of Captain Cook and astronomer Charles Green in the after fall of *Endeavour*. Note the octant, celestial navigation instrument, in its case on the cot. (Courtesy HM Bark *Endeavour* Foundation).

Left: Captain Cook's *Endeavour* by Karl Heinz Marquardt illustrates the arrangement of the 5 stern windows with the rudder post driven directly in front of the middle "dummy" window.

sheep, pigs, poultry, goats, cats to keep down the rats and mice, and two dogs. As Nicholas Roger says in his book on the eighteenth century navy,⁵ a ship combined disciplined efficiency with "eighty-five large elements of the playground, the farmyard and the travelling circus."

Apart from the deck plan, there was only one other piece of Admiralty correspondence directly relating to *Endeavour's* interior, and that was a carpenter's account dated 19 April, 1768, submitted during refit in Deptford. This showed that lockers were built in the cabins on the after fall with swinging cots rather than hammocks provided. It also showed evidence for the stern windows in the great cabin. The decision as to the correct stern windows for the replica is a good example of the research methodology.

STERN WINDOWS

There were no original plans showing the stern of *Endeavour* and therefore no indication of the number and style of the stern

windows. The carpenter's account gave the first clue as they were to make four new stern windows and hang them in place. However, there was what appeared to be contradictory evidence in the form of two sketches of the *Endeavour*, showing her stern with five windows. These were done by Sydney Parkinson, the botanical artist on board with Joseph Banks' group. In both sketches there are five arched windows, the central one larger than the others. The four small windows have deadlights over them, while the larger central window does not have a deadlight. Deadlights were heavy wooden shutters that were lowered over the windows during bad weather or battle. Combined with the carpenter's evidence of four windows, we decided that the middle window was a dummy. Not an unusual feature in ships at this time, as the rudder post passed directly in front of the larger window, and the cost of glass and repairing such a window at sea most likely weighed against fitting it with glass.⁶

We now knew the shape and number of



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windows. The next question was how did they open and close? Ship models and paintings gave us evidence of three possibilities: they could be hinged at the side and swung inward, hinged at the top and slung upward and inward, or dropped down as a sash. We tried them all, and the *Endeavour* gave us the answer. The only one that worked was the sash, which dropped neatly into the transom. Each sash needed to be weighted to raise and lower, and to do this we replicated the lead weights recovered from the wreck of *HMS Pandora*. This was the vessel that was sent to the South Pacific to bring back the *Bounty* mutineers, and she was wrecked in 1791 on the Great Barrier Reef, north of where the *Endeavour* grounded twenty-two years earlier. Copying exactly the *Pandora* lead weights, we marked them with the Admiralty broad arrow (marked on every item purchased for stores) and hand-sewed the weights into sail-cloth covers (to stop the rattles). These will never be seen, but they show the attention to detail that has gone into building this remarkable ship.

BULKHEADS AND PANELLING

As the interior bulkheads did not need to be removable, as in ships of war where they were taken down during battle, *Endeavour's* bulkheads are fitted as permanent structures. On the mess deck they are of simple wooden plank construction, while in the after fall, in keeping with the Captain's rank and authority, they are panelled. The design for the panelling was based on evidence from an American wreck, thought to be an eighteenth century merchant ship, one of seven believed scuttled by Cornwallis during the Battle of Yorktown in 1781. This panelling matched designs used in common houses in England at that time, and our choice was verified when the *Endeavour* replica visited Whitby, England in 1997. This is the town where the original ship was built and where James Cook first went to sea in the coal trade. During her stay, a local ship's carpenter came on board and commented on the accuracy of our panelling and mouldings, which he said had been used for many years in Whitby houses and ships.

PAINT

The question of whether to paint below decks or not was a simple one to answer. A number of extant seventeenth and early eighteenth century contracts for painting ships showed the areas to be painted and the method of applying three coats of priming and one final coat of stone, beige or wood coloured paint, well ground and mixed in linseed oil. The next question was what colour was eighteenth century stone - wood or beige? Dr. Ian Bristow, an expert on traditional paints, came to our rescue providing samples of eighteenth century paints he had mixed by hand, and we then computer matched them to a modern equivalent. The great cabin, cabins and officers' mess areas are all painted in stone coloured oil paint, while the seamen's mess is covered with a modern equivalent of whitewash. Whitewash was a cheap mixture of chalk, water and glue, and was first officially adopted for use aboard HM ships in 1778,



The large iron firehearth (stove) on which all the meals were cooked, installed in forward end of crew's mess decks. Doors to left (forward) lead to the cabins and storerooms for Captain Cook's boatswain, John Gathrey, and the carpenter, John Satterley. (Courtesy HM Bark *Endeavour* Foundation).

but was in use as early as 1695 as the contracts showed.

FLOORCLOTH

Although naval officers rarely write personal details in their journals, passengers sometimes do. It was a fortunate chance that brought Joseph Banks, the natural scientist on board *Endeavour*, in 1768. He kept a wonderful journal, which described life on board, gave details of instruments and tools used, and solved one of our major problems - what was on the great cabin floor? Prior to sailing, Captain Cook had written to the Navy Board asking for green baize to be fitted to the deck of the great cabin. This was a thick heavy woollen cloth, used for horse blankets, army coats, and excellent for keeping out the damp when used as a carpet. The Admiralty, always eager to save money, replied that Cook could have baize if there was no painted floorcloth available. So was it green baize or painted floor cloth? There was no further Admiralty correspondence

on the subject, but Joseph Banks gives the answer. While carrying out an experiment in the great cabin, he writes, "...the floor of the Cabin in which the experiments were tried was covered with a red floor cloth of painted Canvas, that had been issued to the ship from his majesties stores at Deptford; which was usually washed with salt water every morning, and suffered to dry without being ever taken up." ⁵

Following the traditional method of floor cloth manufacture, our sailmakers hand-stitched strips of canvas, stretched it, and applied layer after layer of thick paint, rubbed down in between each layer with leather to take out the bumps. Eventually, we had a perfect floor cloth for the great cabin, which to everyone's surprise has stood the test of thousands of shoes over the last four years, with little damage and a once yearly repaint. This shows why floor cloth remained such a popular and cheap floor covering for over two hundred years, until the manufacture of cheap linoleum in the nineteenth century.

THE GREAT CABIN

We are also indebted to Banks for the only description of the great "Cabin." He wrote, "Dr Solander sett's at the Cabin table describing, myself at my Bureau Journalizing, between us hangs a large bunch of sea weed, upon the table lays the wood and barnacles...." The great cabin was the centre of daily life for Captain Cook, astronomer Charles Green and selected officers on board. Here they studied, dissected, and painted the fish, plants, seaweeds and birds they caught as they voyaged. They ate their meals at the central table and discussed daily events. The bureau that Banks refers to was his own. We know that Banks visited the ship a number of times while she was refitting on the Thames to check the fitting out, his cabins and stores. Extant lists and accounts belonging to him show some of the items he brought with him.

The Admiralty supplied only the basic furniture for everyone, something to sleep in, sit on and eat at. The great cabin was provided with a large table and chairs, a small serving table, the red floorcloth, and a heating stove. Everything else including bedding, linen, and eating utensils had to be brought aboard by the individual, whether captain or seaman. What they brought depended on space and finances.

We have chosen for Charles Green, the astronomer, a small kneehole desk and chair, which with a sea chest and swinging cot takes up all the room in his cabin. Captain Cook has the largest cabin, but has room only for a desk and chair, sea chest, wash stand, and swinging cot. All officers were allowed to bring a sea chest, which was stowed in their mess area or in their cabin, while a seaman had room only for his canvas bag. All the furniture on board is typical of the eighteenth century. The folding chairs in the great cabin are based on folding chairs belonging to Joseph Banks.

Throughout the *Endeavour* replica shelves and lockers have been fitted where needed, although the original ship probably had many more lockers and shelves than we do, as they carried double our crew numbers and stores for a three year voyage. Small pantries were fitted in most ships for the officers' use and *Endeavour* deck plans show two on steerage; one is a small cabin fitted with cupboards, work top and shelves for storing food, and cooking/serving ware for Captain Cook and the gentlemen. Nearby is another small storage pantry tucked under the deck. In the officers' mess area on the after fall, another pantry cupboard and shelves provided storage for the officers who worked, ate, and relaxed in this area.

THE SEAMEN'S MESS

The seamen's mess was fitted out with swinging tables and small shelves for storage. Seamen messed six to a table and slung their hammocks in just 16 inches of space. They brought little with them as they had little space to store anything. They came aboard with their own mattress, pillow and blankets, a wooden eating bowl, tankard, spoon and knife, clothes, and perhaps a small remembrance of home. Any valuables were looked

after by the first lieutenant. They stored their canvas bags in a sea chest shared with two others, which served also as their seating. If they smoked, pipes and tobacco were issued at certain times on the weather deck, as no smoking was allowed below decks.

COOKING

All cooking was done on the large iron firehearth, and the one-handed cook, John Thompson, and his mates, had a small cupboard and shelves fitted for storing cooking items. If extra work surface were needed, a folding table or planks on top of two barrels would be used. Free standing iron firehearth were first introduced on naval ships in the 1750's and we based ours on one fitted in 1757 to the *Dorsetshire*, a 3rd rate of 70-Guns. Most meals on board were boiled, and at the front of the firehearth are two large coppers for boiling salt meats, vegetables, and oatmeal or wheat porridge. These coppers were heated by a fire from below. On the opposite side was an open fire with spits, where fresh meat could be roasted and other food cooked in the ashes. A small oven was added and occasionally fresh bread and pies were baked for the officers and the sick. Joseph Banks writes of a good apple pie that they ate using dried American apples he had brought with him.

ARTIFACTS

In addition to the structural details and furniture, hundreds of other items needed to be researched and made including nautical and scientific equipment, hammocks and swinging cots, bedding, eating and cooking utensils, and personal objects. Most have been based on common eighteenth century items used on land, as well as artifacts found on various shipwrecks. Full attention to detail has been carried over to making these artifacts accurately. Many of the textiles on the ship have been hand-loomed, and all are sewn by hand. The curtains are based on woollen cambric of the 1760s and were hand-loomed on early nineteenth century looms. The sheets and pillowcases are hand-loomed linen, and the mattresses and pillows hand-sewn to an Admiralty pattern and stuffed with woollen flock and cotton waste as specified in 1762.

The pottery is commonly found in shipwrecks of the period and much is hand-thrown, including the chamber pots, which are based on those in the medical collection at the Wellcome Institute in London. Wooden bowls, spoons and cooperage items are hand-turned, and iron cooking implements and pots were made by the ship's blacksmiths in Western Australia. The ship's cat-o-nine tails was made by our boatswain and has been tested - guaranteed to draw blood! Our log line and lead line are regularly tested during sailing to show our voyage crew how to use them.

One day, we hope in the far future, *Endeavour* will have to stop sailing. At this time she will have her engines and modern equipment removed from the hold and will then be fully restored and fitted out as a floating stationary museum. The last piece of the research puzzle will fall into place. Until then she will continue to



(Courtesy HM Bark Endeavour Foundation)

sail, teaching new generations about James Cook and his voyages of discovery, and enabling visitors to experience an eighteenth century seaman's life.

*Antonia Macarthur is the Endeavour replica ship's historian and curator. With a degree in History and Environmental Studies from London University, Digby Stuart College, Macarthur initially worked for the National Maritime Museum at Greenwich on a research scholarship. For the past 18 years, she has done restoration or replication research for historic ships including HMS Warrior, HMS Monitor M33 (Minerva), HMS Trincomalee, and the clipper ship Cutty Sark. She continued to work for the Endeavour Foundation for six years to complete her below decks construction and fitting out at the Museum. Macarthur is the author of the book, *His Majesty's Bark Endeavour: the story of the ship and her people* (Sydney, NSW, Australia; New York, NY: Angus & Robertson, 1997. ISBN 0 207 191080 8)*

NOTES

1 National Maritime Museum, Greenwich. Drawing DR3819.

2 The term "after fall" is written on the final deck plan on the area of great cabin, gentlemen's cabins etc. It was also called "steerage" on other plans. Both terms were commonly used during this period to indicate this aft deck.

3 Nicholas Roger, *The Wooden World, An Anatomy of the Georgian Navy*, (London: Collins, 1986).

4 In Karl Heinz Marquardt, *Captain Cook's Endeavour*,

(Annapolis, Naval Institute Proceedings, 1995), pages 11-12 and 59, readers and model builders can see some of the details of the *Endeavour's* stern windows. A model of *Endeavour* is on display aboard the ferryboat *Berkeley* at the San Diego Maritime Museum.

5 J.C. (John Cawte) Beaglehole, ed., *The Endeavour Journal of Joseph Banks, 1768-1771*, (Sydney: Trustees of the Public Library of New South Wales in Association with Angus and Robertson, 1962).

6 *Ibid.*

7 During one of our voyages on the East Coast of America, I gave a talk on food and cooking. All 40 voyage crew were treated to 18th century breakfast porridge, - oatmeal, spinach (in place of scurvy grass) and meat extract, which they ate in wooden bowls seated at the mess tables.

Unknown to them "Captain Cook" arrived and selected one who refused to eat and had him hauled onto the main deck, lashed to a grating and whipped. This was done gently, but "Captain Cook" warned the bosun "if he didn't lay on harder he would receive the rest." At his wishes our bosun was then lashed up, and received the remainder. He'd wanted to know what it felt like - and after two moderate lashes, which drew blood, he gave in - but not until he had been doused with salt water (which was not in the script). He proudly showed his marks for many days - a good indication of what the real thing would have done. The original Captain Cook was moderate in his punishments - only 24 punishments during the three years' voyage; 21 with 12 lashes. Of the others, two were for desertion and one for stealing nails from the stores.

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On the cover . . .

This reconstruction of how the Chinese fishing camp on Point Loma probably looked in the 1880s was painted by Jay Wegter. Virtually the only artifacts remaining from San Diego's Chinese fishermen were found in the archaeological excavations on which this image is based.
Courtesy Fort Guijarros Museum Foundation



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

Our readers who have followed the *Mains'l Haul* over the past several issues may have noticed a change in the way the articles are organized. First with the *Berkeley* issue, then with the *Endeavour*, and now in the present issue, we have attempted to organize the subject matter thematically, presenting the research of several scholars working on a common topic, each with a unique perspective. While we will not be able to do this with every issue, the ability to present several thematic issues in succession marks an important waypoint in the development of the *Mains'l Haul* and also the way we are conceptualizing our regional maritime history.

First of all, we are able to devote entire issues of the journal to a single topic because there are more historians than ever interested in maritime history. Once something of a niche field, this growing interest on the part of historians is reflective of an increasing general awareness that our historic relationship to the sea is central to the development of the world we live in. We saw this recently when the San Diego Congress of History met for its annual conference on the *Berkeley* and local historians presented their research for three days, all devoted entirely to regional maritime history. Their intensity of interest is mirrored in the increasing demand for our educational programs, in public response to historic replica ship visits and new exhibits, in the doubling of our membership over the past four years, and in patterns of museum attendance.¹

Secondly, we are beginning to understand that our maritime history has been shaped by historic forces in which various fac-

tors interrelate in complex ways. Maritime history, in other words, is not a series of restrictive unconnected episodes, but a rich cohesive drama that encompasses vast distances of ocean, the attributes and resources of the natural world, enormous cultural diversity,

worldwide political and economic developments, and a spectrum of intellectual achievement in science and technology. Any maritime topic, in other words, can be sliced a number of different ways and *Mains'l Haul* is maturing in its ability to reflect a complex understanding of how maritime enterprise has shaped our lives through a diversity of paths.

Consider, for instance, the subject matter of this issue. But for very odd and unlikely circumstance, it might have been Asians rather than Europeans to achieve maritime ascendancy, establish seaborne trading networks and empires, and export their culture, by cannon fire if necessary, all over the earth. Certainly by the eleventh century, seafaring peoples from Asia had colonized most of the islands of the Pacific through spectacular achievements in navigation and seaborne migration. In the fifteenth century, while the European states of the Mediterranean were losing a centuries-long contest with Islam for maritime control of that sea, when Portuguese caravels were creeping slowly and tentatively down the west coast of Africa, China reigned supreme as the greatest seapower thus far in history. Already an imposing seafaring nation by 1403, upon imperial direction of that year Chinese shipyards in Fujian began an aggressive shipbuilding program that resulted in the construction of two thousand large seagoing ships during the next sixteen years.² Ming histories record that the largest ships of this program were elaborate nine-masted vessels of up to 440

FROM THE HELM

A lone figure sits in the sampan tied astern of what is probably the *Hazel*, San Diego Bay's last working junk, about 1910. His blurry silhouette may be the only surviving image of a local Chinese fisherman. This issue of *Mains'l Haul* is dedicated to providing a closer look at the lives of all the pioneering Asian fishermen whose contributions to Southern California's maritime heritage are frequently overlooked.

San Diego Historical Society Photograph Collection

Ballast Point - Entrance to San Diego

feet on deck.³ In addition to a general expansion of maritime commerce and naval activity, between 1405 and 1433 China sent seven massive exploration and trading expeditions ranging from the East Indies to the Indian Ocean and the east coast of Africa. Fleets consisting of up to three hundred ships and 30,000 mariners, heavily armed and possessing vast inventories of trade goods, spread across the seas and coastlines of the East, everywhere inspiring awe and respect for Chinese technical and cultural attainment. Had this trajectory continued, somewhere off Africa in 1497 the small India-bound squadron of tiny caravels commanded by Vasco de Gama might have run smack into a powerful Ming treasure fleet on its way to Europe. We could amuse ourselves indefinitely in considering the possible outcomes of such an encounter.

As we know, this was not to be. An internal power struggle in the mid-fifteenth century resulted in a shift in Ming policy from seafaring and trade to an inward looking, Neo-Confucianist isolationism. This emphasis was based on the reasonable assumption that Chinese cultural superiority was so overwhelming that contacts with the outside could only be corrupting and decadent. Since the outside world had nothing to offer China, governmental attention turned from the sea to the building of roads and canals, the dismemberment of China's seapower, and the migration of population away from the seacoast.⁴ By the mid-fifteenth century, it became a capital offense to build a seagoing junk with more than two masts and in 1525, an imperial edict authorized coastal officials to destroy all seagoing ships and place their crews under arrest.⁵

A little less than four hundred years later, a few Chinese mariners reached San Diego. In an efficient and quiet manner they began to build ships and to build lives. The terms and nature of enterprise were quite different now that other people had learned

to dominate the sea and use it to their advantage, but some aspects remained the same. Like their ancestors, these Chinese fisherman used the tools their culture had given them in an effort to make the sea their own, facing the difficult task of sustaining and imprinting that culture on a foreign seacoast in the midst of a suspicious, protective, and sometimes hostile society. In the course of their enterprise, they ignited what was to become one of the world's great fishing industries and added immeasurably to the economy and color of a growing San Diego. In these pages you will see old photographs of their junks anchored off New Town. The images are grainy and, to an historian, maddening in their lack of definition and detail. But in one way, the ambiguity of image is an advantage. Off beyond the junks, in the gray distance of centuries, you can almost make out the fabled treasure fleets of Zeng He.

1 The 85,000 museum visitors of 1994 were 93% out-of-town tourists and 7% local residents. In 1998, the 160,000 museum visitors were 75% out-of-town tourists and 25% local residents, representing an almost **seven fold** increase in San Diegans coming to the Museum.

2 Bruce Swanson, *Eighth Voyage of the Dragon: A History of China's Quest for Seapower* (Annapolis: Naval Institute Press, 1982): 32-33.

3 Louise Levathes, *When China Ruled the Seas: The Treasure Fleet of the Dragon Throne 1405-1433* (Oxford: Oxford University Press, 1994): 79-82. Some modern historians have revised assessments of size for these ships to approximate that of the largest recorded junks of recent times, which would suggest vessels of slightly less than 200 feet on deck.

4 Swanson, 40-41.

5 Ibid., 43.



THE CHINESE FISHING

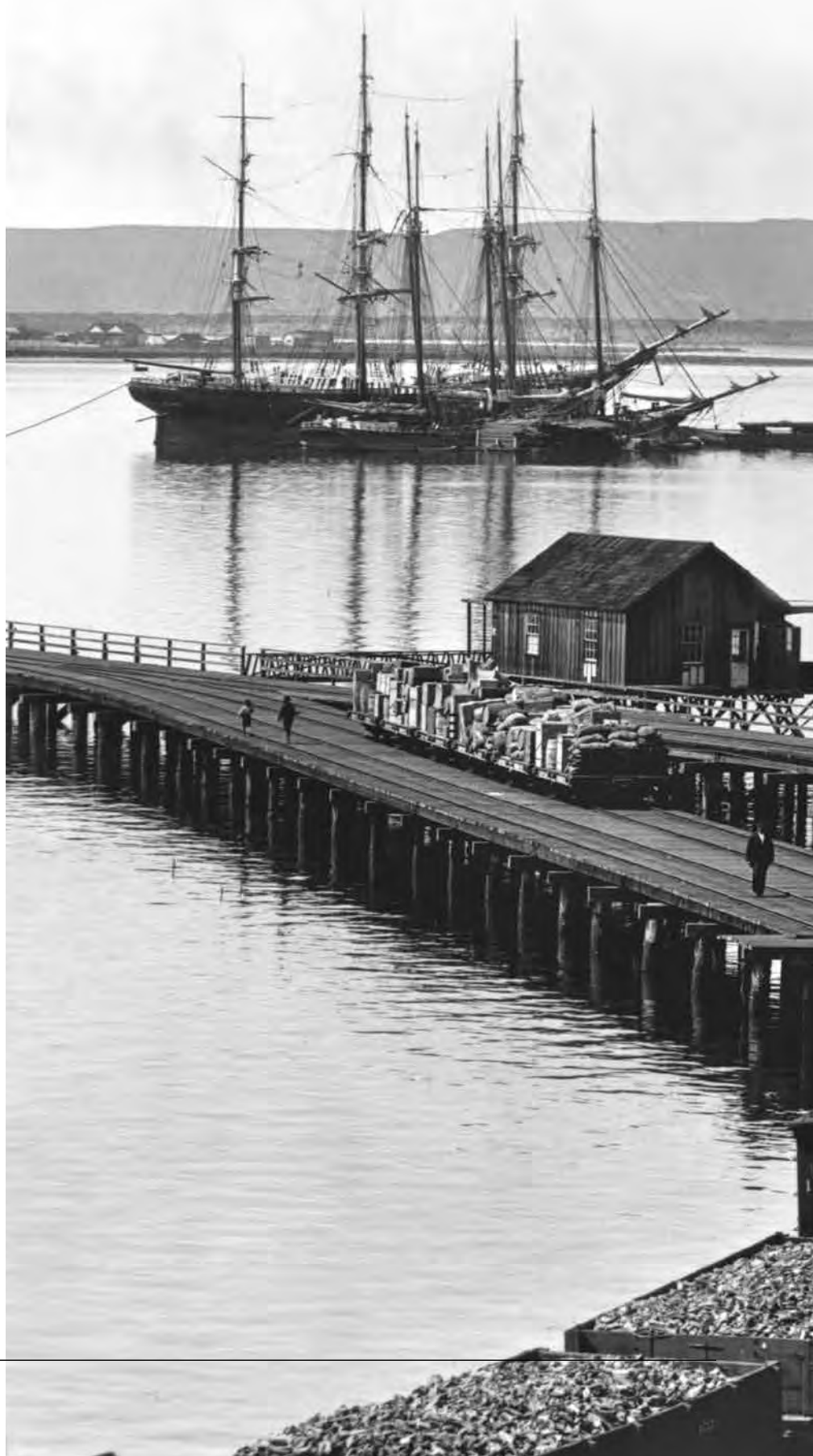
The Beginning of Chinese Immigration to America

In order to better appreciate the story of the Chinese contribution to San Diego's maritime history, one must first understand the background of early Chinese immigration to America. The Chinese did not begin to migrate to America in significant numbers until after the discovery of gold in California in 1848. Thanks to their association of California with gold, early Chinese immigrants referred to it as *Gum Saan*, or "Gold Mountain" in Cantonese.

Besides the lure of gold, several factors contributed to Chinese migration in the Nineteenth Century. Canton, the capital of Guangdong Province, had a history of foreign contact, maritime trade, and related manufacturing. For many years after its opening in 1757, it was the only treaty port with the Western Powers, and when the British established the colony of Hong Kong as a result of the Opium Wars, the area became an even greater center of trade. During this period the region was ravaged by flood, famine, war, and rebellion, including the Opium Wars of 1839-42 and 1856-62, the Taiping Rebellion of 1851-64, and fighting

The boats at right are locally-built junks, moored between the wharves of the Pacific Coast Steamship Company (foreground) and the Santa Fe Railway. North Island and Point Loma form the backdrop in this photograph, taken about 1890.

San Diego Historical Society Photograph Collection



G INDUSTRY OF SAN DIEGO

BY MURRAY K. LEE



Deaths of Chinese Fishermen Reveal Their Lives

Though time has erased most traces of Southern California's pioneer Chinese fishermen, the deaths of a few offer some of our best glimpses into their lives. San Diego County Coroner's reports from the nineteenth and early twentieth centuries suggest the hardships of life for the Chinese here. The two documents excerpted below have never been published; in them, long-silenced people speak again in their own words. The punctuation and abbreviations have been left as they appear in the originals.

A Chinese Fisherman's Wife Battles the Sea

From the San Diego County Coroner's Inquest, November 2, 1878:

H.S. Leland, [Captain of steamer Santa Cruz] having been duly sworn testified

...about 3 miles S.W. from Point Loma, we heard a Chinese woman calling for help; I stopped the str., lowered a boat and went to the fishing smack. I bring her on board the str., when she said her husband was on the little boat & drowned. We then went back and took boat & body on board & returned to port. She said they had been out since Tuesday. There were only these two on board.

H.S. Leland

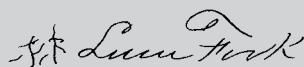
Mrs. Pat [speaking through interpreter Ah Chung] having been duly sworn testified

I know the dead man; his name is Ah Sing he is my husband; he was 45 years old; we went out in the fishing boat Thursday; there were only two of us. On Thursday it was very rough; the boat capsized in the kelp and threw us both out. I got on the bottom when it turned right side up. I tied him to the boat with a rope and the tossing of the boat was what hurt his head. I pushed the boat toward him and caught him by the head. We had no fight. I could not hail the steamer when it was coming in but did so as it went out. He had been dead 24 hours when the steamer rescued us. The deceased came from China 4 years ago. He had no property except the boat. We lived in La Playa.

X Mrs. Pat her mark

Luw Fook being duly sworn testified

I live at La Playa, am a fisherman; I knew the dead man, his name was Ah Sing. I saw him alive Thursday morning at 3 o' clk; he was going to fish. Nobody but his wife went with him. He has 200 or 300 pounds of salt fish at La Playa worth 2 1/2 cts. per pound. The boat belonged to him, he had no money; he and his wife agreed well together.



[The Coroner's verdict]

Accidental drowning from a fishing boat, about 3 miles S.W. of Point Loma

— excerpted by Mark Allen from documents in the San Diego Historical Society Collection

between the *Punti* and *Hakka* factions of the Canton area. These conditions created a situation similar to that which caused people to emigrate from Europe in search of a better life for themselves and their families. The Chinese, like many Europeans, originally intended to sojourn and return with their fortune to their native villages.¹

The principal port of entry to the U.S. for Chinese immigrants was San Francisco. In the early years there were no immigration controls, and before the Civil War immigrants were welcomed no matter where they came from, because there was a shortage of laborers. Most of California's early Chinese immigrants were involved in mining, while others were employed as domestic servants, gardeners, and launderers. The construction of the western half of the transcontinental railroad by the Central Pacific demanded a large labor force, for which around twelve thousand Chinese proved themselves willing laborers. Others were involved in construction work such as land clearing, flood control, and irrigation, while the growing industries of the West employed Chinese in the manufacture of clothing, shoes, and cigars. Many others entered occupations with which they were familiar back in their homeland, such as agriculture and fishing.

Origins of the Chinese Fishermen

Since fishing was a familiar activity for many of the Chinese, the early immigrants quickly took it up in the bountiful waters along the California coast. In the San Francisco Bay area, the Chinese focused on shrimp fishing, while at its peak Monterey had two hundred fishing huts. Fishermen began taking abalone there in the 1850s and '60s, diversified in the early 1870s during their boom years, and then specialized in squid during the next decade, as competition from Italians and Portuguese and restrictive legislation threatened to drive them off. Santa Barbara also had a few fishing companies and fishermen who gathered abalone from the nearby Channel Islands, particularly Santa Rosa.

Although it is possible that the Chinese could have sailed directly to the San Diego area from China, they almost certainly began their fishing activities in and around San Francisco and Monterey Bays. By the late 1850s, they found San Diego Bay with its unexploited marine resources and proximity to the Baja California coastline to be an ideal base for fishing activities, and they dominated this industry until the 1890s.

Tuberculosis Claims A Chinese Fisherman

From the San Diego County Coroner's Inquest, March 17, 1902:

Q [County Coroner Dr. Theodore F. Johnson] Where did you find this body?
 A [T.E. Sanderson, a witness] It was lying on the floor in the Fisherman's shanty.
 Q Where? A At the rear end of the shanty.
 Q Where was the shanty?
 A Right up on the beach, a few feet from the shore.
 Q At Roseville? A Yes sir.

* * *

Q Will you tell us how the body lay, where it lay?
 A As I come into the shanty—you go in like this (indicating) it is just one long shanty—and he lay on a little place in the back part of the floor under a bench covered with matting—it seems that's where he slept, all his bed clothes lay up there—and he was laying on his right side—well, like he fell out of bed on the floor.

...his pants lay across the head or bench, he used it for a pillow—and it rattled and I turned the pocket inside, and in there was \$2.25, a led [sic] pencil I think and a pocket book with nothing in it but a paper that had China writing on it.

* * *

Q What is your name?
 A Tom Jit. [speaking through interpreter Quong Mane, a merchant]
 Q Where do you live?
 A San Diego.
 A And what is your occupation?
 A I am a fisherman.
 Q Did you know this Chinaman that is dead here, when he was alive?
 A Yes sir.
 Q How long had you known him?
 A More than ten years.
 Q What was his name? A Tue Fook. Q How old was he?

A He was aged over fifty. Q Where was he born?
 A He was born in China.
 Q How long had he been in this country?
 A Over twenty years. Q What was his occupation?
 A He was a fisherman. Q And where did he live?
 A At Roseville. Q How long had he lived there?
 A Over ten years.
 Q Did you know about his being sick?
 A Yes sir, I know he was sick for a long time.
 Q How long has he been sick?
 A He had been sick over a month.
 Q What was his sickness?
 A I don't know. Q Did he cough?
 A He coughed, and he was too poor to have a doctor.
 Q Did he cough and spit up a good deal? A Yes sir.

* * *



a junk

Q Do you know whether he smoked opium much?
 A Yes sir, he has very strong habits of opium.
 Q Had he not been coughing more than a month?
 A Yes, been coughing for a long time.

* * *

THE CORONER: From the testimony it appears that he had had continued cough, and the condition of the body shows extreme emaciation; everything points to consumption. I do not think there is any question but that the man died of consumption, and if the jury is satisfied with that, we will adjourn.

The San Diego Fishing Villages

The first Chinese fishermen in San Diego settled along the bay, probably on Point Loma between Ballast Point and Roseville, in an area also referred to as La Playa. There they built ten shanties, drying racks, and salting tanks, and began a significant Chinese ship-building industry. By 1869 the bay was home to two Chinese fishing villages, one at Roseville and the other on the waterfront at New Town, which consisted of two rows of unpainted redwood shacks built at right angles to each other. Some were erected over the water on stilts, because at that time the harbor had not been dredged and the waterfront consisted of tidal mud flats; their junks were anchored in deeper water nearby. No photographs of these fishing villages or of the Chinese fishermen of San Diego are known to exist, although photographs of the villages on Monterey Bay provide a good indication of what San Diego's fishing communities may have looked like. The "exotic" junks and disagreeable aromas, however, drew the attention of the news media. The *San Diego Union* reported in 1886 that, "It would be a pleasure to announce the departure of that foul-smelling fleet of Chinese fishing boats, anchored near the steamship wharf; they seem to be the variety 'warranted to kill at a hundred yards.'" ² Later that year, the *Union* reminded its readers again that "The sea breeze that sweeps up F Street these afternoons is cool, but not pleasant; the perfumes it carries are not of the fragrant kind; some place to seaward needs to be disinfected." ³

Though they formed the largest Chinese fishing community in Southern California, the numbers of San Diego's Chinese fishermen were relatively small, as was Chinatown. Census reports list nine fishermen in 1870, fewer than forty in 1880, and fifty-two in 1888, which was probably the peak year. In 1870 the nine were all single men ranging in age from twenty-one to thirty-six, while in 1880 there were five families with children in the two fishing colonies. In 1890, the distinguished local merchant Ah Quin testified that the city housed only about a dozen Chinese families. ⁴

The area between Second and Fifth Avenues, adjacent to the Stingaree red-light district, became San Diego's Chinatown, while the Chinese fishing village stood in the area presently occupied by the San Diego Convention Center. Railroad construction along the waterfront in 1881, ironically performed largely by Chi-

nese labor, forced the fishermen to move to Roseville, while San Diego's Chinatown remained behind.

The Varieties of the Catch

A wide variety of fish and shellfish was taken by the Chinese fishermen, including barracuda, mullet, rock cod, smelt, sheepshead, and abalone, as well as seals, which were hunted for their skins. Speaking of San Diego in the 1880s, a Portuguese fisherman recalled that

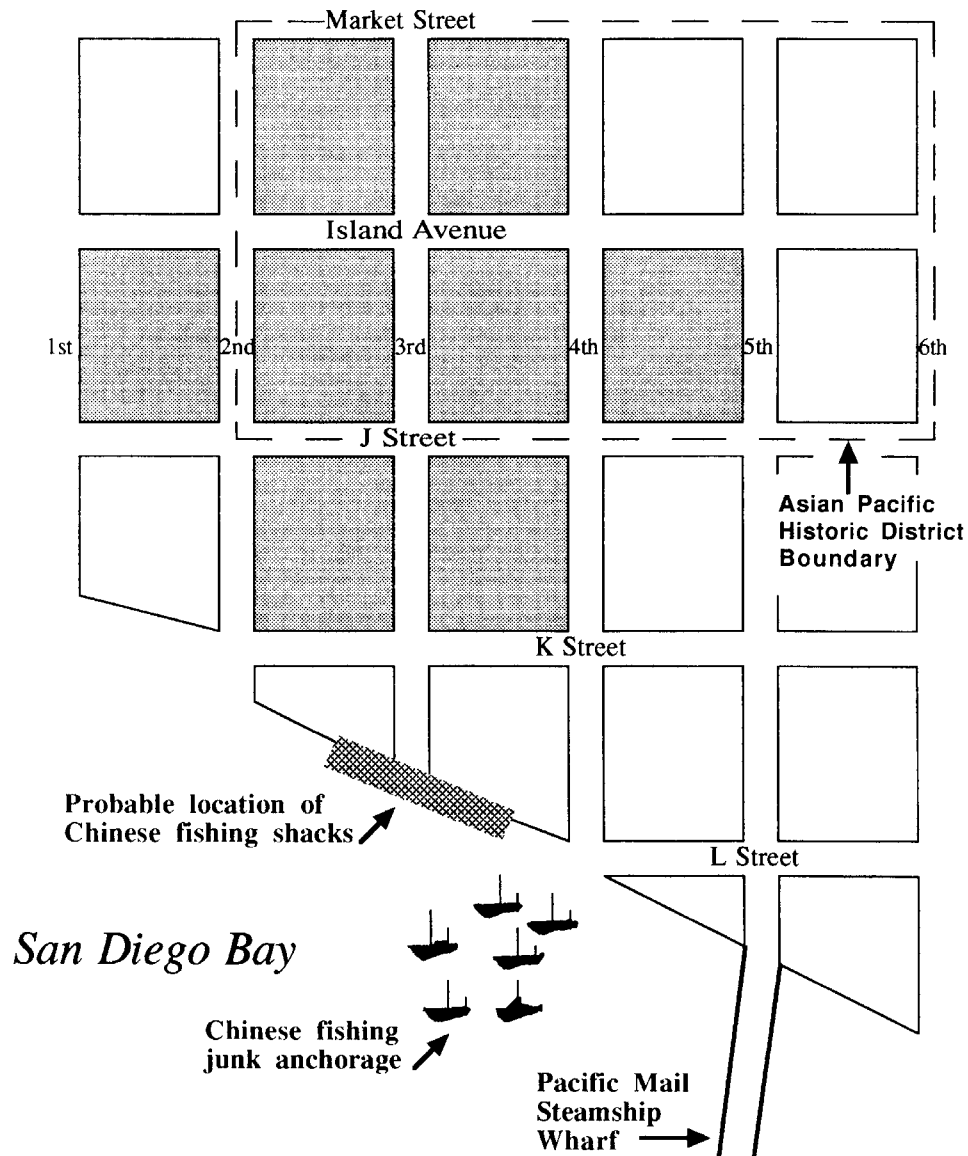
The Chinese here were catching fish and drying them. They would pack them in big barrels and ship them back to China. [One of] The fish they wanted was the sheepshead. They would get them out in the kelp beds, bring in loads of them, clean them and sun dry them before packing them for shipment. ⁵

Abalone, a highly prized catch, was dried and exported to China and to other Chinese communities, since Americans had not yet acquired a taste for this delicacy. San Diego's abalone fleet became the largest on the West Coast with an annual export of abalone reaching seven hundred tons. The export of large quantities of abalone from San Diego to San Francisco drew the attention of the *Union* in 1871:

There are engaged at present in the business of taking and drying abalone on the coast of lower California, about twenty five Chinamen, who manage to procure about six tons per month. The abalone is found attached to the rocks; and in extreme low tide in greater quantities than at any other time. The fish, covered by the shell, adheres to the rock as tightly as if glued to it, and is cut loose with a sharp instrument carried by the Chinamen. After filling a large bag with the meat, which is removed from the shell, it is carried to a place chosen to dry it, and is there treated in the same manner that a tough beefsteak is in a first-class boarding-house—that is, it receives a good pounding. After this beating the meat is thrown into a large kettle and boiled for a short time; then it is spread out to dry in the sun. After a thorough drying, it is nicely packed in strong sacks and shipped to San Diego, to be reshipped from here to the Chinese merchants in San Francisco. The meat commands in that city from five to six cents per pound, and it used exclusively by the Chinese. A considerable quantity is shipped to China, where it is regarded as a great luxury, being only used by the better class of people in that country. ⁶

On the Channel Islands, off the Southern California coast, the fisherman harvested abalone in two ways.

General Area of Chinatown During the Time of the Chinese Fishing Industry



Some worked from their junks and returned to port with their catch, while others remained on the islands for periods of several months and lived in tents or shacks while they gathered and processed their catches. Many places on the islands still carry Chinese-influenced names, such as China Bay, China Point, and China Canyon.

At first the Chinese removed the meat and immediately discarded the shells to lighten their load before returning to port, especially when they had to travel long distances from the Baja California coast. After a market was devel-

oped for abalone shell in the making of jewelry, however, the shells were kept and many of the sites where they had previously been discarded were revisited.

The shells were also used by the Chinese themselves in the pursuit of barracuda, another important catch. The fishermen used a curved piece of shiny abalone shell which they trolled behind their boats, which functioned like a lure and was attached to a barbless hook and a swivel. As the shell spiraled and glistened, a fish would strike at it, and was then pulled aboard and dropped into a box. Each fish was gutted, split down the middle,

and spread flat into a wooden tank. Each layer of fish was covered with a light covering of salt until the box was full. Once salt water was added, the catch would last until they returned to port. At Roseville, the fish were placed skin-side down on drying racks along the shore, built on stakes about three feet high. Later the fish were baled in bundles of about twenty-five pounds and shipped by steamer north to San Francisco.⁷ Chickens, a by-product of the fishing industry, were raised on scraps.

In pursuit of these catches, San Diego's fishermen ranged from Cabo San Lucas, Mexico in the south to Monterey in the north, in junks constructed at Roseville on San Diego Bay. The watercraft they built there ranged in size from sampans, small boats which primarily remained in or near the bay, to the three-masted, fifty-two foot *Sun Yun Lee*, the finest and largest junk built in Southern California. Because the fishermen had to range so far, they had to carry as much sail as possible and yet keep the crew to a minimum, so most had two masts. Wealthy San Diego merchant Quong Sung Kee owned her and several others, while at least two other abalone junks belonged to the merchant and medical practitioner Wo Sing.

Importance to the San Diego Economy

The Chinese fishing industry was an important part of San Diego's economy, for the fishermen supplied all the city's fresh fish needs with door-to-door sales, exported to China by way of San Francisco, and purchased lumber, food, and supplies. In 1871, the *Union* reported that "Two junks loaded with abalone meat arrived from the Lower California coast yesterday. The two brought eight tons of abalone meat, which will be shipped by the steamer *Orizaba*."⁸ Within the decade, however, Chinese merchants had developed markets for the shells as well, shipping them as far as Austria, Hungary,

and other European countries, primarily for the manufacture of buttons. The *Union* reported in 1880 that

The *Orizaba* on Tuesday will probably take away the largest shipment of shells and abalone meat ever forwarded from this port. This branch of commerce is rapidly developing into a trade of considerable importance. Six or seven years ago a few of these shells were taken away by tourists as souvenirs, while now nearly every steamer takes away several tons. In San Francisco they readily bring fifty dollars and upwards a ton.⁹

Late that year, the *Union* boasted again that "The demand for these from San Diego is constant, these shells being considered the best obtained on the entire coast."¹⁰

The industry also had an impact on Chinese workers throughout the West. The dried seafood products supplied by the fishermen to their fellow countrymen in the mining and railroad camps contributed to a more nutritious and varied diet than was available to their white counterparts. Ah Quin, who was the Chinese labor broker for the building of the California Southern Railroad, supplied a considerable amount of local seafood to the railroad gangs.¹¹

While in some respects the Chinese community kept to itself, the fishermen were inextricably linked to the local economy, as the owners of the former Klauber and Steiner store downtown later recalled:

To the store the Chinese fishermen, back from their voyages along the Mexican coast, brought their sealskins, graded as bulls, cows and pups, and their dried fish; they took away in exchange China gin, rice, oil, rope, and oarlocks for their junks.¹²

The Demise of the Chinese Fishing Industry

By around 1888, there were fifty-two Chinese fishermen living and working in

San Diego. They and their families lived in a dozen roughly-built houses adjacent to Chinatown, and ten more across the bay in Roseville. As many as eighteen junks plied local waters, but by 1893, only one remained in Chinese hands.¹³ The passage of the Scott Act in 1888, one of many discriminatory laws aimed at the Chinese, was the beginning of the end for the Chinese fishing industry in America. This act canceled all outstanding certificates that had allowed reentry of Chinese who had temporarily left the United States. Twenty thousand Chinese who were visiting their families in China were caught in these circumstances and not allowed to reenter the country. At first the fishermen were not affected because they were not classified as laborers, but an amendment to the 1892 Geary Act explicitly redefined "laborer" to include anyone "taking, drying, or otherwise preserving shell or other fish for home consumption or exportation," and barred Chinese fishermen from reentering the country once their boats had passed the three-mile territorial limit.¹⁴ Faced with the extinction of their livelihood, most of the fishermen departed, some to seek work on land, some to return to China, and the industry stagnated. Eventually, it was taken over by other immigrants, many of whom had agitated for restrictions against the Chinese.

When the Chinese were left to pursue the work that they knew well, they filled a need, prospered and made a significant contribution to the local economy. When their successes bred resentments from other segments of society, the law was used to eliminate or severely restrict them so that they could no longer succeed. The Chinese fishing and shipbuilding industry fell victim to discriminatory legislation, but the Chinese pioneered San Diego's commercial fisheries, and fishermen of other nationalities followed in their wake.

- 1 The immigration of Chinese to the U.S. was part of a worldwide Chinese migration pattern, which included immigration to Southeast Asia and Latin America. Between 1848 and 1882 ninety-five percent of the more than three hundred thousand Chinese who came to America were Cantonese. Hong Kong was the principal port of embarkation, and their transport became a highly organized business. From villages around the Pearl River Delta of Guangdong, the Chinese, primarily young men, would make their way by land or water to Hong Kong carrying their bedrolls and bamboo baskets of possessions. Most came through the credit ticket system, by which arrangements were made to repay the cost of transportation through deductions from wages to be earned in California, which usually required three years' work to repay.
- 2 *San Diego Union*, 11 April 1886.
- 3 *Ibid.*, 16 September 1886.
- 4 Arthur F. McEvoy, "In Places Men Reject: Chinese Fisherman At San Diego, 1870-1893," *Journal of San Diego History* XXIII (fall 1977): 22.
- 5 Manuel Madruga, interview, San Diego, California, 26 April 1957, San Diego Historical Society Oral History Collection.
- 6 "Abalone Meat — How and Where it is Found," *The Daily Union* (San Diego), 5 October 1871.
- 7 Don M. Stewart, *Frontier Port: A Chapter in San Diego's History* (Los Angeles: Ward Ritchie Press, 1965): 17.
- 8 *Daily Union*, 14 October 1871.
- 9 *San Diego Union*, 29 February 1880.
- 10 *Ibid.*, 9 March 1880.
- 11 Andrew Griego, "Rebuilding the California Southern Railroad," *Journal of San Diego History* XXV (fall 1979): 327-28.
- 12 Klauber Wangenheim Co. sixtieth anniversary brochure, quoted in Mary G. Marston, *George White Marston: A Family Chronicle* vol. 1 (Los Angeles: Ward Ritchie Press, 1965): 162.
- 13 J. W. Collins, "Report on the Fisheries of the Pacific Coast of the United States," in U.S. Commission of Fish and Fisheries, *Report of the Commissioner for 1888* (Washington, D.C.: Government Printing Office, 1892).
- 14 *Act of May 5, 1892, known as the Geary Act* (27 Stat. 25), "Chronology of Treaties and Major Federal Laws Affecting Chinese Immigration to the United States" (Washington, D.C.: National Archives, n.d.).

Redwood, Bamboo and Ironwood: Chinese Junks of San Diego

By Linda Bentz



As San Diegans gather to watch the 1892 reenactment of his landing, "Cabrillo" prepares to disembark his galleon - actually the locally-built junk *Sung Wo On*, recently rechristened *Alta*.

San Diego Historical Society Photograph Collection

September 28, 1892.

It is a sunny day, and a calm wind is blowing on the citizens of San Diego, who have gathered on the end of the wharf at the foot of E Street to attend the restaging of Cabrillo's landing on its 350th anniversary. The women, dressed in their finest taffeta, seek protection from the sun beneath their parasols. The men, elegant in their hats and starched white collars, grasp their jacket lapels and stand with dignity. They are all secretly competing for the first glimpse of the man of the hour: Juan Rodríguez Cabrillo, or more precisely his 1892 stand-in, an actor in stage armor brandishing an antique sword.

He emerges onto the deck of a vessel intended to represent the *San Salvador*, the ship which carried Cabrillo to San Diego in 1542. But even before the pretender steps into a boat to be rowed ashore, the onlookers cannot fail to notice that his "galleon" is unmistakably a Chinese junk.

This vessel, the *Alta*, was a historic part of San Diego's maritime heritage in her own right, for she was Chinese in virtually every respect, yet was built of California redwood on the beach at Roseville, ironically very near the spot at which the actual Cabrillo probably landed. Her history parallels that of the rest of the fleet of junks built in San Diego Bay in the nineteenth century.

Launched as the *Sung Wo On* in 1884, she was one of a pair of abalone junks owned by Wo Sing, one of three local wealthy Chinese merchants heavily involved in the commercial fishing and exporting business.¹ The junk's appearance in the Cabrillo celebration, however, was due primarily to discriminatory anti-Chinese legislation, which appears to have driven him to sell the vessel eleven days earlier to Charles L. Stedman and R. Stedman for \$100.00.² Virtually overnight, in the wake of the 1892 Geary Act, which made it difficult for "alien vessels" to return to the United States after fishing in Mexican waters, these junks passed out of Chinese hands. Thus, as "Cabrillo" was rowed ashore from the ex-*Sung Wo On* that day, San Diegans unwittingly commemorated not only the arrival of one maritime pioneer, but also marked the contemporary departure of most of San Diego's Asian maritime pioneers.

When Chinese settlers arrived on the Pacific coast in the 1850s, they found the tidal zone teeming with a Chinese treasure: abalone. These mollusks were



a delicacy in China, and through Chinese ingenuity and entrepreneurial skill, their fishermen in San Diego pioneered the commercial fishing industry. To exploit this and other maritime resources, these settlers needed vessels. They built their own in Roseville, Hunter's Point, San Mateo, San Pablo, Point San Pedro, and Santa Barbara. Their junks sailed in and around San Diego and Baja California for approximately forty-five years, and left behind a fascinating legacy. This article will explore the operations of Chinese junks, their design and construction techniques, and their ultimate sale to Euroamericans in San Diego during the last century.³

During the 1870s and 1880s Chinese shipbuilding operations in San Diego were far more ambitious than those of their Euroamerican counterparts, who built nothing as large until at least the late 1880s. San Diego acted as a base of operations that provided facilities and materials for the construction and repair of Chinese craft. The junks built there were among the finest of all junks launched in California.⁴

The earliest surviving record of Chinese vessels in California dates from 1861, when the *Los Angeles Star* reported two large Chinese fishing craft plying their trade along the coast from Santa Barbara and beyond to the south, and on the Channel Islands.⁵ In March of 1864, San Diego County tax rolls recorded that Y. Shing and Company owned seine, boats and other property valued at \$80.00. In 1865 Ah Yu reported a schooner worth \$75.00, small boats at \$15.00 and seines at \$20.00.⁶ The larger of these vessels were likely junks, and the smaller were probably sampans, because San Diego newspapers mention the presence of Chinese watercraft by 1871.

The ships in the Chinese fleet grew as the fishing industry prospered. In 1881 there were four abalone junks in San Diego Bay, while by 1887 the number had quadrupled. By 1888, thirteen junks were moored in San Diego, down slightly from sixteen the year before. The junks in San Diego were limited by their foreign status, however. They were considered alien vessels, and therefore were not registered in the United States. They traveled under a permit from the customs house:

They carry no papers except an alien certificate, which insures to the crew permission to land upon their return to the city. In addition to the Chinese names, the junks are numbered by the customs officers, and are known to them by their numbers only. The junks return as seldom as possible, but if they have occasion to visit San Diego, with or without cargo, they report at once to the custom-house

and pay a tonnage tax of 83 cents per ton; \$1.50 for entering, 67 cents for survey, and 20 cents for a certificate. It is currently reported that, to avoid payment of these customs dues, the junks often transfer their cargoes of abalone shells, meats, etc., to small boats that come out to sea, off San Diego, for this purpose, and to bring supplies.⁷

In 1877 United States Customs officials seized a Chinese junk for transporting fifteen tons of dried abalone into San Diego without paying customs fees.

Junk Design and Construction

Shipbuilding in China has been practiced in the maritime provinces for millennia. The best-constructed vessels came from the northern ports of Guangdong province, and from Fujian, which had the highest population of shipwrights. Guangdong province was the homeland of Chinese settlers who came to California.

It is highly likely that Chinese shipwrights acquired their skills in China.

The junks of San Diego and San Francisco differed in appearance and purpose. Junks built in San Diego were similar in structure to the "Hung-hsien-t'o" or "Tongkang" style, long narrow vessels with gentle sheer fore and aft, broad bows which narrow slightly at the waterline, and sterns which are modified ovals. This design was common for fishing junks found in the Hong Kong and Guangdong areas of China.⁸ The junks built in San Francisco were similar to the "Ts'ao-ch'uan" style that originated from the same vicinity. It appears that junks were designed according to their intended use. For example, the junks of San Francisco were shrimpers and the distance to the fishing grounds was short, so only one sail was required. Fishermen operating out of San Diego traveled long distances into Baja California waters, passages of up to four hundred miles, so their vessels required multiple sails that could be handled by as few crew members as possible. All junks recorded for San Diego had at least two masts.

Some contemporary observers in California questioned the sailing qualities of Chinese junks. Their shape was found to be peculiar, their appearance cumbersome, and the skills of Chinese sailors were ridiculed. In 1886, for example, a local newspaperman barely hid his disdain for the vessels and their crews beneath a veneer of humor:

A beautiful specimen of marine architecture - a cross between the Puritan "Mayflower" and the recently demolished Sea Nymph Bath House on one side, and a piledriver and Noah's Ark on the other - called the

“Young-tse-kiang,” commanded by Admiral Hi-ti-mi-gun, a loyal scion of “True Son” of the flowery kingdom - spread its buzzard-like and snowy-flowery White wings (barring the numerous streaks of tar) and went sailing down the bay in pursuit of fish and abalones yesterday afternoon. As she sped by the waterfront in a fine ten-knot breeze at the rate of nearly three knots an hour, she was the pride and received the honors of all Chinatown.⁹

In reality, however, these vessels were seaworthy and often surprisingly fast, sometimes more so than comparably-sized Euroamerican craft of the same era. Furthermore, Chinese sailors were masters of their trade.

There are several characteristics that positively identify nineteenth century Chinese junks. The bow was sharp while the stern was rounded. Solid bulkheads divided the craft into three compartments. Their frames were in three or more separate and unattached parts and were fastened to planking only; the shape of the junk was therefore dictated by the planking and not the frame, unlike Euroamerican vessels. These planks were made of two-inch California redwood and edge-nailed with common cut nails. A clay-like daubing called *chunam* was applied to nail shafts to avoid nail decay and to seams to achieve water-tightness.¹⁰

Masts and rudderstocks were made from imported ironwood, also known as *lignum vitae*.¹¹ The foremast was typically placed one-third of the junk's length from the bow. Rudders were unusually large and perforated by lozenge-shaped holes. “The rudder,” recalled Portuguese

boatbuilder Manuel Madruga of the junks he saw at Roseville as a boy,

was so big that when they would tie up or anchor they would rig a block and tackle on a beam over the rudder and pull it up higher than the bottom of the boat. The junks were round-bottomed, built like a barrel — no shape to them at all.

Their sails, he continued, “had bamboo stays across them, used in reefing in strong winds. They would pull the bamboos together and tie them to make the sails smaller. ...they went pretty good; they weren't slow.”¹²

Most California junks seem to have been left unpainted, and were simply treated with *t'ung* oil. It appears that some Chinese watercraft in California, as in China, had eyes painted on the hull, according to one witness in the San Francisco Bay area:

Each camp was well equipped with large Chinese junks . . . The crafts were always extremely dirty, unpainted, and weather stained. The only paint used about the ship would be on the bow where two big eyes were always painted. Asked why the eyes were there, the Chinaman was heard to answer: “no eyes, no see!” Each junk was thus equipped to see where it was going.¹³

Living conditions on junks were meager and cramped. This description of life on board a junk in San Diego appeared in the local press:

living quarters were aft, and cooking was done on

Name	Official Number	Date Built	Place Built	Home Port	Gross Tonnage	Net Tonnage	Length	Beam	Depth of Hold	Number of Masts	Date Sold to Euro-Americans
<i>Yangtze Kiang</i>	--	1879	San Diego	--	--	--	--	--	--	--	--
<i>Sung Wo On</i>	106970	1884	Roseville	--	8.59	8.17	40.8'	12.6'	3.7'	2	1892
<i>Acme</i>	106960	1884	Roseville	San Diego	9.76	9.27	45.0'	12.2'	4.0'	2	1892
<i>Peking</i>	150693	1884	San Diego	San Diego	18.93	17.98	51.5'	16.0'	3.9'	2	--
<i>Sun Yun Lee</i>	96202	1884	Roseville	San Diego	14.61	13.88	52.0'	16.0'	4.0'	3	1892
Name Unknown	--	--	--	San Diego	--	14.30	54.0'	12.0'	4.0'	2	--
<i>Chromo</i>	126804	1891	San Diego	San Diego	10.26	9.75	40.3'	10.6'	4.1'	2	1892
<i>World</i>	--	1895	Roseville	San Diego	--	--	--	--	--	--	--
<i>Hazel</i>	--	--	--	San Diego	--	--	~20.0'	--	--	2	--

deck, the stove being a coal-oil tin with some sand in the bottom. They lived on canned goods, fish and turtles, and when this grew monotonous, they would go ashore and shoot a deer.¹⁴

When a reporter boarded a California-built junk off Santa Barbara in 1885, he found conditions doubtlessly identical with those aboard San Diego's junks:

Her cabin is dark, dingy and uninviting, no windows nor means of ventilation of any kind except a small aperture, just large enough to permit a man's body to pass through, and through this hole you have to pass in order to reach the cabin. Here we found a man at work netting seines and nets which they use in their business. . . . They carry no nautical instruments, not even a compass, and their navigation is done entirely by landmarks, as they seldom go out of sight of land. When darkness overtakes them, they let go their anchor and thus remain stationary till day break.

"They have no stove, the cooking being done in a box lined with sheet iron, he observed. "A portion of the boat...was covered overhead by canvas, and men were busily engaged in catching fish, mackerel predominating."¹⁵

Junks were not built from plans; rather, they were built to the specifications of the owner using traditional methods. The experience of the builder dictated the proportions and general arrangement. One of the few surviving accounts of the building of a junk in California was recorded between 1901 and 1905 at Soquel by the indefatigably curious John P. Harrington, renowned researcher of California's Native Americans:

The Chinamen bend boards for boats using a frame. They do this by placing the board above a fire, but not touching the flames. When the board gets hot, the Chinese pour water on it, still holding the board over the fire. When the board becomes soft, they bend it.

They place stones on top of the board they were going to bend. These men had erected two posts upright and placed another across their top, forming a frame... Then they took the board to be bent and put one end of it under the cross beam of the frame. Next, they brought a post and placed it underneath the board they were going to bend, at the place to be bent. They put cold rocks on top of the board, directly above the fire. Water was then poured on, without stopping, and soon the board began to bend. As soon as it began to bend they put more rocks on the end of the board so that it would bend more. Then they took the board out of the frame and put another in its place and repeated the entire process. When the bend was right, they removed the board and just nailed it on the hull of the boat they were making.¹⁶

During the late 1880s the Chinese fishing industry in San Diego began to decline. Citizens became concerned about the decimation of the bay's fisheries by Chinese fishing practices, particularly their use of fine-meshed nets. Local officials began to monitor Chinese fishing activities more closely, and discriminatory legislation forced the fishermen to sell their vessels. In 1889, six junks remained in the fleet, and by 1893, only one junk could be found in the abalone fishery. The last Chinese junk on the bay was the *Hazel*, a small two-masted one-man junk, active until about 1916.¹⁷

Upon the change of ownership to Euroamericans, these exotic craft entered a new and colorful phase of existence. The ships were measured and documented for the first time, and consequently this documentation provides reliable information about California-built Chinese fishing craft. After the sale, their speed and seaworthiness ensured second careers for some of the vessels and they were used for seal hunting, smuggling and particularly guano poaching across the Mexican border; guano was used to fertilize San Diego's citrus groves. Junks were very fast, so it was difficult for Mexican authorities to apprehend offenders.¹⁸

Several of these vessels, most notably the *Hong Kong*, gained unsavory reputations in their new trade. Quong Sow Kee sold the *Hong Kong*, originally named the *Sun Yun Lee*, to Henry Koch for \$350 on November 6, 1892. The vessel changed hands several times and met disaster in December, 1900:

Wreck of the Hong Kong The Old Junk is Piled up and Broken in Ensenada Bay

The old junk Hong Kong is no more. After breasting the waves for many years and after going through many legal complications, she is at last dashed to pieces on the shore at Ensenada. During the recent storm she was thrown on the beach and almost totally demolished. The Hong Kong is a noted guano boat and has plied between here and Mexico in search of the fertilizer for many years. But some months back the Mexican authorities caught the captain of the Hong Kong in the act of poaching guano, so they took her into custody at Ensenada. It was intended that when the case had passed through the slow Mexican courts that she would be sold.¹⁹

Reports of the *Hong Kong*'s demise were premature, however, for a change of master was endorsed on February 17, 1900. In March of that year she was captured poaching guano at Elida Island by Mexican



This junk, cruising just off Roseville, may be the fifty-two foot *Sun Yun Lee*, by far the largest vessel yet built on San Diego bay when she was launched in 1884.

Courtesy Chinese Historical Society of Southern California, Nash Collection

authorities, along with the junk *Alta* (the stand-in for Cabrillo's galleon only a few years before) and a sloop, the *Cora*. The *Hong Kong* attempted to escape but was thwarted by Mexican gunfire. The three captured vessels were towed to Ensenada, Mexico and the master and crew of the *Hong Kong* spent several months in jail awaiting trial and many more months following their conviction for smuggling.²⁰ At this point, the *Hong Kong* vanishes from official records.

Another vessel that had trouble with the law was the *Acme*. She was sold by Wo Sing to Mrs. Mary Augusta Chase, wife of Captain George W. Chase, for \$250 on August 8, 1892. The *Acme* worked the lower coast of Mexico

as well as points north among the Channel Islands until she was seized, along with her cargo of dried goat meat and tallow were seized in December of 1893 for violating United States revenue laws. It appears that customs officials were lenient in this case because Captain Chase bore an excellent reputation as a hard-working man. He testified that he had made a living with the vessel for years and it was the sole support for his wife and six small children.²¹

The *Acme* wrecked on February 5, 1901 as she was bound for Ensenada, carrying guano. Valued at \$300, she carried a crew of three, and no lives were lost.

Chinese fishing activities in California

add an intriguing flavor to California history. Their junks, built in California, displayed traditional designs and were a notable sight along San Diego's early waterfront. Plying Southern California coastal waters, and far south along the rugged coast of Baja California, they pioneered commercial fishing in this region. When opposition and legislation reached their apex, however, their Chinese owners were forced to sell their vessels to Euroamericans. This began a colorful, and nefarious, final chapter for the junks.

There is much more to be learned about Chinese fishing activities in California during the late nineteenth century. Their stories are just beginning to unfold. With every new document, photograph and oral history, these brave Chinese pioneers' important place in history will be marked and not forgotten.

This scene could be in China, except for the San Diego wharf in the background. A photographer caught this flotilla of locally-built junks and sampans near the foot of Fourth Street around 1887.
San Diego Historical Society Photograph Collection

- 1 The other two merchants involved in the fishing industry in San Diego were Ah Quin, the legendary "mayor of Chinatown," and Quong Sow Kee. The latter owned the *Sun Yun Lee*, a three-masted vessel measuring fifty-two feet in length, weighing 13.88 net tons. Quong Sow Kee was apparently an excellent businessman, for his death notice, in the September 1, 1887 *San Diego Union*, stated that he was one of the "wealthiest Chinese merchants with an estate worth over one-half million dollars."
- 2 Wo Sing's decision to sell was also precipitated in part by the Mexican government's 1891 denial of his request to fish in Mexican waters. He sold both the *Sung Wo On* and the *Acme* to Euroamericans in 1892.
- 3 The information regarding Chinese junks in California comes from many sources, including federal reports, oral histories, dissertations, newspaper accounts, and photograph analysis. However there has not been any Chinese source material found to date on the topic of Chinese junks in California. Much progress has occurred during the past twenty years, yet this work is ever evolving, as new information becomes available.
- 4 Robert A. Nash, "Slide Show Script," Robert A. Nash Collection, Chinese Historical Society of Southern California, Los Angeles. Nash was a renowned researcher who studied California junks for twenty-five years. The topic of his doctoral dissertation was Chinese shrimp fishing in the San Francisco Bay area. Data for the table which accompanies this article can be found in the Nash Collection.



- 5 *Los Angeles Star*, 2 March 1861.
- 6 Judy Berryman, "Archival Information, Abalone Shell, Broken Pots, Hearths, and Windbreaks: Clues to Identifying Nineteenth Century California Abalone Collection and Processing Sites on San Clemente Island: A Case Study" (Ph.D. diss., University of California, Riverside, 1995): 51.
- 7 J.W. Collins, "The Fishing Vessels and Boats of the Pacific Coast," United States Fish Commission, *Bulletin of the United States Fish Commission*, vol. X 1890 (Washington, D.C. GPO, 1892): 32.
- 8 Nash Collection.
- 9 *San Diego Union*, 4 January 1880. The junk in question is the *Yangtze Kiang*, built in 1879.
- 10 Nash Collection. A Portuguese boatbuilder recalled construction details of the junks he saw built at Roseville when he was a boy: They built them in a funny way. They didn't drive nails in the square end. They used the edge cut with a chisel, made a mortise, and then drove the nails down through the mortise and then plugged the holes with wooden dowels. Manuel Madruga, oral interview, San Diego, California, 26 April 1957, San Diego Historical Society Oral History Collection.
- 11 Bob Smith, "Chinese Junks Play an Interesting Role in History," *The Log* (August 4-17, 1995): 33.
- 12 Madruga, interview. According to Nash, the large rudder functioned as a keel, which could be raised in shallow water.
- 13 Alexander McLeod, *Pigtails and Gold Dust* (Caldwell, Idaho: Caxton Printers, 1947): 95.
- 14 *San Diego Union*, 30 September 1934.
- 15 *The Daily Independent* (Santa Barbara), 22 June 1885.
- 16 Travis Hudson, Janice Timbrook and Melissa Rempe, eds., *TOMAL: Chumash Watercrafts as Described in the Ethnographic Notes of John P. Harrington* (Santa Barbara: Ballena, 1978): 71.
- 17 William A. Wilcox, "The Fisheries of the Pacific Coast," in United States Commission of Fish and Fisheries, *Report of the Commissioner for the Year Ending June 30, 1893* (Washington, D.C.: Government Printing Office, 1895): 188, and "Incoming Letters," Nash Collection. Only nine San Diego-built junks have been documented, however, of which four were sold in 1892. Perhaps the number of junks reported in the fleet was exaggerated in this period, or Chinese vessels from other California ports were counted among them. It is possible that further data will be found to explain this discrepancy.
- 18 Nash Collection.
- 19 *The San Diego Union and Daily Bee* 19 December 1900.
- 20 "Hensley Memoirs," Vol. 1, San Diego Historical Society, n.d.: 149-150. As quoted in Nash Collection.
- 21 Letter from the Treasury Department, Washington D.C., to Collector of Customs, San Diego. 28 December 1893. Nash Collection.



Chinese Abalone Fishermen on San Clemente Island:

An Archaeologist's Perspective

By Judy Berryman

Between the late 1850s and early 1900s, hundreds of thousands of tons of abalone meat and shells were harvested by Chinese fishermen along the shoreline from San Francisco south into Baja California, and on the Channel Islands. On San Clemente, the southernmost of the Channel Islands, archaeologists have documented the largest concentration on the islands of camps where Chinese fishermen collected and processed abalone.¹

San Clemente Island lies approximately sixty-five miles northwest of San Diego. Its eastern side is so steep that few beaches or shallow-water rock shelves are present. Because of this, all of the archaeological sites associated with historic abalone collection are clustered along the western side.

Abalone was a favored food that had been overfished in China by the 1850s. The fishery developed along the California coast replaced the one lost in China. Four abalone species live in these waters, though only one, the black abalone (*Haliotis cracherodii*) was harvested by the Chinese. Deep-water diving, a skill not practiced by these fishermen, was required to harvest the other three species. Over a period of approximately forty years, millions of these mollusks were dislodged, harvested, dried,

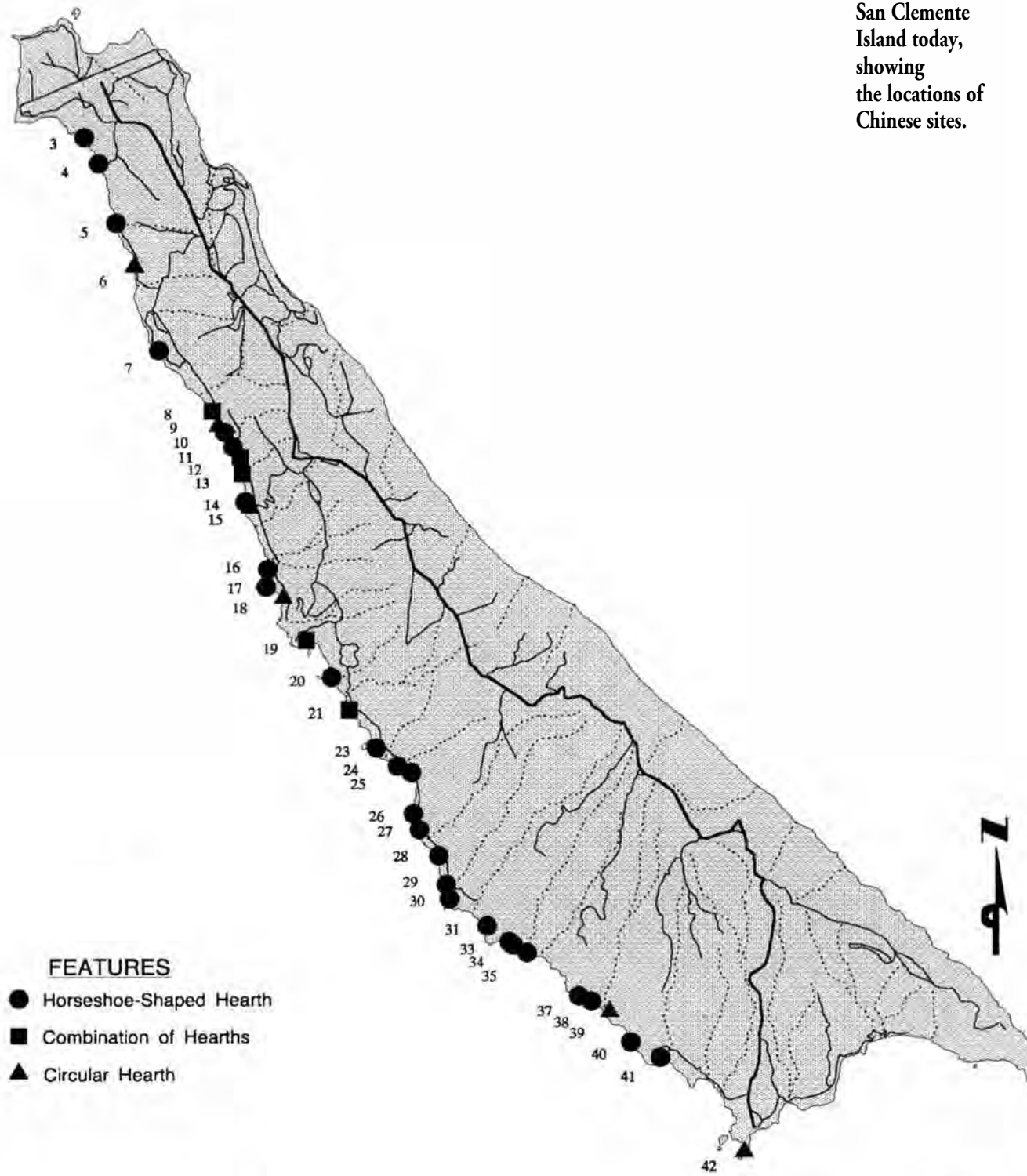
and shipped to China, a labor-intensive endeavor conducted by small, organized groups of Chinese fishermen.

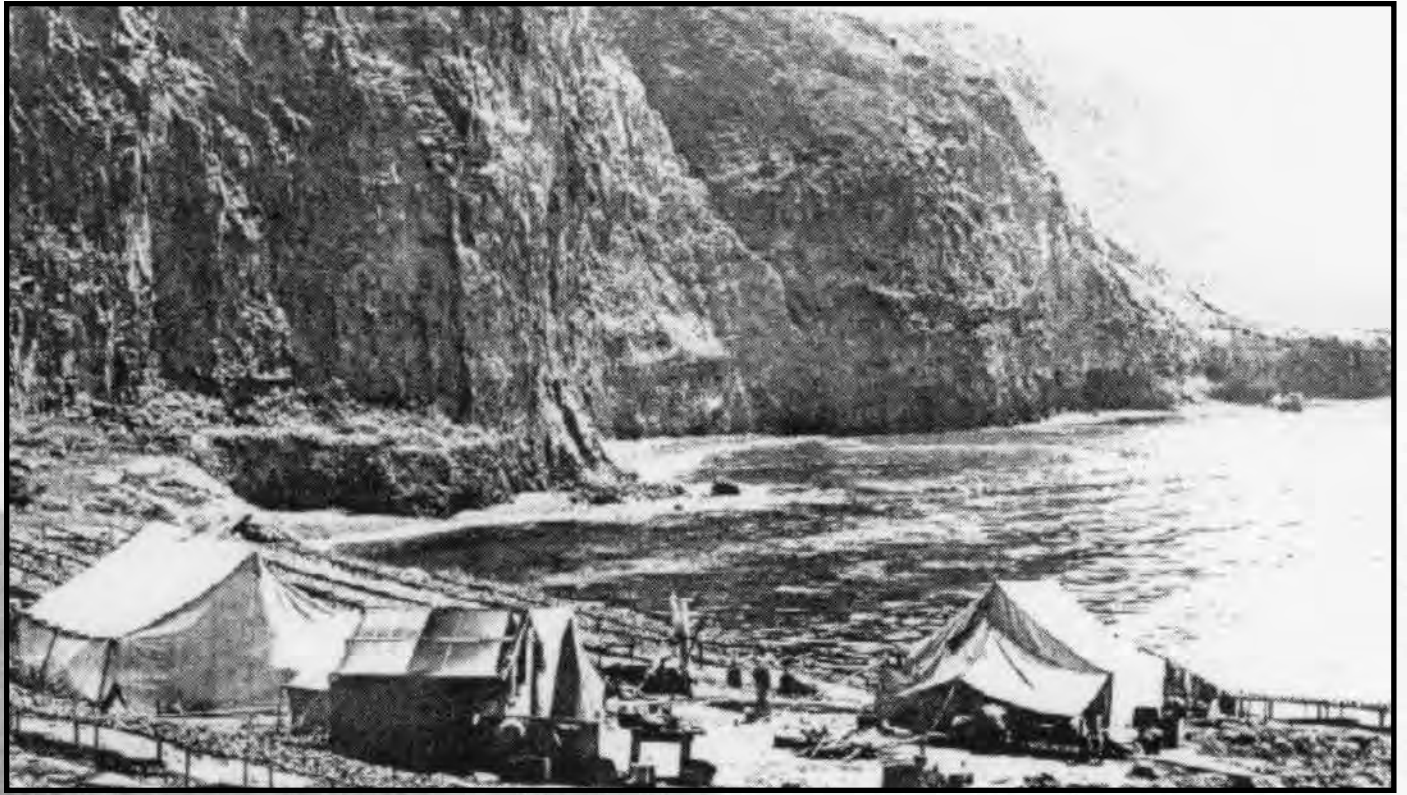
The black abalones found in Baja California and the Channel Islands were considered to be of a higher quality and larger size than those collected in other areas, and they formed the majority of the abalone which was shipped from San Diego.² By the 1880s, San Diego shipped 35.5% of all abalone meat and 41.4% of all abalone shells exported from the U.S..

The earliest reference to abalone harvesting by San Diego's Chinese fishermen appears in 1856, while the presence of Chinese fishermen on San Clemente Island is documented between the late 1870s and the early 1900s.³ Fishermen concentrated exclusively on drying and selling the meat prior to the late 1860s, when renewed interest in lacquerware and inlaid woodwork, and increased construction needs for plaster created demand for abalone shell. Then, as an observer noted in 1876,

some enterprising white men began to manufacture little 'curios' from the shell, and some time thereafter an ever increasing demand for the 'curios' prompted the Chinese to stake out their share of this new enterprise.⁴

San Clemente
Island today,
showing
the locations of
Chinese sites.





Hot work: Japanese fishermen on San Clemente Island around 1913 boil abalones.

Courtesy San Diego Public Library



These tents and abalone drying racks on San Clemente Island around 1913, though Japanese, suggest the likely appearance of the camps of the Chinese fishermen who preceded them.

Courtesy San Diego Public Library

Chinese immigrants were not the first to recognize the commercial value of abalone. Spanish and Mexican settlers harvested limited amounts of the shells for ornamentation during the late 1700s and early 1800s. Unlike the Chinese, however, they did not eat the meat. The early market for abalone was exclusively an Asian one, and export records from San Francisco for 1859, 1860, and 1861 show that

the mollusks composed one-seventh of all U.S. exports to China. Chinese tastes also did not initially extend to the Euroamericans who supplanted the Spanish-speaking settlers as California's dominant ethnic group, for, as a newspaperman noted in 1883, "... Yankee-Californians had not yet discovered that pounding and brief cooking rendered the univalves edible." When this same reporter "questioned what peculiar charm this dried meat has for the celestial palate," he decided that "it much resembled in consistency, color, and odor a piece of veteran sole leather."⁵

Before the meat was shipped back to San Diego, it had to be dried to prevent it from spoiling and to reduce the bulk and weight of the catch. Readers of *Overland Monthly* magazine learned in 1913 that the mollusks

were removed from the shell, salted for several days, thoroughly cooked in boiling water and dried in the sun. After they have

These Japanese abalone drying racks at Turtle Bay, Baja California, are similar to those used earlier by the Chinese.

Collection of Toshiye C. and Donald H. Estes



been well dried they are again cooked, smoked for twenty-four hours, given a third boiling and once more set out on trays to dry, this time for a period of six weeks.

They are then given a final bath to remove any dirt that may have accumulated, and are ready to ship...⁶

Small camps were set up around the vats and trays to protect the meat from birds and other scavengers. There, after approximately two months of drying, the abalone meat was placed in sacks weighing roughly one hundred pounds each and shipped to San Diego, the nearest port.⁷

Life on this isolated island was harsh. There was no source of fresh water, and the boiling vats required frequent refilling with sea water. No regular supply ships were available in case a worker was injured, a rice bowl was broken, or a piece of equipment was lost.

By the close of the nineteenth century, Chinese fishermen lost their dominant position in the abalone fishery, a result of legislation enacted in a climate of widespread racism and desire to limit foreign control of the fishing industry. Abalone harvesting on the islands, however, continued in the early twentieth century with an influx of Japanese divers, who themselves were pushed out of the industry by the time of the Second World War.

By 1906, however, at least one commentator recognized that abalone had a future as a delicacy outside the Asian community:

Consumption by Americans has been tentative, but demand has increased via advertisements; they are sold in cans, claiming to be recommended by physicians for its strengthening and invigorating qualities.

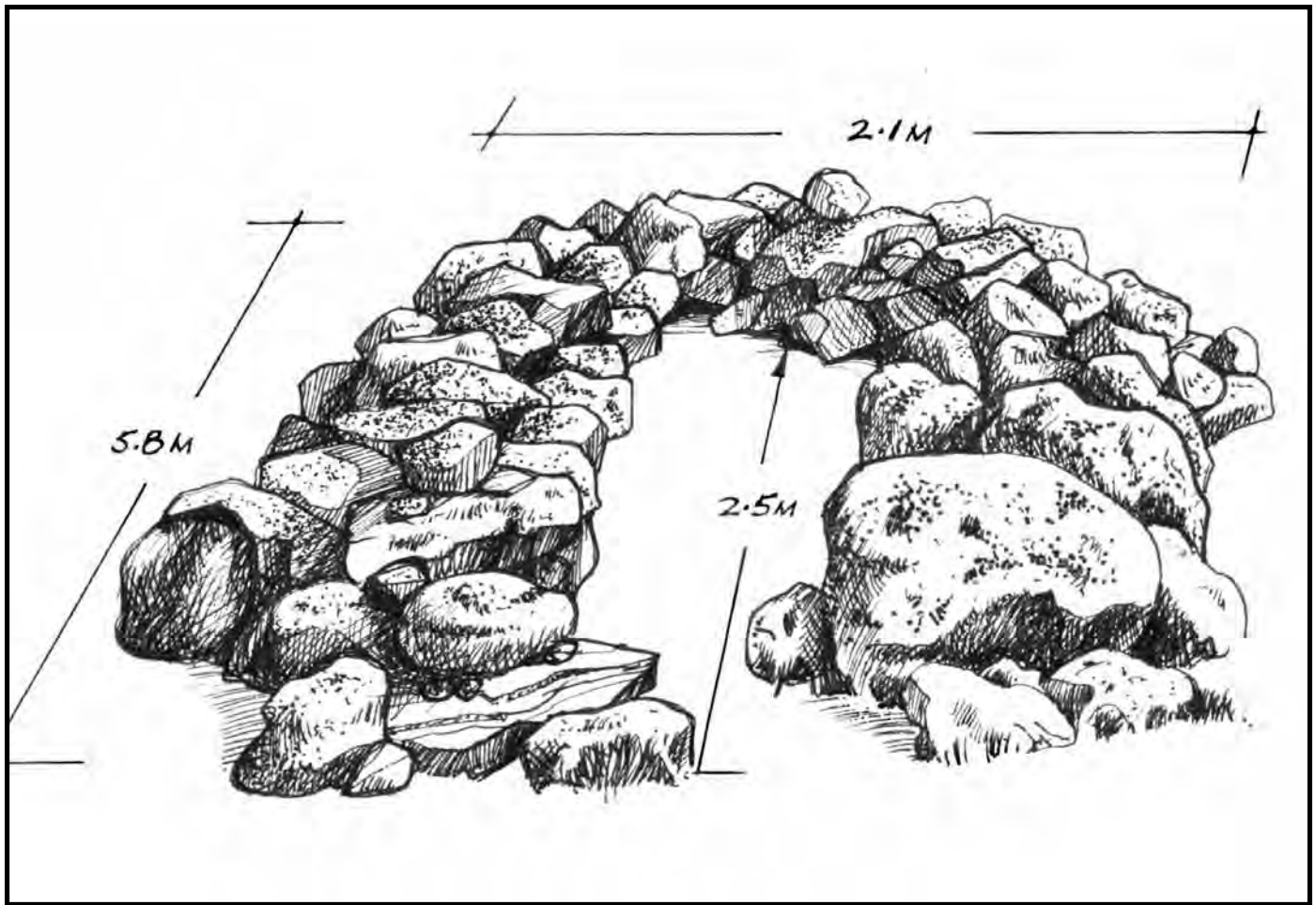
Longstanding negative perceptions of abalone meat continued, however, enough so that at least one manufacturer marketed them as “Eno Laba” – abalone spelled backwards.⁸

In recent decades, intensive archaeological investigations of Chinese sites have been conducted on San Clemente and San Nicholas Islands. Many of these sites include stacked rock features, remnants of shelters, windbreaks and tent pads, and hearths, which vary in form from horseshoe-shaped to circular. These horseshoe-shaped hearths appear only in conjunction with Chinese sites.

As one might expect from people who essentially lived on their boats and owned few possessions, the fishermen left little behind. At most sites, archaeologists have found

fewer than fifty artifacts, which include storage vessels, rice bowls, fragmented glass, buttons, and opium tins. The true legacy of the Island’s Chinese fishermen, though unacknowledged, continues in the form of a once-scorned delicacy, which (when available) now costs from thirty to forty dollars per pound. “Californians,” a perceptive observer commented in 1913, “once laughed at the crazy Chinese for eating abalone, but now epicures have adopted this delicacy who give no thought to who introduced it as a food in the first place.”⁹

- 1 For more detailed information, see Judy Berryman, “Archival Information, Abalone Shell, Broken Pots, Hearths, and Windbreaks: Clues to Identifying Nineteenth Century California Abalone Collection and Processing Sites, San Clemente Island: A Case Study (Ph.D. diss., University of California, Riverside, 1995).
- 2 George Goode, ed., “Fisheries of San Diego, Los Angeles, and Ventura Counties,” in *Fisheries and Fishery Industries of the U.S., Section II- Review of the Fisheries Industries* (Washington, D.C.: Government Printing Office, 1887.): 596.
- 3 Thomas O. Larkin, *The Larkin Papers*, G. Hammond, ed., Vol. 10 (Berkeley: University of California, 1964): 283.
- 4 Fairbanks, 461.
- 5 *San Diego Union*, October 1883.
- 6 Charles Edholm, “Steaks and Pearls from Abalones,” *Overland Monthly* 62 (4), 1913: 384. The meat was dried on trays, “lath-like strips of wood” placed about eighteen inches from the ground, which each held an average of one hundred abalones. B. Williamson, “The Haliotis or Abalone Industry of the California Coast: Preservation Laws.” Part 1, *Historical Society of Southern California* 7, 1906: 25.
- 7 “...only about ten pounds of meat is produced from one hundred pounds of shell/meat; shrinkage is estimated at roughly 90%.” Williamson. An 1871 *San Diego Union* article estimated that 72 tons of abalone was shipped to San Diego and thence to San Francisco; 1880 figures indicate that between 900 and 960 tons were shipped.
- 8 Williamson, 23.
- 9 Mark Newmark, ed., *Harris Newmark: 60 Years in Southern California, 1853-1913* (New York: Knickerbocker Press, 1916): 261.
- 10 Joe Brennan, interview, San Diego, 16 September 1972, San Diego Historical Society Oral History Collection.



Chinese-built rock enclosures, like this one found by the author in an archaeological survey on San Clemente Island, may have been windbreaks.

Editor's Note:

Abalone camps on the Channel Islands occasionally served another purpose as well, as "way stations" where Chinese immigrants brought north from Mexico would await vessels to smuggle them ashore. One such incident on Catalina Island in September, 1900, was recalled by Joe Brennan, who as an adolescent had been a crewman aboard the notorious smuggling schooner Lou:

We got up to the cove where the Chinese had been gathering these abalones and drying them, and loaded them aboard. We started home with a pretty fair wind. When we got off Pt. Loma I wondered why we didn't go into port, but we just kept sailing back and forth until it got dark. After dark we went on in and dropped anchor down by the Santa Fe wharf. [Captain] Goddard said to me, "Joe, these old fellows have been up at that island for a

long time and they want to get home. Do you want to row the Chinamen into the dock tonight?"

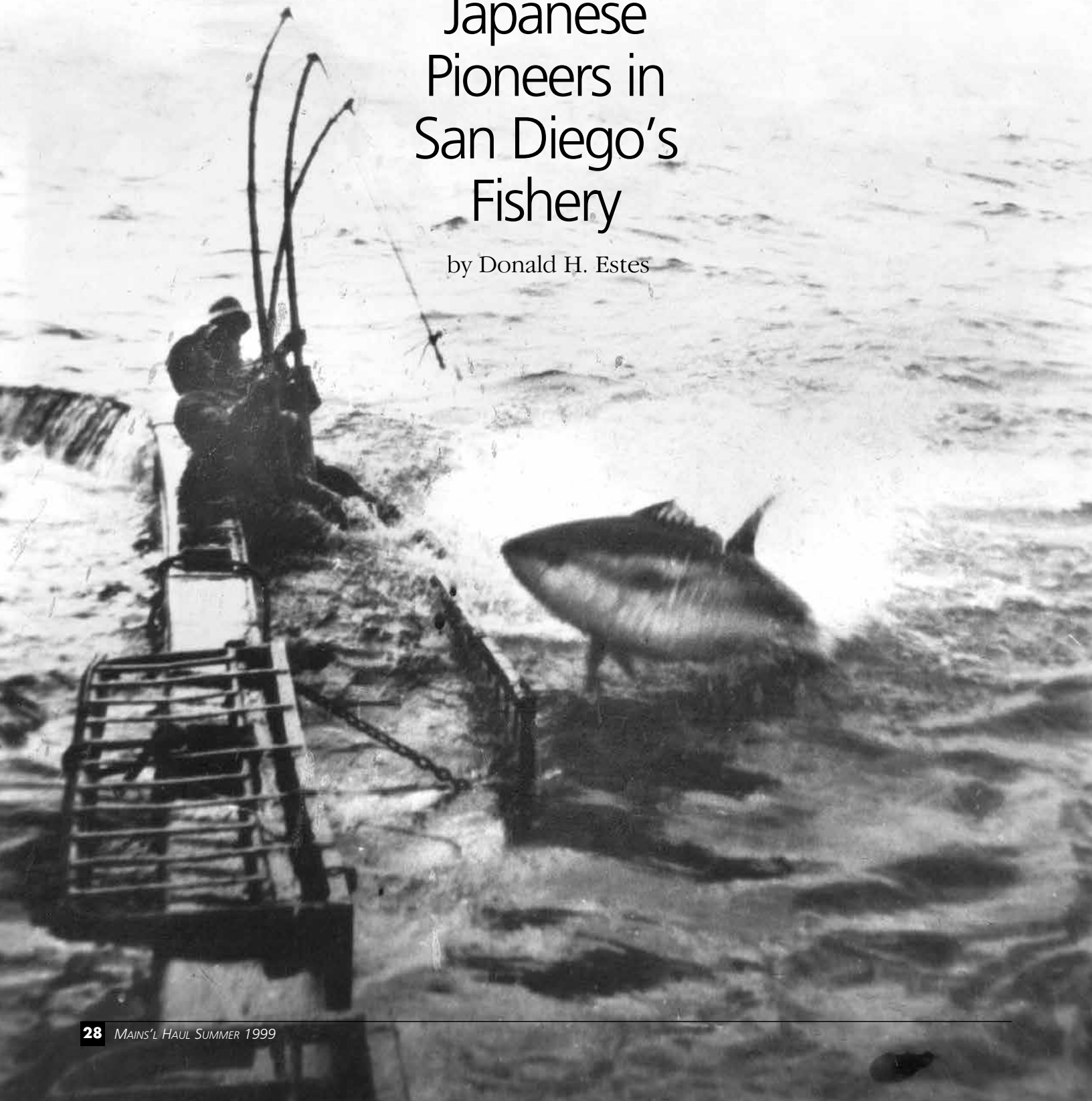
I said, "Well, if you say so. You're the boss!" So he said I should take them ashore. We got the Chinamen in the skiff and I rowed them in the dark and landed them at the foot of 2nd Street or 3rd Street where Chinatown was in those days and I never figured until afterward that maybe there were about a half-dozen Chinamen that didn't go from San Diego up there to get abalones, but that they had picked them up while at the island. So, therefore, we were really smuggling them in.¹⁰

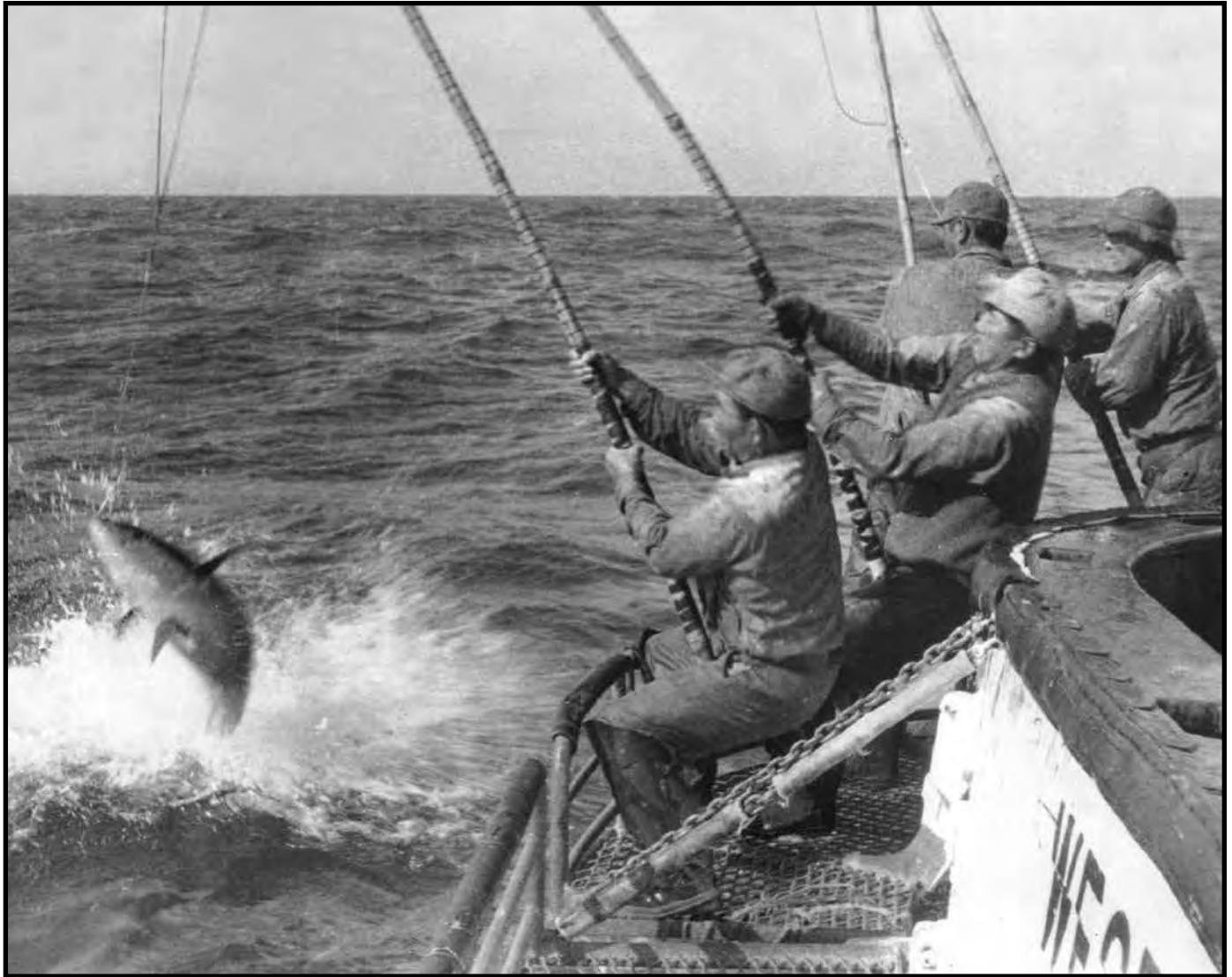
Other illegal immigrants besides the Chinese found the islands a convenient and rarely-patrolled stopover, and smuggling of all kinds has long been commonplace there.

Silver Petals Falling:

Japanese
Pioneers in
San Diego's
Fishery

by Donald H. Estes





Above: Two fishermen haul an albacore aboard the *Westgate* around 1939.

Collection of Toshiye C. and Donald H. Estes

Definitely a three-pole fish: the snapshot at left of Kiyoshi Koga, Masaru Nakamura, and Shigeji Imahashi struggling with a three-hundred-plus-pound albacore was eagerly passed among San Diego's Japanese fishing community in the early 1930s.

Collection of Toshiye C. and Donald H. Estes

For the first three quarters of the Twentieth Century, fishing formed a major component of San Diego's economy. San Diego has the good fortune to be located on the periphery of one of the greatest marine habitats on our planet, and this community has always held close ties with the sea. In terms of commercial fishing, however, the region had to wait until the late nineteenth century and the arrival of the Chinese, the first in a line of ethnic fishermen who pioneered an industry.

The rapid Chinese entry into the local fishery can best be explained by the fact that at the time fishing represented one sector of the local economy where there were few race-based restrictions and only minimal competition with whites. The success of the

early Chinese fishermen was quickly offset by a rising tide of anti-Chinese feeling which ultimately produced punitive state and federal legislation designed to drive them out of business.

The collective impact of these legislative attacks coupled with the volatile racial mood in California, brought a virtual halt to the extensive fishery that had been established in San Diego. As the Chinese departed, never to return, the local fishery was left to stagnate as a handful of fishermen struggled simply to sell their catch to local markets.

As the nineteenth century closed, there was some renewed interest in the fishing potential of the San Diego area. Local Italians and Portuguese began to expand the



Aboard a small boat off the Baja California coast in the late 1920s, a helmeted diver prepares to dive for abalone.

Collection of Toshiye C. and Donald H. Estes

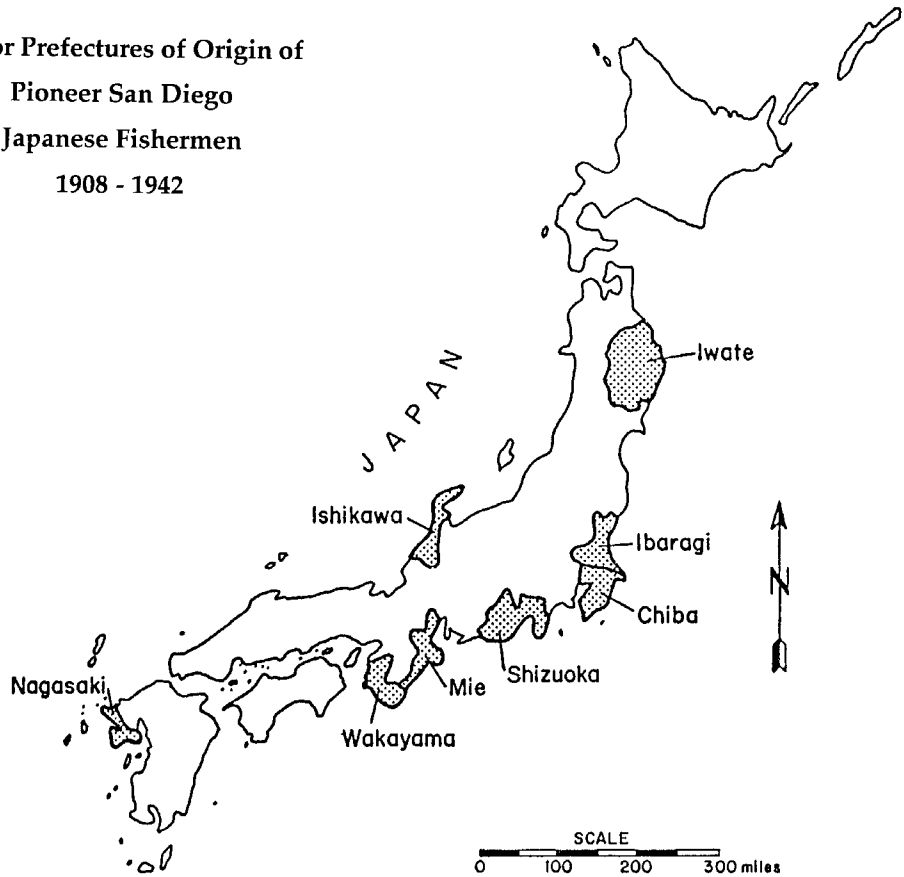
market, but were frustrated by the American public's general reluctance to embrace fish as a regular part of their diet. The problem of public acceptance was further exacerbated by the lack of technology required to ship fish products any great distance and still maintain a competitive price.

The Japanese entry into the local fishery was initially both inconspicuous and tentative. In July 1899, two fishing boats owned and operated by Hatsuji Sano sailed out of San Pedro, dropped anchor in San Diego Bay, and began fishing. The men working the boats had all been fishermen in Japan and hailed from Wakayama Prefecture and the Island of Shikoku. A measure of the level of success of these first Issei was that local Japanese working the salt pans in the South Bay quit their jobs and joined Sano's crew, forming the nucleus of a new fishing community.¹

Buoyed by the fishermen's optimistic reports, Jirohichi Kikuchi moved his small fleet of three boats from San Pedro to San Diego in June 1908 and began to collect and process abalone from as far south as Punta Banda in Baja California. Eschewing the Chinese methods of collecting abalone, Kikuchi harvested the mollusks utilizing two methods popular in Japan. The first technique involved a two-man team in a small boat wielding a long bamboo pole with a steel hook attached to one end. The second method was to employ a diver in a suit and helmet. The abalone was then dried on the peninsula and shipped to Japan.²

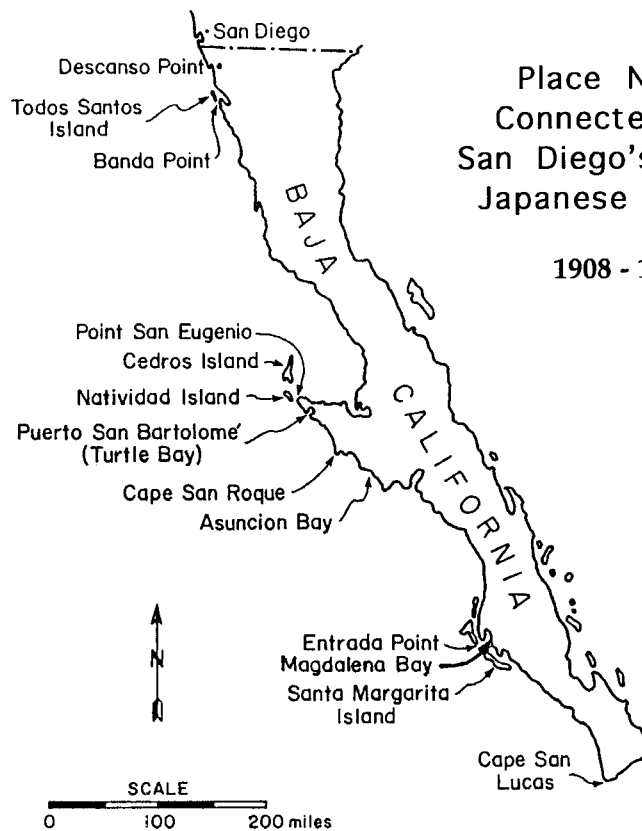
The large-scale entry of the Issei into the local fishery appears to have been triggered by two major events. The first of these came in 1911 when the price of albacore rose to fourteen dollars a ton with the result that a number of local Japanese who had

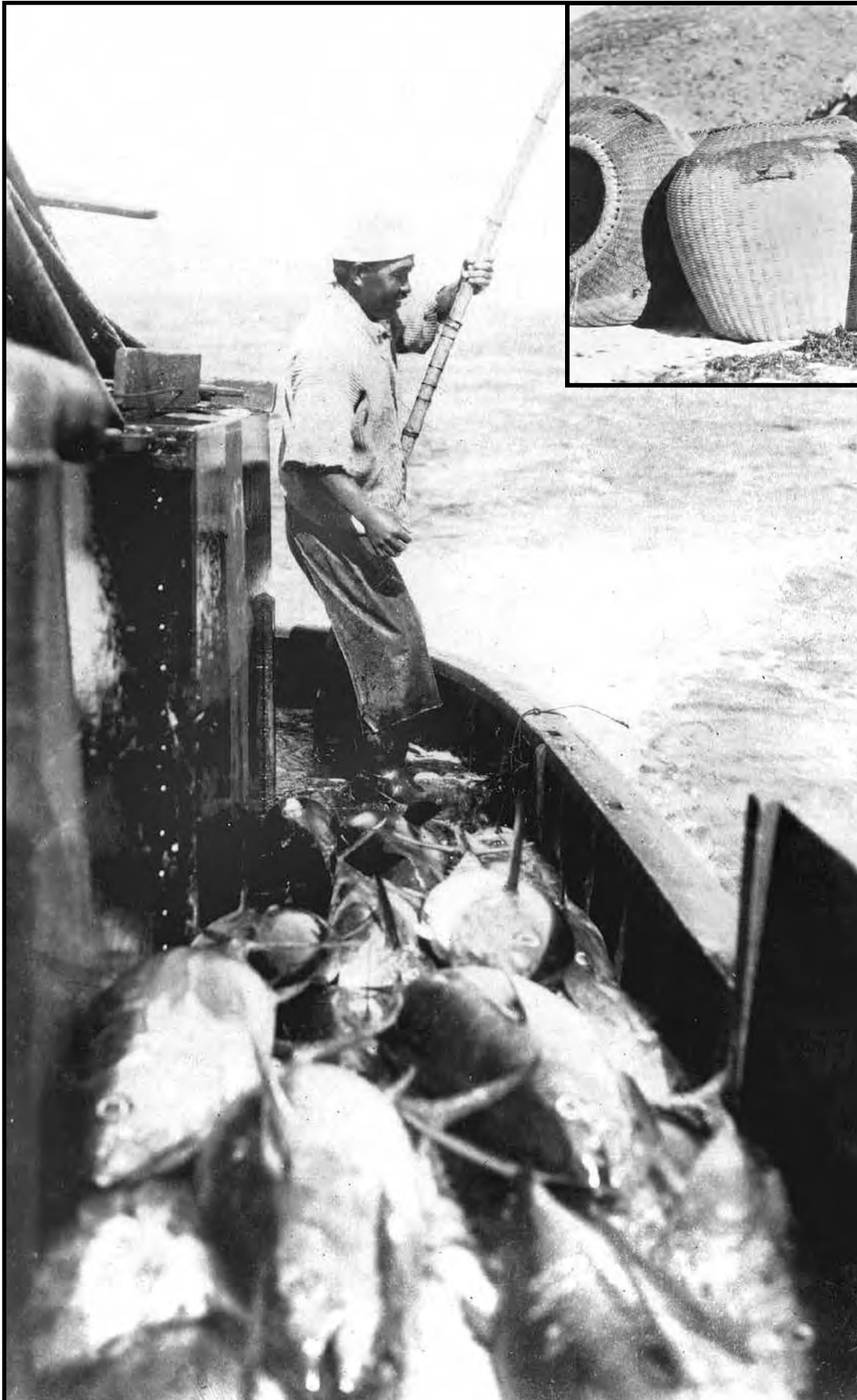
**Major Prefectures of Origin of
Pioneer San Diego
Japanese Fishermen
1908 - 1942**



**Place Names
Connected with
San Diego's Pioneer
Japanese Fishery**

1908 - 1942





Huge baskets held abalone meat as it was shipped north to San Diego from Baja California. The viscera, shipped separately, were boiled in soy sauce to make *tsukudani*, a side dish popular with beer drinkers in Hawaii and Japan.

Collection of Tosbiye C. and Donald H. Estes

A good catch of albacore destined for a San Diego cannery clearly pleases this fisherman, probably aboard the Southern Commercial Company's *Enterprise* in late 1925.
San Diego Historical Society Photograph Collection



The *Toni Maru* and a British collier, the *Boyne*, ride at anchor in Turtle Bay, Baja California, in 1915. The *Toni Maru* made several trips from her home port in Yokohama carrying fishermen to San Diego. Today, Yokohama is San Diego's Japanese sister city.

Collection of Tosbiye C. and Donald H. Estes

been engaged in other occupations switched to fishing. The increasing legal pressure exerted by white farmers and politicians intent on denying ownership or even use of agricultural land to the Issei also encouraged them to alter their occupational patterns. With the adoption of California's Alien Land Law in 1913 many Issei moved into the local fishery which was, at this point in its development, still an occupation in which anyone willing to work long and hard was welcome.³

The second event was the arrival in San Diego of Masaharu Kondo, the man who by all Japanese accounts is credited with opening up the San Diego-based fishery to the Issei. Born in Kyoto less than twenty-five years after Commodore Perry arrived in Japan, Kondo was a graduate of Japan's most prestigious school, Tokyo Imperial University.

Upon graduation he was immediately hired by Japan's Imperial Fishery Institute. The Institute had been established by imperial decree in 1905 for the express purpose of planning the modernization of Japan's fishery. The cornerstone of the plan was the Pelagic Fishery Encouragement Act which included government funds for establishing fishery schools, building marine research vessels, and even providing direct government subsidies to individual fishermen.

As a member of the Institute's Board of Commissioners, Kondo was directed to make a world tour for the purpose of studying fishing technology outside Japan. In June 1908, the same month Jirohichi Kikuchi began hauling Baja California abalone aboard his boats, Masaharu Kondo stepped off the train in San Diego.

Kondo, a scholar with the eye and brain



of an entrepreneur, quickly recognized the untapped potential offered by San Diego and the West Coast of Baja California. Sensing that his immediate future lay in the San Diego area, Kondo immediately began making important social and financial contacts throughout Southern California. By far the most important of these contacts was with Aurelio Sandoval, President of the Los Angeles-based International Fisheries Company, which held the Mexican government's exclusive concession to the fisheries in Baja California.⁴

With Sandoval's promise to keep in close contact, Kondo completed his world tour and returned to Japan in 1910. Kondo spent the next year working for the Institute and, on the side, he scoured the country in search of venture capital for his proposed West Coast enterprise. In early 1912 Kondo returned to San Diego with the cash necessary to launch

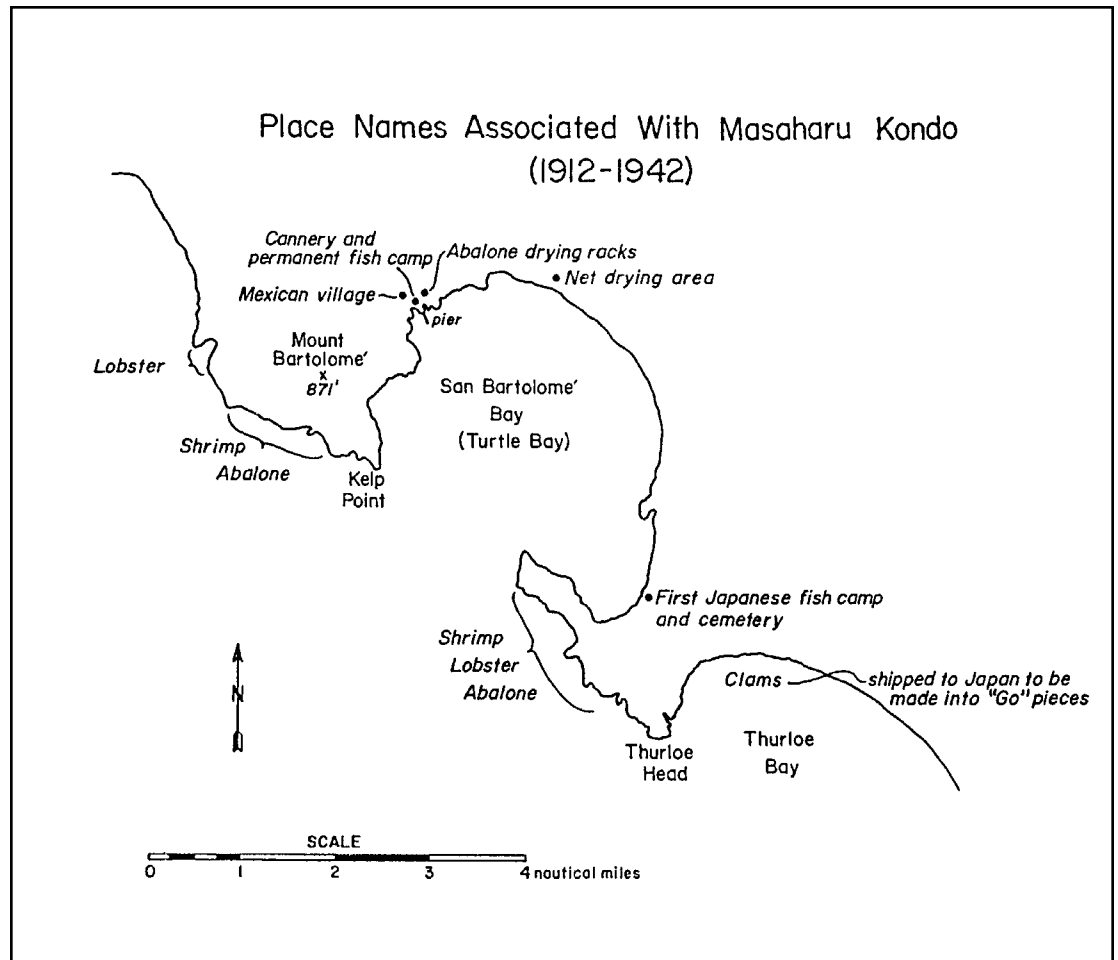
his new business. Upon arrival Kondo discovered Mexico in the throes of revolution. Covering all eventualities he quickly entered into negotiations for fishing concessions in Baja California with the administration of President Porfirio Díaz and followed up by obtaining a covert agreement from the rebel government headed by Francisco I. Madero. Next, he incorporated the Lower California Mexican Industrial Development Company as a legal entity in the state of California, and sent his men to begin gathering and drying abalone at Turtle Bay, Baja California, for markets in China and Japan.⁵

Yahachiro Inouye, one of the first contract fishermen Kondo brought to Turtle Bay, remembered it as a rich environment:

Abalone were found in abundance. It was common to find them in layers of twelve or thirteen. Now [1979] it is considered

Chickens, raised on the by-products of the catch, peck around the abalone drying racks at Turtle Bay, Baja California, in the late 1920s.

Collection of Toshiye C. and Donald H. Estes



good if a diver catches fifty or a hundred kilos of abalone. At that time divers used to catch five to six tons a day. Those using hooks [from small boats] could catch a ton a day.⁶

Kondo, however was by no means the only Japanese who recognized the potential of the local fishery. Lured by the promise of high wages, other Issei with a wide range of fishing experiences began to settle around the growing Japanese community that was centered on Fifth and Island streets. By 1913 San Diego, like other West Coast cities, had its own independent fishermen's association. The local group, headed by Kichisaburo Nakamoto and Ichimatsu Hamaguchi, was incorporated with the State of California as the Japanese Fishermen's Association of San Diego. Hamaguchi in particular was a tireless organizer and worker. Stories are still told of his patient attempts to teach the skills he had learned over a life-

time at sea to men who had always been farmers. The majority of local Japanese fishermen, however, were experienced practitioners of their trade who brought with them techniques and equipment that set the standard for the growing fleet of tuna boats operating out of San Diego.⁷ From the technological perspective, the stage was now set for the expansion of an industry that would eventually put the food products of San Diego on the nation's tables, yet one significant element remained missing — consumer demand.

In the second decade of the twentieth century, Americans were not a nation of fish eaters. It ultimately required a world war to modify our long-held dietary habits. Assisting the American people to survive the patriotically-inspired "meatless" days of World War I were a number of protein alternatives, of which by far the most successful was canned tuna.

For the firm, white meat, tasting a good deal like chicken, it was simply a matter of the right product being available in commercial quantities at the right time. By 1914, the supply of inshore market fish was depleted to the point that local fishermen were pushed further out to sea, where they began to harvest

large catches of tuna. Of equal importance to the industry was the concurrent development of a method that successfully allowed the canning of tuna. It was this breakthrough that facilitated the marketing of the product to the interior areas of the United States.⁸

By 1918 the size of San Diego's Issei-owned or -operated fleet had grown to over forty-five boats and the membership of their five-year-old fishermen's association to over two hundred working fishermen. The rapid growth in the number of Japanese fishermen in the state drew the attention of the California Fish and Game Report Commission,



which reported that between 1915 and 1920, the percentage of Japanese among the state's fishermen more than doubled.⁹

In 1923 the United States Department of Commerce stated that the "Japanese in San Diego make up 50 per cent of the crews [of

fishing boats], 30 per cent are Italian, 10 per cent are Portuguese, and 10 per cent are Americans."¹⁰ Economic conditions were good enough that the Issei fishermen's association built a new hiring and meeting hall at the foot of Crosby Street near the Van Camp Cannery.¹¹

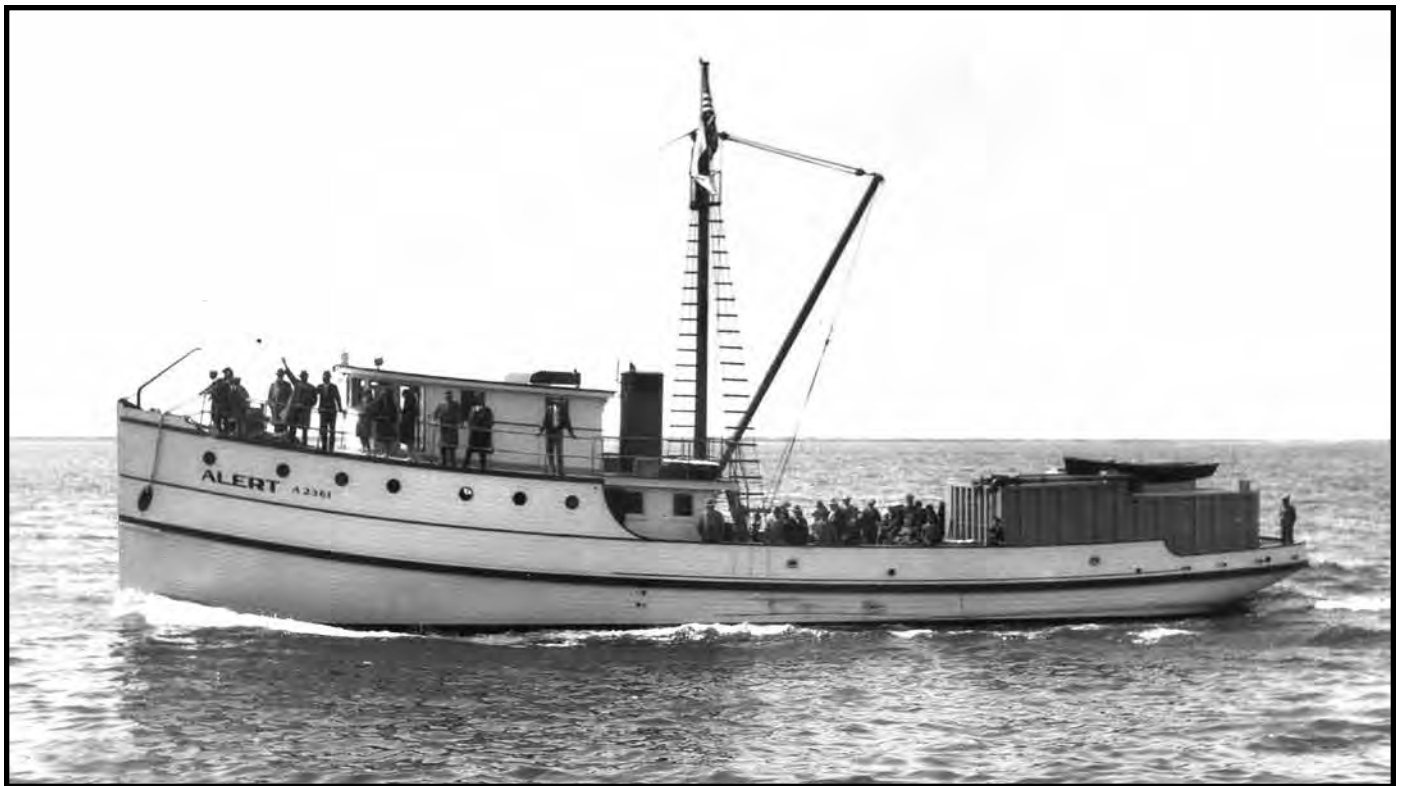
By using the advanced technology they had brought with them from Japan, Issei fishermen rapidly gained a reputation for quick voyages and full boats, a fact that did not go unnoticed by local Italian and Portuguese tuna men. Within months, Japanese methods and technology were in use throughout the fleet.

Left: Looking every bit the entrepreneur and political activist that he was, Tokunosuke Abe turns on the charm in his Crosby Street office in 1940.

Collection of Toshiye C. and Donald H. Estes

The Depression does not seem to have dimmed the spirits of those aboard Abe's newly-launched tuna boat *Alert* in 1930. Abe stands proudly just forward of the pilot house.

San Diego Historical Society Photograph Collection





Fishermen relax around 1938, perhaps happy that their boss, Tokunosuke Abe, had recently won a U.S. Supreme Court case, *T. Abe v. California Fish and Game Commission*, which was centered around their boat.

Collection of Toshiye C. and Donald H. Estes

Off the Baja California coast in the late 1930s, the *Westgate's* Japanese crew prepares to load the bait they have netted.

Collection of Toshiye C. and Donald H. Estes



The first items to be universally embraced were the strong yet flexible bamboo poles seen on all Japanese boats. Soon the use of one-, two-, three- and even four-man poles allowed the landing of ever larger fish. The appeal of the poles, as opposed to nets, was that they minimized damage to the catch.

Motosuke Tsuida, who skippered his own boat, the *White Cloud*, described what Japanese fishermen still call, “the pole method:”

The Italians and Portuguese were very good fishermen. We learned from them and they from us. They were good, but they didn’t know about the advantages of the bamboo pole. They used nets at first, and it took too long to get the tuna free, plus the fish were usually damaged in the process.

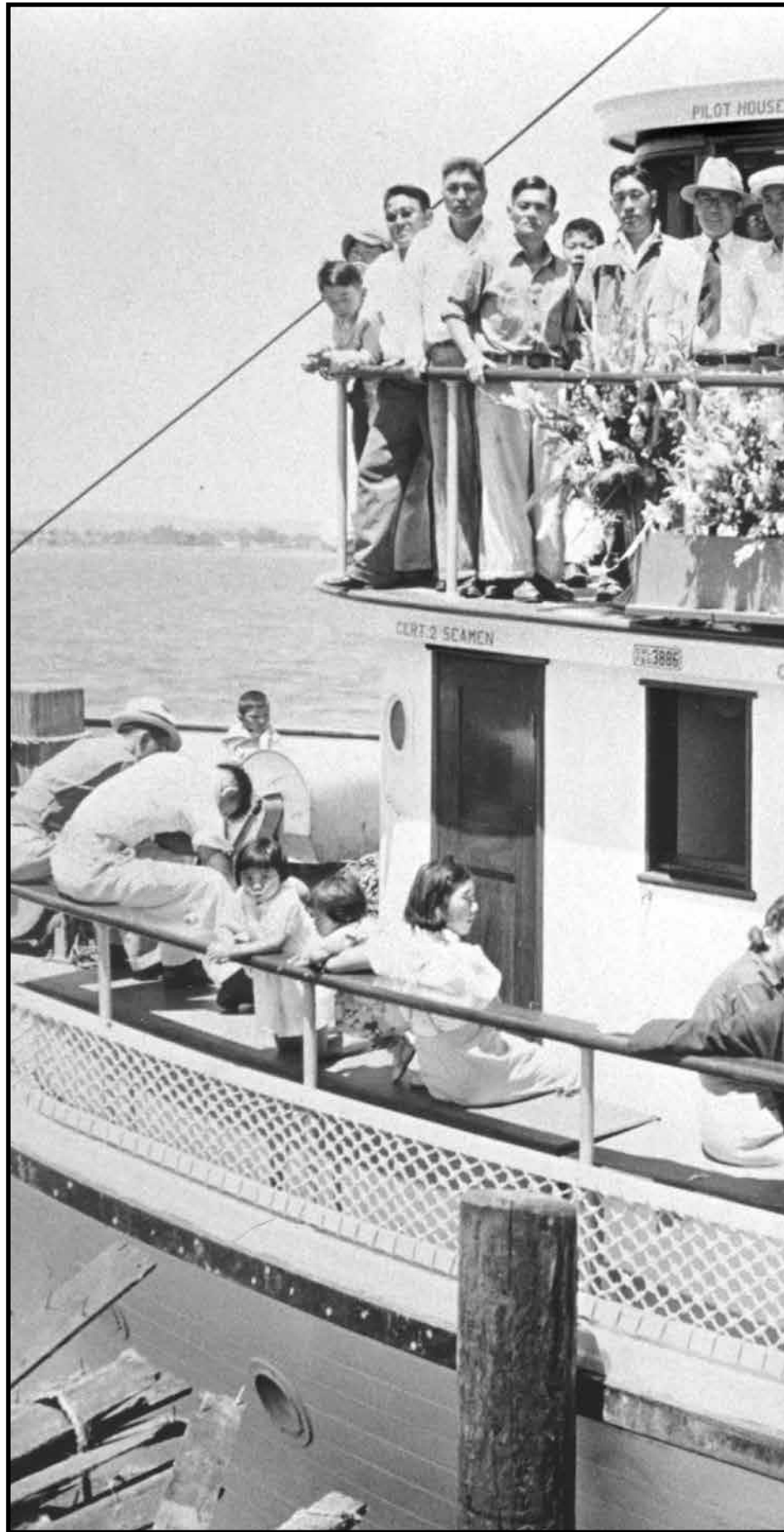
Using the pole the Japanese fishermen could catch the fish fast. Our men fished with a certain rhythm and the fish would come off the hook in mid-air. From a distance the tuna looked like silver petals falling from a tree.¹²

Facilitating the rapid removal of the tuna from the line was another Japanese innovation – the “squid.” A “squid” was in fact a barbless hook introduced into this area by Takezo Taniguchi. Taniguchi was hired by the State of California following World War I to conduct an extensive fishery survey of Southern California. Later, Kondo employed Taniguchi to conduct a similar survey of the West Coast of Baja California. In 1928 Taniguchi left Kondo’s employ and opened a fish and poultry market on the corner of Fifth and Market in downtown San Diego. As a sideline he began to offer fishing equipment imported from Japan such as bamboo poles, and a new item: mass-produced barbless hooks, which became the basic component of the “squids.”

To assemble a “squid,” a member of the Taniguchi family secured a cluster of hackle feathers from a rooster to the shank of a

Virtually all of San Diego’s Japanese community was invited to major events like the 1936 maiden voyage of the ill-fated *Vantuna*. Within a month she capsized and was ignominiously towed home upside down; refitted, she later burned.

Collection of Toshiye C. and Donald H. Estes







hook, by wrapping it in dried chicken skin. The finished “squid” was then attached to one-, two-, three- or four-pole swivels depending on the size of the hook.

Within a short time Taniguchi was catering not only to Japanese fishermen but to Italians and Portuguese as well. Six months later the market was closed and the operation devoted exclusively to the needs of the local tuna fleet.¹³

Another Japanese fishing technique that the fleet adopted with alacrity was “chumming,” a practice widely used in Japan but unknown on the West Coast. The early Issei fishermen knew from experience that tuna would strike at live bait if certain conditions were present. As Captain Tsuida explained it:

Tuna are very strange. We knew that when they had nothing in their stomach, they would not eat. After they have something in their belly they go crazy and will strike at anything. Today you call this a feeding frenzy. In Japan we learned to open the belly of the first tuna [and throw the entrails overboard] to see if the catch was going to be good.¹⁴

Koshiro Miura, who supervised Kondo’s fishermen in Mexico, described the chumming operation: “One man was designated to throw live bait into the water in one place to bring the tuna together. That job needed special skill and was usually done by an old and experienced fisherman.”¹⁵

Between 1915 and 1921 many of the Issei fishermen began to marry. Initially their goal had been to make *icibiman doru*, or ten thousand dollars, and return to Japan. According to Taketaro Enomoto, another of Kondo’s fishermen,

I think that the best men saved about seven or eight hundred dollars a year at that time [1927 to 1933]. You could work four years and save two or three thousand dollars. That was like five or six thousand yen. If you wanted to build a nice house in our village it would cost you three or four hundred dollars. If you could save five or six thousand dollars you would be a very, very rich man. That’s why we did everything we could to save money.¹⁶

Even in America, however, wealth proved an elusive commodity, as some of these men began to think about establishing homes and families here.

Because relatively few single Japanese women chose to emigrate to the United States, there was a distinct scarcity of Japanese women in America. Compounding the problem for Issei men were California’s strict anti-miscegenation laws. In these circumstances many Japanese men turned to the time-honored custom of the *omiai* or arranged marriage. With the aid of family or friends in Japan, couples were united by proxy and the new brides sailed for the United States. On their arrival in San

Japanese and Mexican women labor side by side in the Van Camp cannery about 1930. Both Fuji Nakamura (second from right) and Take Minemide (front row, second from right) were married to fishermen.

San Diego Historical Society Photograph Collection



Flowers bloom behind Mrs. Nakamura, a cannery worker, on the pier at the foot of Crosby Street. Families attempted to make homes for themselves in spite of the primitive conditions. Next to her sits Michio Himaka, whose mother Kazuye stands at far right.

Collection of Toshiye C. and Donald H. Estes

Diego many women found employment in the canneries that their husbands kept supplied with tuna.¹⁷

San Diego's Van Camp Sea Food Company provided housing for the families of some of their Japanese fishermen. The area known as "Fish Camp" was located on a pier in back of the cannery that extended out over the bay. Here in primitive conditions, Issei families lived in board-and-batten shanties and bore their American children: the Nisei.

A second Japanese fish camp, connected with the Westgate Cannery, was established further up the bay at what is now the intersection of Kalmia and Pacific Highway. Because the Westgate camp was six miles north of Van Camp, the residents christened their community "Hokkaido" after Japan's northernmost island.

Both parents of Hideko "Bubbles" Shimazaki worked for Westgate, and she was born across the street from Hokkaido. Bubbles remembers going to classes at Washington Elementary School, and having a number of Italian playmates whose families

also fished. They all used to swim together at a small beach next to the Coast Guard Station. As a child she was frequently invited to the homes of her Italian friends, though the Japanese families, however, did not shop in Little Italy.

The Italians kept pretty much to themselves. We had more contact with the Mexican workers who were employed by the cannery, especially the women who worked the line together. There were about an equal number of Italian, Japanese, and Mexican women working there.¹⁸

Local cannery operators, particularly Van Camp, quickly recognized the financial advantages of supporting one of the most productive sectors of the fishing community. As early as 1914, the Pacific Canning Company agreed to finance the purchase of tuna boats for Issei fishermen in return for a percentage of the catch as repayment on the loan.

In discussing the financial assistance offered to Issei by local canneries, Taju Koide, Captain of the *Enterprise*, pointed out that: "On shore, the law would not allow



us to own land, but at sea, one good trip and you owned the boat.”¹⁹

In 1924 Kondo’s expanding operation sailed two newly constructed fishing vessels from Japan to San Diego. The arrival of the *Haruna Maru* and the *Chichibu Maru* generated considerable local interest, as they were among the first fully-refrigerated boats in Southern California. Four years later, Kondo completed the construction of his cannery at Turtle Bay, where he pioneered a technique for canning abalone whole that is still in use today.

During the 1930s, Issei and a scattering of young Nisei were an important component of the local fishing fleet. The decade also saw them direct an increasing amount of time and effort toward fighting off discriminatory legislation issuing from Sacramento.

Between 1919 and 1933, seven bills were introduced into the legislature to deny commercial fishing licenses to persons of Japanese ancestry. Each of these pieces of legislation

was turned back by a strong coalition of both Japanese and non-Japanese fishermen’s associations and the state’s cannery interests. In 1933 the legislature succeeded in placing a restrictive change in the California Fish and Game Code which effectively denied commercial fishing licenses to the Issei.

These new regulations were immediately challenged in the courts by Tokunosuke Abe, President of San Diego’s Southern Commercial Company, whose twenty-one vessels composed the largest private fleet of tuna boats on the West Coast. In 1935, the state supreme court upheld Abe’s contention that the offending statutes represented discrimination based on race and as such were violations of both the California and United States constitutions. Three years later Abe spearheaded another drive to defeat new state legislation designed to restrict the role of Japanese in the state fishery. He and his coalition were again successful and the legislation was defeated.²⁰

New Year’s Day, 1934, at the Crosby Street fish camp. Next to Yaniko Okamoto, standing at far left, crouches Takichi Namiki (“Nami-ki-San”); kimono-clad Michiko Sakaguchi stands in front of her father Tomkichi, alongside her friend Asako Kobayashi.

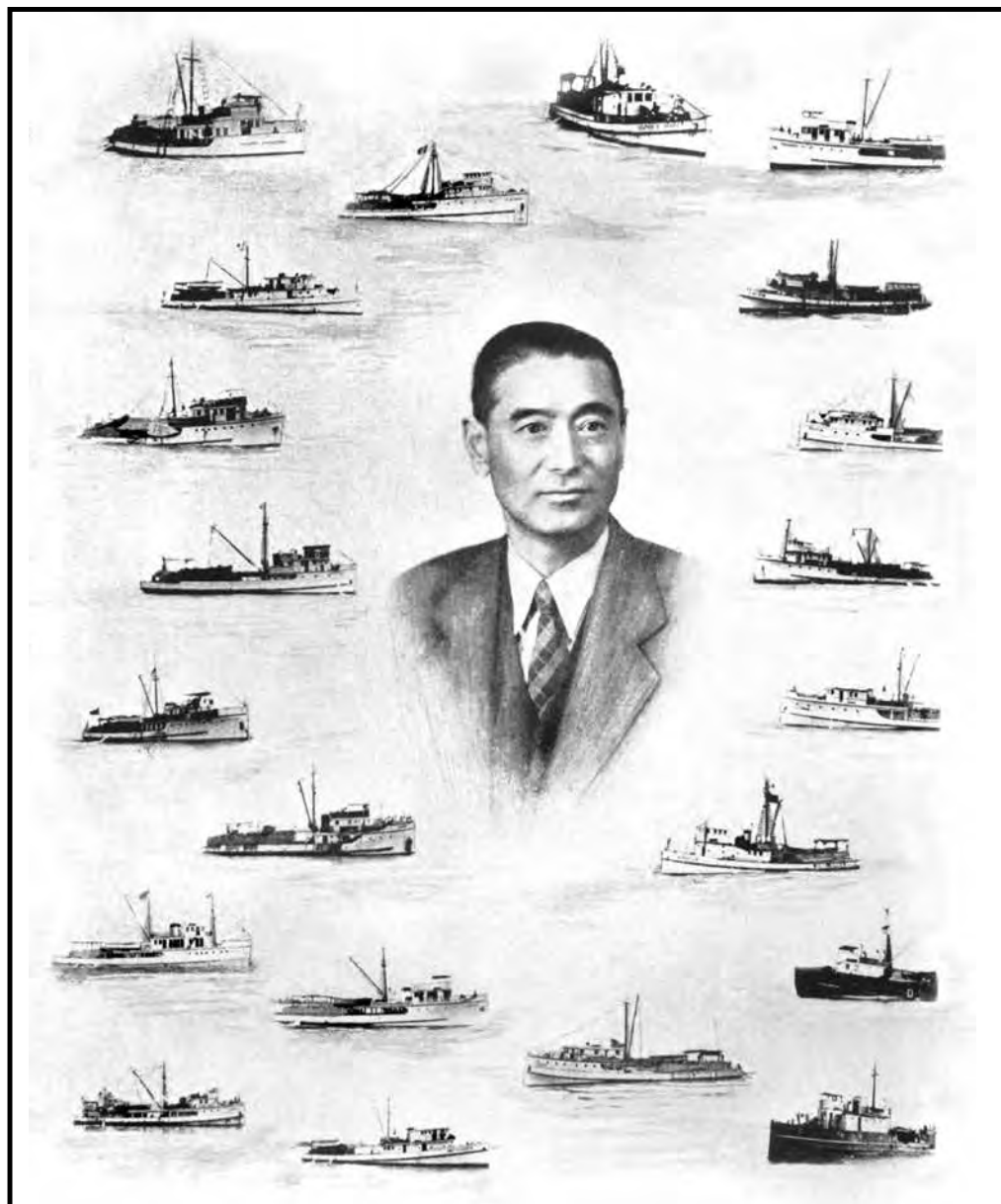
Collection of Toshiye C. and Donald H. Estes

Two generations of San Diegans pose outside their homes on Van Camp's pier in the early 1920s, with the cannery behind them. This man, known to all as "Nami-ki-San," was in charge of looking after the children; following an accident in which a child fell through a toilet hole into the bay and drowned, an older fisherman was designated to babysit. The boy in his lap, wearing a cap, is Masato Asakawa; Haruki Koba is second from the left, and the little girl is Yuki Nakamura. *San Diego Historical Society Photograph Collection*



Carp flags fly over the homes of Japanese fishermen near the Van Camp cannery on May 5, commemorating the "Boys' Day" holiday. This pier stood near where the Coronado Bridge rises today. *San Diego Historical Society Photograph Collection*





Tokunosuke Abe's 1940 fleet of tuna boats form a halo around him, but within two years, the Second World War and Japanese internment put an end to San Diego's Japanese fishing community.

Collection of Toshiye C. and Donald H. Estes

In preparation for New Year's Day, these men pound steamed rice into *mochi* at the foot of Crosby Street in the late 1930s.

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What years of attempts to enact restrictive legislation against Nikkei fishermen failed to accomplish, Pearl Harbor and the subsequent exile of all persons of Japanese ancestry from the West Coast accomplished virtually overnight. Although these men had successfully weathered racially-motivated attacks by elements of California's society, they and their families became victims of war-inspired hysteria.

Whatever antipathy San Diegans outside the fishing community may have held toward the Japanese, tuna men of every ethnic group shared

respect for the contributions made by the other groups.²¹ The words of two men who spent their lifetimes in the tuna fishing community testify to this. Anthony Mascarenhas, a Portuguese fisherman who grew up in the local fishery, said in 1980 that, "If it wasn't for the Japanese, we would all still be setting in small boats fishing out in the bay."²²

Veteran tuna fisherman Laurence Oliver gave San Diego's Issei pioneers perhaps the simplest, but certainly the most eloquent, testimonial of all: "The Japanese - they were the best of all fishermen."²³

- 1 Collectively all persons of Japanese ancestry living in the United States are known as Nikkei. Within that category, subcategories identify the generations. The Issei are the immigrant generation; their children, the Nisei, became citizens by virtue of *jus soli*. See M. Sasaki, ed., *Minamikashu Nihonjin Shichijunen-shi [Japanese in Southern California: A History of Seventy Years]* trans. Donald H. Estes (Los Angeles: Nanka Nihonjin Shoko-kaigisho, 1960).
- 2 Ibid.
- 3 For details of California's Alien Land Law, see Donald H. Estes, *South Bay Monogatari: Tales of the South Bay Nikkei Community* (San Diego: Chula Vista Historical Society, 1996): 31-58.
- 4 Manchester Boddy, *The Japanese in America* (Los Angeles, 1921): 180; Ko Murai, ed., *Zaibei Nihonjin Sangyo Soran [Outline of the Works of the Japanese in America]* (Los Angeles, 1940): 736-37.
- 5 For a more extensive discussion of Kondo and the San Diego fishery see Donald H. Estes, "Kondo Masaharu and the Best of All Fishermen," *Journal of San Diego History* XXIII:3 (summer, 1977): 1-19. Puerto San Bartolome is in fact two bays, with the smaller shown on charts as Bahia Tortugas. West Coast maritime circles refer to the whole area as Turtle Bay rather than the correct Puerto San Bartolome.
- 6 Yahachiro Inouye [also known as Luis Inouye], interview by author, tape recording, Ensenada, Baja California, 8 September 1973. Conducted in Japanese.
- 7 Koshiro Miura, interview by author, tape recording, Monterey Park, California, 20 October 1973. Conducted in Japanese.
- 8 Taketaro Enomoto, interview by author, tape recording, San Diego, California, 24 April 1975. Conducted in Japanese.
- 9 In the 1915-16 fiscal year, 491 of the state's 3,758 fishermen, or approximately 13%, were Japanese. In the 1919-20 year, 1,316 out of a total of 4,671 fishermen, or 28%, were Japanese. California State Board of Control, *California and the Oriental: Chinese, Japanese, and Hindus* (Sacramento: California State Board of Control, 1922): 105.
- 10 P.L. Bell and H. Bentley Mackenzie, *Mexican West Coast and Lower California*, United States Department of Commerce Publication 220 (Washington D.C.: Bureau of Foreign and Domestic Commerce, 1923): 34-35, 167-68.
- 11 *Minamikashu Nihonjin Shichinen-shi*, 145.
- 12 Tsuida, interview.
- 13 Takeharu Taniguchi, interview by author, tape recording, San Diego, California, 18 August 1976.
- 14 Tsuida, interview.
- 15 Miura, interview.
- 16 Enomoto, interview.
- 17 For a discussion of *omia*i see Estes, *South Bay Monogatari*, 11-22.



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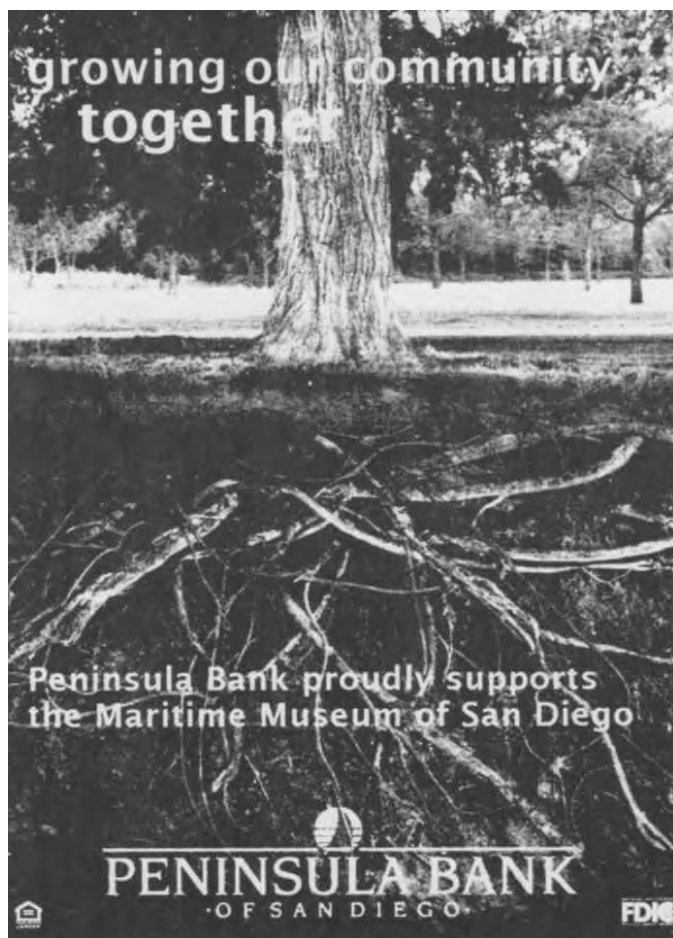
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- 18 Hideko Shimazaki [nee Tsuida], interview by author, San Diego, California, 27 January 1999.
- 19 Taju Koide, interview by author, tape recording, San Diego, California, 15 January 1972. Conducted in Japanese.
- 20 For a fuller discussion of the anti-Japanese fishing legislation of the 1930s see Donald H. Estes, "Offensive Stupidity and the Struggle of Abe Tokunosuke," *Journal of San Diego History* XXVIII: 4 (Fall, 1980).
- 21 William C. Richardson, "The Fishermen of San Diego" (master's thesis, San Diego State University, 1981): 148-49.
- 22 Anthony Mascarenhas, interview by the author, San Diego, California, 19 November 1980.
- 23 Laurence Oliver, *Never Look Backward* (San Diego: n.p., 1972): 67.

About the Authors:

Murray K. Lee is Curator of Chinese American History at the San Diego Chinese Historical Museum, where he has also served on the Board of Directors and as a Trustee. He has written extensively on the Chinese in this region. Both his graduate and undergraduate degrees were earned in Geography, at George Washington University in Washington, D.C..

Linda Bentz, a freelance scholar, lives in San Pedro. Her articles have appeared in *Chinese America: History and Perspectives*, *Noticias*, the *Gum Saan Journal* and other publications; a forthcoming article will appear this fall in the *Ventura County Historical Society Quarterly*. Linda acknowledges "eternal debt" to Judy Berryman for her scholarly work on Chinese fishermen.

Dr. Judy Berryman, archaeologist, is a resident of Oceanside; her dissertation was a case study of Chinese sites on San Clemente Island. She writes that her initial investigations of Chinese fishing camps were born of desperation, not inspiration — a response to the need to account for the broken Chinese ceramics littering the island.

Dr. Donald H. Estes is professor of history at San Diego City College. He has lived among and been active in San Diego's Japanese American community since his youth. He and his wife Carol (Toshiye) are founding charter members of the Japanese Historical Society of San Diego. Professor Estes has published articles in the *Journal of San Diego History* and elsewhere, most recently in the *Journal of the West*.

Only fragments of the lives of most
of Southern California's
pioneer Asian fishermen remain.



These pieces of Chinese porcelain were unearthed in excavations of the Chinese fishing village on Point Loma undertaken in 1991. Like the archaeologists who patiently pieced these sherds together, historians work to reconstruct vanished ways of life.

Photographs by John Wright, courtesy Fort Guijarros Museum Foundation

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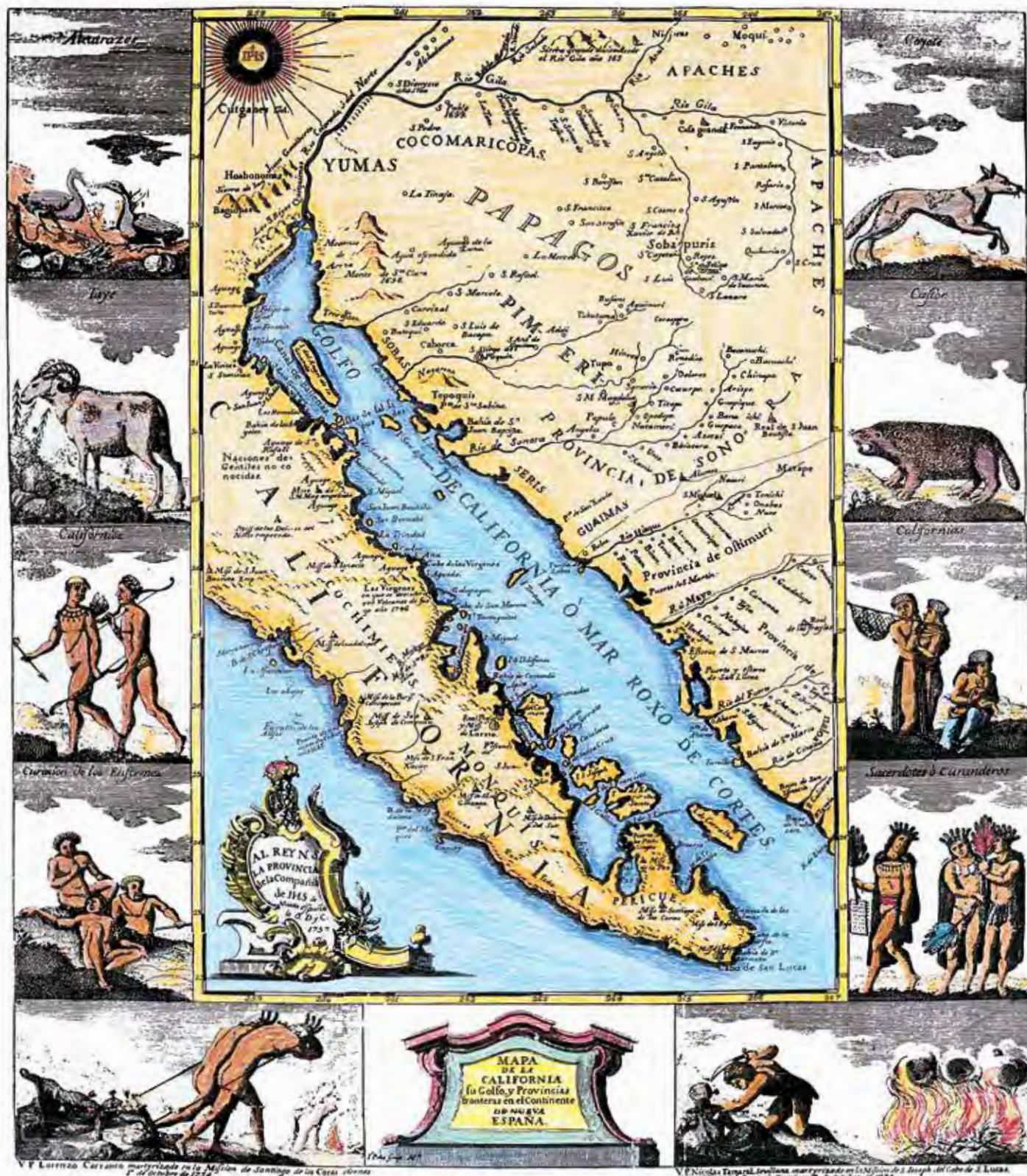
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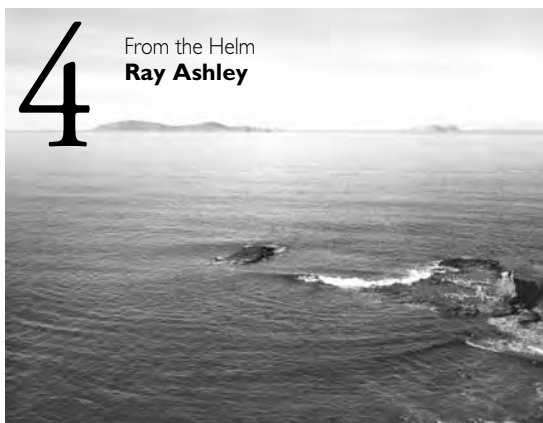
—John Wasefield

Bahía San Luis Gonzaga, on Baja California's Gulf coast.
Courtesy Harry Crosby

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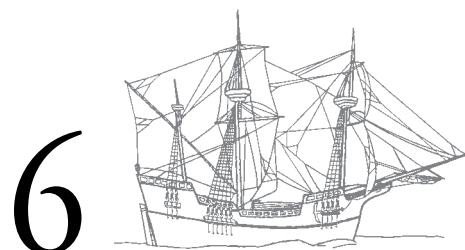
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This map from Miguel Venegas' 1749 *Noticia de la California* is surrounded by images of the peninsula's native life and history. Color has been added by the editor, though in a manner consistent with hand-colored maps of the period.



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Mains'l Haul's mission is to engage our members and the public in the study of maritime history, while encouraging scholarly research. This journal is also a benefit of membership in the Maritime Museum Association of San Diego.

We welcome submissions on the maritime history of the Pacific, and encourage the widest variety of perspectives on this rich heritage. Send all submissions and inquiries to Editor, Mains'l Haul, 1306 N. Harbor Dr., 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.

From the editor:

Alert readers of the Summer 1999 issue have pointed out that the tuna pictured on pages 28, 29, and 32 are not albacore as stated, but almost certainly yellowfin. We regret the error.

This issue of *Mains'l Haul* marks the fourth time in succession that we have been able to combine the independent research of several scholars within a single coherent theme, in this instance the maritime history of neighboring Baja California.

Today we are ever more cognizant of a great proliferation in economic and cultural connections between San Diego and Baja California as the entire region emerges as a powerful economic entity with vast potential in the gelling economy of the Pacific rim. As these connections proliferate, encouraged by favorable trade agreements, cultural diffusion, and the application of new technologies, it is worthwhile to remind ourselves that we are living in the midst of a historical process that has long antecedents. In keeping with our institution's core thesis that maritime endeavor has been decisive in the development of our community and our culture, we have ample evidence within these pages that these antecedents were for the most part maritime until the very recent past.

FROM THE HELM

by Ray Ashley

By the end of the sixteenth century, the European enterprise of seafaring had assumed characteristics of what we might today call a large-scale technological system, comparable in some ways to transportation and communication networks of the industrial age such as the railroad, the telephone, and the automobile. Arguably, this was the first such large-scale technological system in history and it endowed western civilization with its first essential artifact

(or "superartifact" as some historians of material culture are wont to say) capable of projecting European power and ideas worldwide: the oceanic sailing ship.

Ultimately, this artifact would allow the once backward, fractious, and impoverished states of Medieval Europe to control the world's oceans and many of the shores they washed, ushering in the modern era. By the 1540s, the extent of that reach was just beginning to touch our now familiar shores. From the perspective of Europeans, even Europeans in the New World, the Californias were indelibly linked as a single entity at the far reaches of the known world, even as late as 1771, when the first

The Coronado Islands, close by the invisible line that divides the Californias.

Courtesy Harry Crosby

edition of the *Encyclopædia Britannica* described “Callifornia” as “a large country of the West Indies, lying between 116o and 138o W. long. and between 23o and 46o N. lat. It is uncertain whether it be a peninsula or an island.”

Whether a peninsula or an island, California was linked to itself and to everywhere else by ships, also described in the first edition of *Encyclopædia Britannica* as “undoubtedly the noblest machine that ever was invented.” The kind of ship to first provide this link, as well as important information on how such ships were manned and provisioned is described in Harry Kelsey’s paper, using important primary source information published here for the first time. We can discern the difficulties involved in forging and sustaining such links in the years to follow in Michael Mathes’ inquiry into Francisco de Ortega’s third voyage. The political emergence of Baja California and its linkage to the new nation of Mexico as an expression of naval power during the wars of Spanish colonial liberation is explored in Carlos López Urrutia’s paper “When the Chileans Invaded Baja California.” Finally, Karina Busto Ibarra describes the linkage of the Californias to each other and

to Mexico during the steamship era, the same period which saw San Diego finally begin to assume the attributes of a city, connected to Baja California and to the world by sea long before it was connected by railroad, telegraph, automobile, telephone, air travel, or the internet.

It is the ability of such connections to reinforce themselves over time and to proliferate endlessly into new combinations of technology, time, and distance that perhaps constituted the essential power of the oceanic ship and explain its rise as the essential artifact of the modern era. In the words of Samuel Eliot Morison, for us this arguably began when “Cortés went on board his flagship, crossed the mouth of the Gulf, sighted the coast of Baja California on 1 May 1535, passed Isla Cerralbo on the port hand, entered the Bahía de La Paz, landed (3 May), and took possession for Charles V, under the name Terra de Santa Cruz. This is the discovery of California.”¹

1 Samuel Eliot Morison, *The European Discovery of America: The Southern Voyages A.D. 1492-1616* (New York: Oxford University Press, 1974): 620.

LA TRINIDAD

Ulloa's Ship Of Discovery

by Harry Kelsey

Following the conquest of México, Hernán Cortés began to build ships in his newly constructed ports along the Pacific coast and send them out to sea. He was looking for a route to the Spice Islands and China, and perhaps even searching for a northern passage back to Europe. In the course of several voyages, his crews reached the peninsula of Baja California. For a brief time Cortés established a settlement at a place he named Santa Cruz, where he put a trusted lieutenant, Francisco de Ulloa, in charge. But the burning heat, the arid countryside, and the unfriendly Indians proved too much for Ulloa and his colonists. After less than a year Ulloa abandoned the place and brought his people home.¹

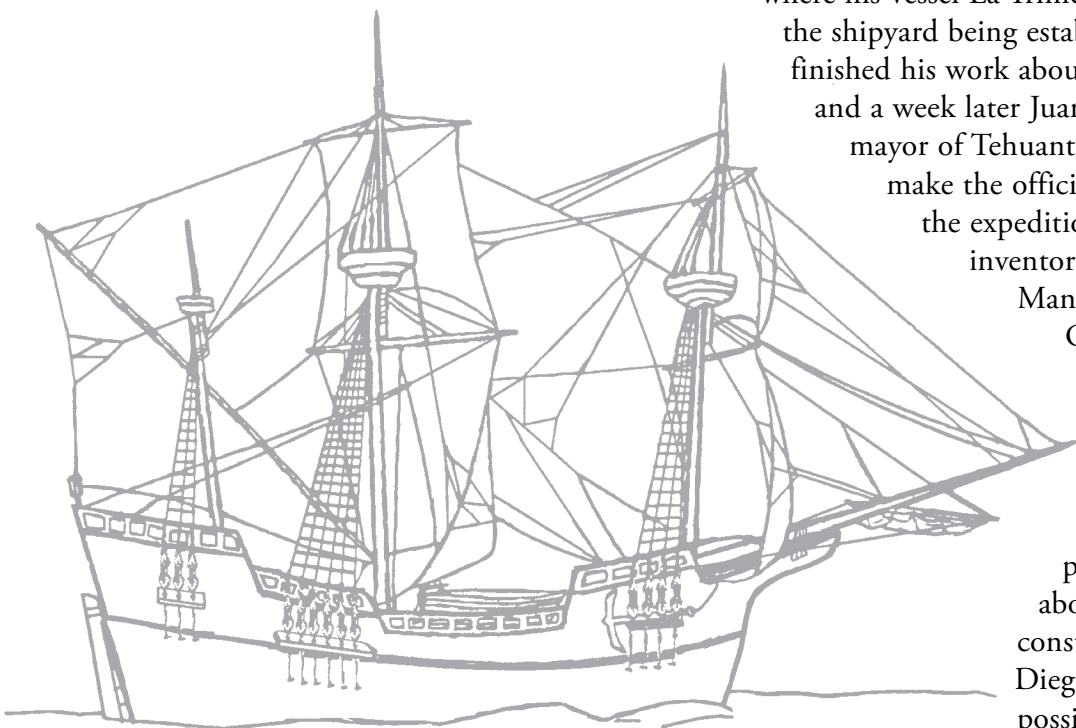
Cortés himself did not lose interest in the new discoveries. Instead, he appointed another commander, Juan Castellón, to prepare a new expedition to reconnoiter the coast and see what lay further north. Initially he dispatched Castellón to the new port of Tehautepec,

where his vessel *La Trinidad* could be refitted in the shipyard being established there.² Castellón finished his work about the end of May, 1539, and a week later Juan de Toledo, the alcalde mayor of Tehuantepec, came aboard to make the official inventory and authorize the expedition to depart.³ The

inventory, now in the Spanish Manuscript Collection of the Gilcrease Museum, Tulsa, Oklahoma, describes the ship, the cargo and the crew in considerable detail.

With this information, plus the detailed material about sixteenth century ship construction compiled by Diego Garcia de Palacio, it is possible to arrive at a fairly good

The probable
appearance of
La Trinidad.



*I have determined, with the ship Trinidad
and the few supplies and men to go on,
if God grant me weather, as far as I can,
and the wind will permit...*

Francisco de Ulloa, 1540

understanding of the looks of this significant vessel, the first to sail to the mouth of the Colorado River and determine that California was not an island.⁴

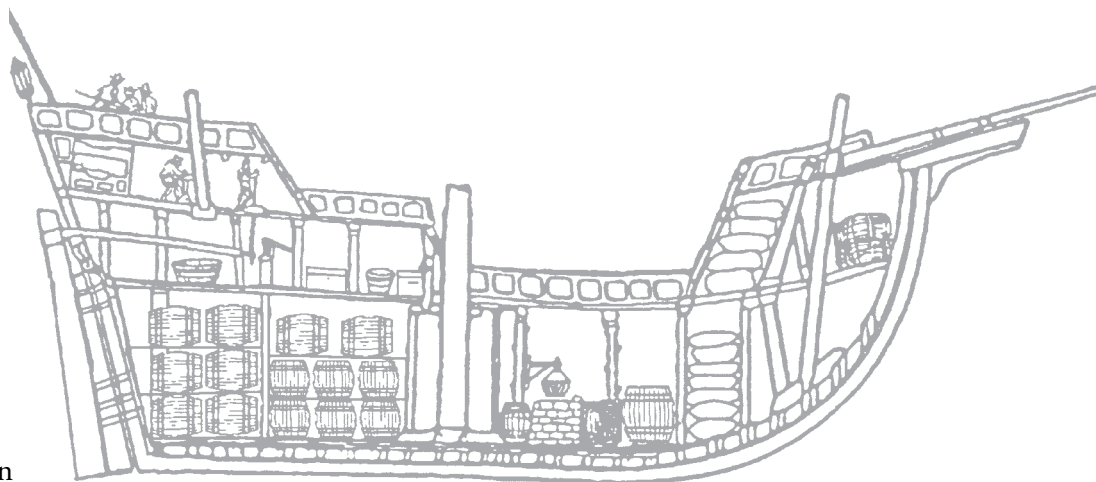
In the first published report of the expedition, the pilot Francisco Preciado listed the size of *La Trinidad* as seventy tons.⁵ This corresponds well with the general information given by Diego Garcia de Palacio, who said that ships built for the west coast ordinarily ran from fifty to one hundred tons. A ship the size of *La Trinidad* would have a length of about forty-five feet (a thirty foot keel, with an additional nine feet of rake to the bow and six feet to the stern). The beam was about twelve feet and the depth of the hold about eight feet. With a floor (plan) of about three feet, the hull was unusually slim, and the ship would run well to windward, though she was very awkward before the wind.⁶

La Trinidad was a three-masted ship, as the inventory shows, with a mainmast, foremast, and mizzenmast. The six sails evidently included main and top courses on the foremast and mainmast, a lateen sail on the mizzenmast, and a sprit sail on the bowsprit. All the rigging, the sails, the iron work, the pump, the rudder, the lead sheathing for the hull, and even the nails were listed in the inventory. All these items were considered removable, and in case of severe deterioration or shipwreck, they would be salvaged for use in another vessel.

In addition to Capitán Juan Castellón there was a master, Pablo Vasco, who was second in command. There were also ten mariners and three black slaves, two apparently intended to serve the mariners, and one who was a personal servant to Castellón. Enslaving the Indians had been forbidden

Harry Kelsey lives in Alta Dena, California, and is the author of *Juan Rodríguez Cabrillo*. His most recent book is *Sir Francis Drake: The Queen's Own Pirate*.

A cutaway view of
La Trinidad.



A Startling Sight aboard the Trinidad:

*I t was so dark
and fearful,
with the wind
and thunder, lightning
and some rain, the winds
at times contrary, now
one way and now the
other, that at times we
thought we were going
to be lost. Some said
they saw St. Elmo.
Whatever it was I
did see, I saw it on the
Trinidad, which was
where it appeared.
It was a shining
object, on the top of the
mainmast. I do not
assert whether it was a
saint or some other
thing, but whatever it
was, devout thanks
did it get, and our Lord
was pleased that shortly
the weather improved
and turned calm.*

Francisco de Ulloa, 1540.
Saint Elmo's Fire is an electrical
discharge sometimes encountered
by sailors during storms.

for some years, but commanders often claimed to be taking Indians for training as "interpreters." For this reason expedition leaders such as Castellón were required to swear that they would not take any Indians at all on the voyage.

Accommodations on the ship were rudimentary. There was a cabin with bunks for the captain and master, but the partitions were movable, and they were taken down during a storm, along with the topmasts, if there was sufficient time.⁷ On a small vessel like *La Trinidad* the captain also served as pilot. His instruments were not terribly sophisticated. The ship seldom ventured far from the shore, so a compass, an hourglass, a log line, and a sounding line served most navigational needs. All these items were included in the inventory of the ship, although every pilot was supposed to have his own navigational instruments and charts.

Even when sailing close to shore the ship could be at sea for several days, so twenty casks of drinking water were included as part of the standard equipment. There were also a small cannon and sufficient hand arms to enable the sailors to make a reasonable defense in case of attack. Anchors were lost with discouraging frequency, so the ship carried four of these, about standard for the time. There was a ship's boat which could either be towed or carried on deck, plus a launch and other equipment being taken to Acapulco for the ships under construction in that port.

But all this is contained in the inventory, which is published here for the first time.

[folio 1]

1539

In the new shipyard in the district and jurisdiction of Tecoaatepec [Tehuantepec], belonging to the very illustrious Señor Don Hernando Cortés, Marqués del Valle de Oaxaca, Captain General of New Spain and the South Sea for His Majesty, on the seventh day of the month of June, in the year of the birth of Our Savior Jesus Christ, one thousand five hundred and thirty-nine, on this day the very noble Señor Juan de Toledo, alcalde mayor in the said villa and its environs and jurisdiction for his most illustrious lordship and in my presence, Francisco Ramírez, notary, a servant of the same, the alcalde mayor went on board the ship named *La Trinidad*, which belongs to the said señor marques and which is presently anchored in this same port and which is going on a voyage of discovery, with good fortune. The captain and pilot of the ship is Juan Castellón. This is the ship that the señor alcalde mayor went to visit, and he found that those who are going as master and mariners and slaves and the supplies and rigging in the said ship are the following:

V.	Pablo Vasco, master Mariner
V.	Rodrigo Yáñez
V.	San Remo
V.	Bernaldino Nicardo
V.	Esteban Sastre
V.	Andrés de Montón

V. Martín de Vermeo
 V. Ochoa
 V. Vergara
 V. Joanes Vizcayno
 V. Antón Fernández

[folio 1, verso] Black Slaves

- V. Two Blacks, one of whom is called Antón and the other Pedro, and they belong to his lordship.
 V. Another Black slave, who is called Francisco and who belongs to the said Juan Castellón, captain.
 V. First, the ship is sound of keel and hull. There are four anchors, plus a large galley anchor and a small anchor for a longboat together with the boat itself.
 V. four anchor cables
 V. a heavy cable
 V. three [ordinary] cables
 V. three other small cables, two of which have been used up in trimming the sails, in renovating the shrouds, and in halyards and running rigging and other minor needs of the said ship.
 V. five large rolls of cordage that are included so there will be no shortage on the said ship.
 V. nine large pieces of small tackle.
 V. one good cable and one that is neither new nor very long.
 V. two bits of cable for tie runners.
 All of this is brand new from Calatayud, except the cable that was cut up which appears somewhat used, as do the two pieces.⁸
 V. twenty-five pieces of canvas from which sails were made for the whole ship

[folio 2]

and for doubled main courses he carries six canvases of the same description which he says are spare courses.

- V. forty-five hanks of thread for sewing sails and to carry so there is no shortage.
 V. a hundred needles that are used to sew sails.
 V. another hundred that are carried as spares.
 V. a mariner's compass.
 V. five large barrels of powder
 V. seven falconets [small cannons] with fifteen canisters and with their serving pieces⁹
 V. four old cables that are serviceable; one is made of pita.¹⁰
 V. the old sails of the same ship; they are not serviceable
 V. and with this all the old rigging for the masts and the shrouds and the rest, just as Juan Carreño delivered it.
 V. two hatchets that Juan Carreño delivered.
 V. a hoe
 V. a scraper
 V. a shovel
 V. an adze
 V. two chisels
 V. two curves¹¹
 V. three old augers
 V. a hammer
 V. a hook for stowing the anchor
 V. one leather hose for filling water casks
 V. one lantern
 V. six hatchets
 V. two other mariner's compasses; one of these was brought by the *San Vicente*

En el astillero nuevo termyno y jurisdicción dela villa de tecoante pe ques dl muy yllr^e señor Don hern^{do} cortés marques dl Valle de guaxaca capin general en esta nueva españa y mar dl sur por su mag^t en los syete dias dl mes de Junio año del nascimiento de nro salvador ihu xo de myll y qui⁰s e treynta e nueve años este dia el muy noble señor Juan de toledo alldc mayor en esta dha villa y sus terminos y juridi^{on} por su yll^{ma} señoria y en presençia de mi fran^{co} Ramyres escri^o criado por el dho el señor alldc mayor fue y entro den tro en el navio nonbrado la trenidad ques dl dho señor mars que al presente esta surxido en este dho puerto que va a dscobrir con la buena ventura de que es capin e piloto del Juan castellón el qual dho navio el dho señor alldc mayor fue a visitar y hallo e yvan en el por maestre y marineros las personas y esclavos y cossas y aparejos dl dho navio son las siguientes

V pablo vasco maestre
 marineros
 V Rr^o yañez
 V San Remo
 V bernaldino nycardo
 V esteban çastre
 V andres de monton
 V mn de bermeo
 V ochoa
 V bergara
 V Joanes Vizcayno
 V anton fenandez

[Folio lv]

esclavos neg^s

V doss negros que se dize el uno anton y el otro pedro son de su señoria
 V otro esclavo negro que se dize fran^{co} ques dl dho Juan Castellon capitan
aparejos del dho navio
 V primeramente el dho navio estanco de quilla y costado con quatro an clavas con un Reson de galera grande y otro Reson pequeño dla varca y la dha varca
 V quatro cables
 V un cablote
 V tres guindalesas
 V otras tres guindalesas delgadas las dos dellas las qualles se gastaron en guarnecir las velas en Refor mar las obencaduras y en tricas y amantes y otras menudencias necesarias al dho navio
 V cinco betas grandes que se llevan p no menest en el dho navio
 V nueve pieças de ga^çia menade^s grandes
 V una guindaresa buena aun no esta flamante e no es muy larga
 V dos pedaços de gindalesa p hustaga

todo lo qual es nuevo flamante de calatayud salvo la ginda lesa corta paresçir a servido aun poco con los dos pedaços
 V veynte e çinco pieças de alonas
 de se hizieron velas p todo el navio

[Folio 2]

y para papahigos doblados lleva seys lonas dlas dhas de ariba en que dize que heran papahigos de Respeto

V quarenta e cinco obillos dhilo p coser
 las vellasy pa llevar pa no menester
 V cien agujas sean gastado en coser las velas
 V unas otras ciento que lleva de Respeto
 V un aguja de marear
 V cinco motones grandes
 V quatro barriles de polvora grandes
 V syete falconetes con quinze camaras
 y con sus armas
 V quatro cables viejos pueden servir
 es uno dellos de pita
 V las velas viejas dl dicho navio no son
 para servir
 V y con esto toda la xarcia vieja p los arbo
 les y ovencaduras y lo demas todo
 como lo entrego Juan carreño
 V dos hachas q entrego Joan carreño
 V un açadon
 V un Rascador
 V una pala
 V un aquela
 V dos escoplos
 V dos gurvias
 V tres barrenas viejas
 V un martillo
 V un gancho de alotar
 V una manga de Cuero de envasar botas
 V una lanterna
 V seys hachas
 V otras dos agujas de marear estaban
 dlas truxo san Viçinte

[Folio 2v]

V una anpolleta de san Viçinte
 V un balde de san Viçinte
 V un agitre de alaton de san Viçinte es de coçinar
 V un verso con su servidor
 V medio Cuero de Vaca dl navio de san Viçinte
 V diez e nueve lanças con sus hierros
 V çirçina de un novillo y sebo
 V ochenta cantaros de pez p llevar
 V doçientos candelas de sebo
 V quarenta Cargas de mayz de a media
 hanega
 V doze Rodelas de tecoantepe
 V otras dos anclas su señoria manda se lleven p santo tomas
 V una bonba p los navios de acapulco manda su sr^a llevar
 nueva
 V un batel su sr^a manda llevar los navios stan en acapulco
 V dos dozenas de tablas su sr^a manda llevar pa los navios
 stan en acapulco

lo lleva el dho navio nonbrado la trenidad de Respeto pa sy es lo
 syguiente

V mastil mayor y verga
 V un trinte
 V y mezana con sus vergas
 V la bonba del arte nuevo
 V van velas de respeto nuevas para el dho navio
 V va un timon
 V van hierros dgovernallo ansy mismo c sus clavos
 V cadenas p la obencadura de Respeto
 V seys cadenas c sus vigotes
 V dos cadenas grandes para dar a los
 cables para en tierra de guerra
 no puedan cortallas y perder el na
 vio y las anclas estas son gruesas y largas
 V otra cadena grande para amarrar
 la barca d la misma condiçion
 V quatro pares de grillonos con sus chabetas
 V çinco colleras d hierro
 V quatro fisgas d çinco gujos
 V quatro harpones grandes
 V dos ganchos para la barca

[folio 2v]

V. one hourglass from the *San Vicente*
 V. one wooden pail from the *San Vicente*
 V. one brass bucket from the *San Vicente*. It is for cooking.
 V. one culverin [a long, heavy cannon] with its server
 V. one half of a cowhide from the ship *San Vicente*
 V. nineteen lances with their iron points
 V. salted beef and tallow
 V. eighty containers of pitch to be taken along
 V. two hundred tallow candles
 V. forty cargass of corn of about half a fanega each¹²
 V. twelve shields from Tecoantepeq
 V. another two anchors that his lordship orders to be carried
 for the Santo Tomas
 V. a pump that his lordship is ordering for the Acapulco ships
 new
 V. a launch that his lordship orders us to carry for the
 ships that are in Acapulco
 V. two dozen planks that his lordship orders us to carry for the
 ships that are in Acapulco

The extra supplies that the ship named *Trinidad* carries
 for herself are as follows:

V. a main-mast and yard
 V. a foremast
 V. and a mizzenmast with its yards
 V. a new style pump
 V. new sails that go as spares for the said ship
 V. there is a rudder
 V. there are also iron rudder fittings with their spikes
 V. chains for the spare shrouds
 V. six chains with their beams deadeyes

[folio 3]

V. two large chains to strengthen the cables so that in a war
 zone they cannot be cut and lose the ship and the anchors;
 these are big and heavy
 V. another large chain to moor the ship; same condition
 V. four pairs of fetters with their locks
 V. five iron collars
 V. four harpoons with five points [each]
 V. four boat hooks
 V. two irons for the pump
 V. ten linked fishhooks
 V. two hundred small fishhooks
 V. two large adzes with iron reinforcement; one is curved
 V. one large ladle for skimming the tar
 V. two crowbars
 V. one iron maul
 V. three rigging hooks for the foremast
 V. another leather sleeve for filling water casks
 V. twenty-six water casks of about twelve iron hoops [in size]
 V. six barrels of about six hoops [in size]
 V. a funnel
 V. three iron hand mattocks¹³
 V. one thousand three hundred planking nails and
 more small [nails]
 V. one thousand five hundred flat headed nails in
 addition to those used to fasten the lead plates on
 the hull of the ship
 V. three hoes

- V. two scrapers for [the hull of] the ship
- V. a hundred cannon balls for the ship

[folio 3, verso]

- V. twenty sounding lines
- V. one dozen wooden plates
- V. eight wooden bowls
- V. one large saw and another small one
- V. two caulking tools
- V. one iron pike
- V. two marlinspikes
- V. a chisel
- V. a water cask for the San Vicente
- V. twelve barrel hoops in order not to run out
- V. six loaves of sugar

All the aforesaid and above mentioned things I have received; I the said Juan Castellón captain and pilot, of the said ship Trinidad which is going on a voyage of discovery, with good fortune. I have received all this from you the said Señor Juan de Toledo alcalde mayor of the said Villa of Tecoaatepeq and its district, in the name of the most illustrious lordship of the said señor marques and by virtue of the power that you have from him. I am obliged to render an accounting and a description of the said ship and of all the things mentioned above to whomever might be there to take it. In witness whereof I sign my name. Done in the said shipyard of Tecoaatepeq, the said seventh day of June of the year one thousand five hundred and thirty-nine. Witnesses who were present at the above, being in the said port, Fernando Díaz and Francisco de Salcedo. Juan Castellón.

Wherefore the said señor alcalde mayor, being in the ship in the presence of me the said notary, inspected it and saw it to be sound of keel and hull and having the gear listed above. He ordered the said Juan Castellón, captain and pilot of the said ship, not to take Indian slaves, be they men or women, or Indian laborers, be they men or women, under the penalty that if he should either take them or order that they be taken, he would lose

[folio 4]

all his goods and the slaves would be freed, in conformity with the cedula of his majesty. Whereupon Juan Castellón, captain and pilot of the said ship, said that he accepts and complies with this statement of the señor alcalde mayor. Witnesses are the said mariners and the said Fernando Díaz. The place scratched out, where it says del Ju, and where it says vigas, is proper as corrected, and the item written between the lines, where it says los stands as corrected. Francisco Ramírez, notary public, in this villa of Tecoaatepeq, servant of the said alcalde mayor, was present for the above, and at the request of the said señor alcalde mayor I wrote this, and I affixed here my sign

as testimony of the truth

Francisco Ramírez
Notary

- V dos hierros para la bonba
- V diez anzuelos deadena
- V dozientos anzuelos peños
- V dos açuelas grandes con sus estribos dhierro la una gurbiada
- V una cuchara d hierro grande p linpiar la brea
- V dos pies de Cabra
- V una maçito dhierro
- V tres ganchos p el trinte
- V otra manga de Cuero dhenchir botas
- V veynte e seys pipas p agua de a doze arcos dhierro
- V seys barriles de a seys arcos
- V un fonil
- V tres almocafres dhierro
- V myll e trezientos clavos de costado y mas chicos
- V myll e qui's estoperoles de mas
- de çinco myl estoperoles van hecha
- dos en las planchas de plomo de costado
- del navio
- V tres açadones
- V dos rascaderos p el navio
- V cien pelotas p el navio

[Folio 3v]

V veynte sondalesas
V una dozena de platos de palo
V ocho bateas
V una syerra grande y otra chica
V dos calefates
V un chaco dhierro
V dos punteros
V un synzel
V un barril dsan Viçinte
V doze arcos de pipas p no menester
V seys panes de açucar
todo lo qual que dho es y de suso Se contiene reçibi yo el dho Juan castellon capitan e piloto del dho navio nbrado la trenydad va a decobrir con la buena ventura lo qual Reçibi de vos el dho Señor Juan de Toledo alldde mayor en la dha villa de tecoaatepe y sus termys en nonbre dla yllma sra dl dho Señor mar ques y por virtud dl pod del teneyns y me obligo de dar quenta y Razon del dho navio y de todo lo suso dho a quyen potr su señoria me la oviere de tomar e por 1 verdad lo firme d mi nbre st dho en este dho astillero de tecoaatepe enl dho dia Syete de Junyo del dho año de mill e qui's e treinta e nueve años tos fuer presentes a lo suso dho fernand diaz e franco de salzedo estantes en el dho puerto Jn° castellon E luego el dho Señor alldde mayor estando dentro en el dho navio en presençia de mi el dho escryo lo miro e lo vido estanco de quylla y costado e con los aparejos ya dhos y le mando al dho Jn° castellon capitan e photo del dho navio que no lleva esclavo yndio ny yndia ny naboryo ni naborya So pena en sy lo llevare o mandare llevar de perdimio

[Foio 4]

de todos sus bienes y los esclavos ansy llevar libre conforne a la çedula dsu magt el qual dho Jno Castello capitan y piloto del dho navio dixo sta escripto de lo ansy haz e cunplir como por el dho Señor alldde mayor le/ estando tos los dhos marineros y el dho Ferdo diaz / va testado do diz /dl Ju / e do diz vigas pase por testado e escripto entre renglones do diz en los vala / A yo Franco Ramyres escryo puco en esta dha villa de tecoaatepe /criado por el dho Señor alldde mayor fuy presente a lo suso dho e de pedimio dl dho señor alldde mayor lo escriví e fize a este mio sygno E a tal en testamio de verdad
Franco Ramyres
escryo

**Voyage
of the
Trinidad
1539**

Ancon de San Andrés
Los Diamantes 28 September

P. de los Lobos
3 October

B. de S. Marcos

Estrecho de S. Miguel
23 September

Bahía de la Posesión
(Guaymas)

Los Esteros de Cruz
(Rio Mayo)

R. Nuestra Señora

R. S. Pedro y S. Paulo
12 September

I. de Perlas
18-25 October

Bahía de S. Cruz

El Guayabal (Cullacán)
27 August

Cabo San Lucas
7 November

Bahía de la Magdalena
2 December 1539

Punta de la Trinidad

Santiago
8 July 1539

Islas de Xalisco

I. de Cedros
January 1540

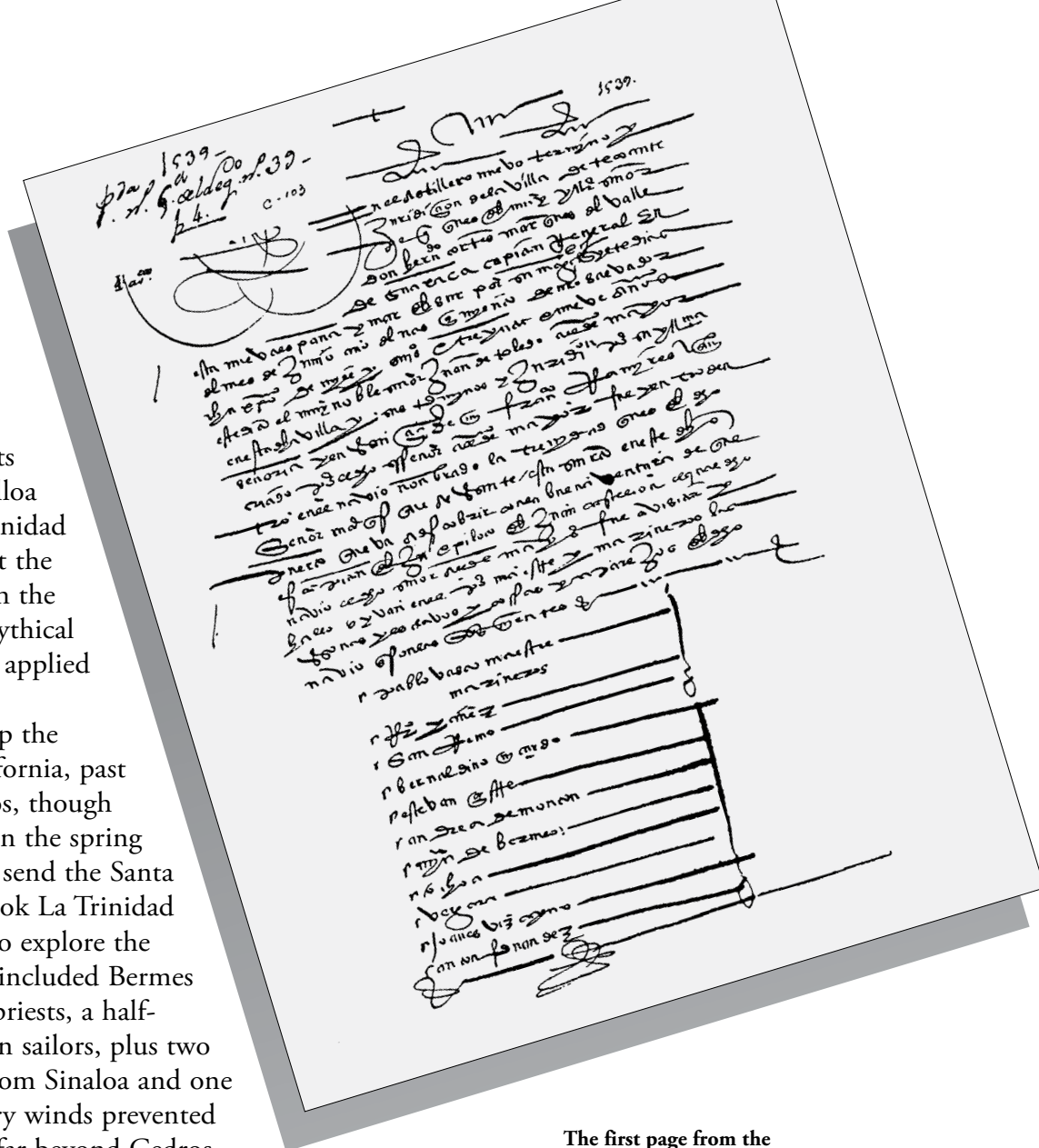
Ancoras

Veracruz
Tlaxcala
Puebla
Tehuantepec

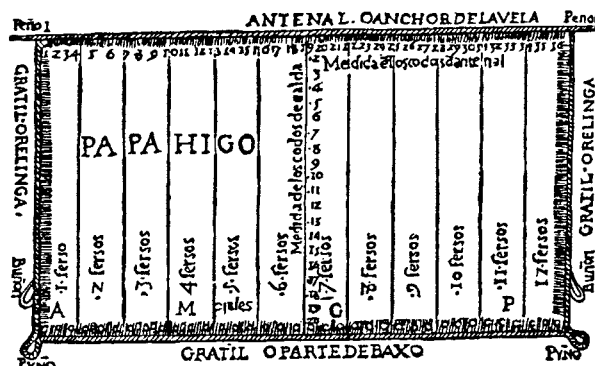
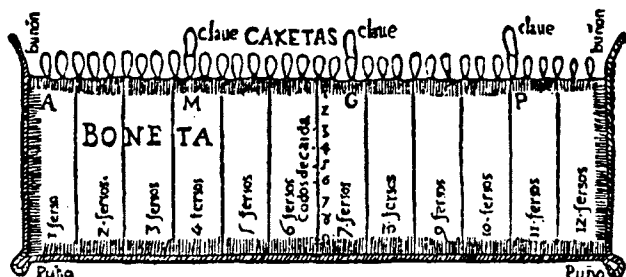
Relegated to a minor role as *piloto mayor* of the fleet, Castellón spent much of the subsequent voyage making difficulties for the new *capitan general*.¹⁴ Given command of the large and lumbering *Santa Agueda*, Castellón first managed to lose a mast in a storm, thus delaying the whole expedition for nearly another month. Then, two weeks later, while entering the harbor at Santa Cruz, Castellón ran the ship aground and caused another delay while the vessel was floated free. The fleet then sailed up the mainland coast of New Spain and back down the eastern shoreline of the peninsula,

sketching newly-found landmarks and naming bays and channels. When they reached Santa Cruz once more in the middle of October, Castellón immediately set about preparing documents for a legal demand that Ulloa return command of La Trinidad to him. Ulloa refused, but the documents provide us with the first indication that the mythical name California had been applied to this region.

The voyage continued up the western coast of Baja California, past the islands near Isla Cedros, though not much further. Here, in the spring of 1540, Ulloa decided to send the Santa Agueda home, while he took La Trinidad north for a final attempt to explore the northern coast. His crew included Bermes the pilot, two Franciscan priests, a half-dozen soldiers, and a dozen sailors, plus two Indian interpreters (one from Sinaloa and one from California). Contrary winds prevented his ship from sailing very far beyond Cedros and Ulloa finally stopped at a point he called Cabo del Engaño, the Cape of Delusion. Turning south once more, he returned to Acapulco with his ship and crew probably in the late summer of 1540.¹⁵ Though there is a persistent myth that Ulloa reached the coast of Upper California, where he and his crew perished, Francisco de Ulloa returned alive and well to Spain, where he testified in a lawsuit two years later.¹⁶

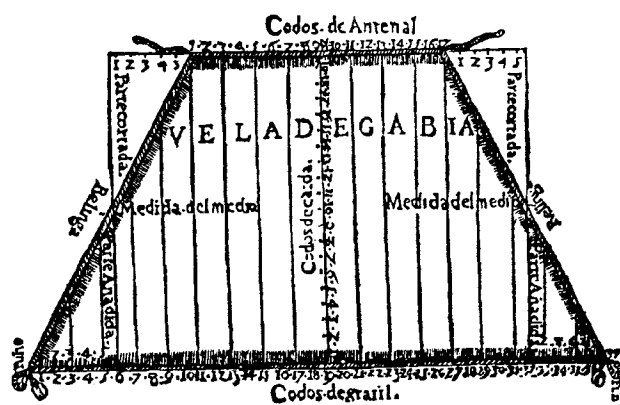


The first page from the inventory of La Trinidad.



- 1 Henry R. Wagner, "Francisco de Ulloa Returned," *California Historical Society Quarterly* (September 1940), 19: 240-44.
- 2 Ibid.
- 3 The *alcalde mayor* headed the municipal civil government of a pueblo.
- 4 *Instruccion nautica para navegar* (Mexico: Casa de Pedro Ocharte, 1587). Garcia de Palacio was a scholar and government official in Guatemala and Mexico. His book on ship construction and navigation is the first of its kind in any western language. Although the *Instruccion nautica* specifically describes ships constructed and used in the New World, it is often cited in general works on Spanish ships of the sixteenth century, simply because there is nothing else like it.
- 5 While the original of this report was very likely written in Spanish, the published text is in Italian, which lists the size of the ship as *settanta botte*. This is equal to *setenta toneladas* in Spanish, or seventy tons. See the definitions of *botte*, *tonello*, *tonnellata*, and *tunne*, in John Florio's Italian-English dictionary as revised by Giovanni Torriano, *Vocabulario Italiano & Inglese, A Dictionary Italian & English Formerly Compiled by John Florio and since His Last Edition, Anno 1611, Augmented by Himself in His Lifetime* (London: T. Warren for Jo. Martin, Ja. Allestry, & Tho. Dicas, 1659), pages not numbered. Richard Hakluyt's sixteenth century translation of the Ulloa narrative published by Ramusio inferred

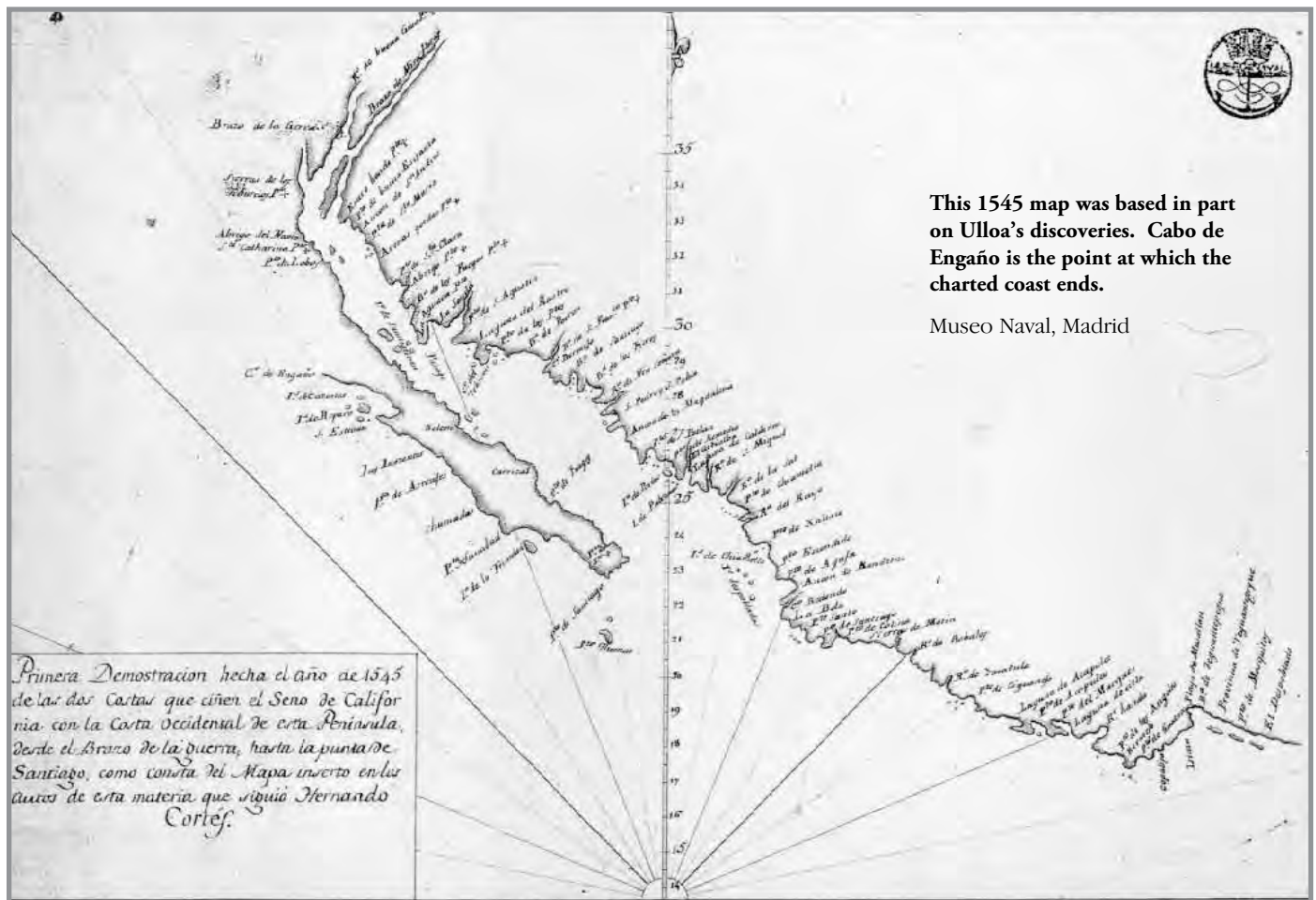
incorrectly that a *botte* was equivalent to a *pipa* or half a ton, and English-speaking historians have followed his text ever since. See for example, Henry R. Wagner, *Spanish Voyages to the Northwest Coast of America* (San Francisco: California Historical Society, 1929): 304. Hakluyt's version is in *Third and Last Volume of the Voyages, Navigations, Trafiques and Discoveries of the English Nation* (London: George Bishop, Ralfe Newberie, & Robert Barker, 1600): 397. The original Italian text of the narrative is in Giovanni Battista Ramusio, *Terzo Volume delle navigatione et viaggi* (Venice: Stamperia di Giunti, 1565): fol. 339-70. Interestingly enough, John Florio's earlier translations of Ramusio's Italian text of the Cartier narrative uses the terms correctly, translating *botte* as tun, tunne, and tunne burthen. See John Florio, *A Short and Briefe Narration of the Two Navigations and Discoveries to the Northwest Partes called Newe Fraunce: First translated out of French into Italian, by that Famous and Learned Man Gio. Bapt. Ramutius, and Now Turned into English by John Florio* (London: H. Bynneman, 1580): 1 and 28. Any lingering doubt is removed by an inspection of the original French manuscript account of the Cartier voyages, where the ship sizes are given in *thonneaulx* or "tons' burden." See the text and translations in H. P. Biggar, *The Voyages of Jacques Cartier, Published from the Originals with*



Translations, Notes and Appendices,
No 11 of the Public Archives of
Canada Publications (Ottawa: F. A.
Acland, 1924): 4, 93.

- 6 The *plan* or floor is the flat part of the deck resting on the keel. The measurements are an interpolation of the dimensions given by García de Palacio for ships of 150 and 400 *toneladas*. See his *Instruccion nautica para navegar*, fols. 89-97v.
- 7 During a severe storm in the subsequent voyage, the pilots not only had the cabin partitions removed, but also the sails, masts, and rigging. Ramusio, *Terzo volume*, fol. 352.
- 8 Calyatud, in Spain, was known for the quality of its rope manufacture.
- 9 A falconet is a small cannon.
[Editor's note: the fifteen *cameras* cited in the inventory could also refer to the removable breech chambers common on sixteenth century artillery.]

- 10 Pita is a plant from which an inferior quality of rope was produced.
- 11 Possibly patterns for making ribs for the ship, or tools for measuring curves.
- 12 A *carga* is a measure of grain whose size varies, but is less than a bushel.
- 13 These objects (*almocafres*) could also be awls or punches.
- 14 Unless otherwise noted, details of the voyage are taken from the original manuscript report of the expedition in Archivo General de Indias, Patronato 20, no. 5, ramo 11. There is a good translation by Irene A. Wright in Wagner, *Spanish Voyages*, 15-50.
- 15 Wagner, "Francisco de Ulloa Returned," 240-244.
- 16 Mexico, Archivo General de la Nación, Hospital de Jesús, legajo 300, fols. 145-55. Ulloa's testimony was taken in Valladolid, on 5 May 1542.



This 1545 map was based in part on Ulloa's discoveries. Cabo de Engaño is the point at which the charted coast ends.

Museo Naval, Madrid

Francisco de Ortega's Third Voyage to the Gulf of California

Fantasy or Historical Reality?

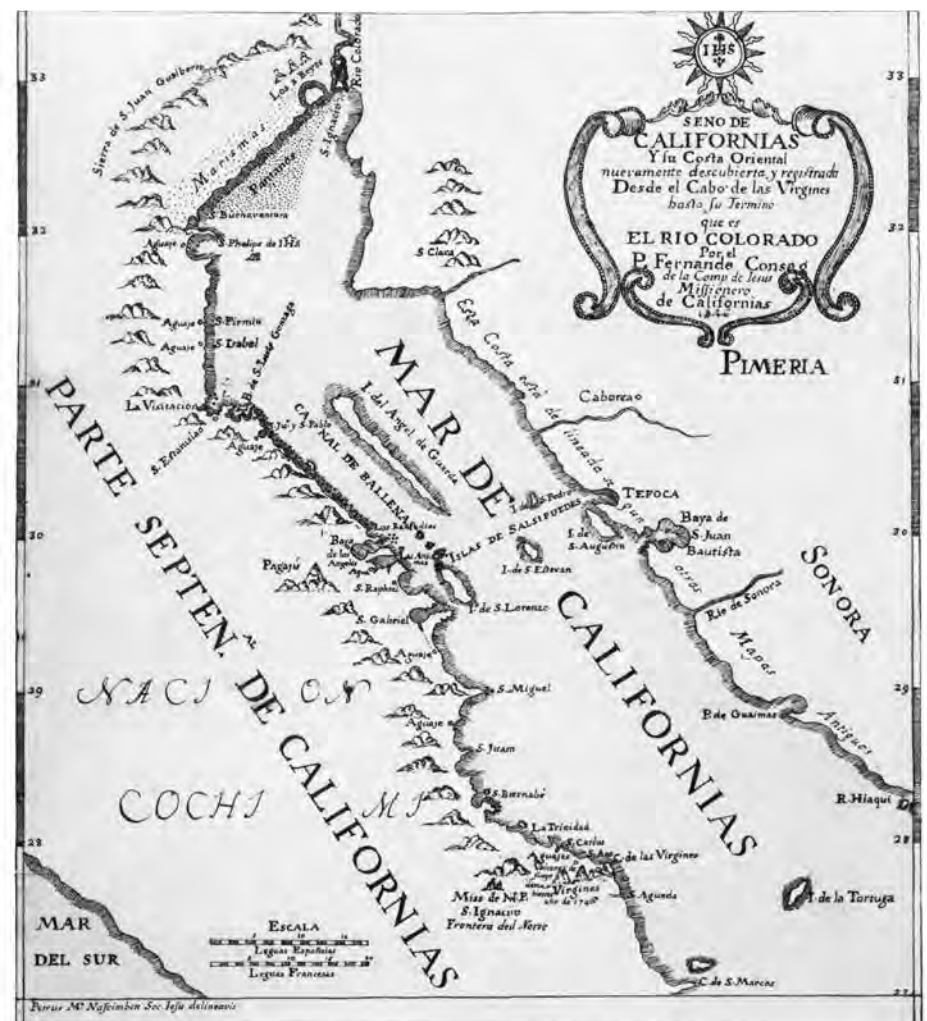
By Michael Mathes

The Jesuit Father Fernando Consag's 1746 map shows correctly that Baja California is a peninsula, after over a century of controversy.

In 1972, Father Ernest J. Burrus, S.J., a prominent historian of Spanish Colonial America, published an article calumniating the Spanish explorer Francisco de Ortega. In "Two Fictitious Accounts of Ortega's 'Third Voyage' to California," Father Burrus, with a good deal of sarcasm, exaggeration, and irony, stated that Ortega had "forged" the "fictitious," "false" reports of an "apocryphal" 1636 voyage in the Gulf of California, in which he had made "impossible" claims, been "dishonest," "lied," and committed fraud, with the "ulterior motive" of furthering his aim to continue his "lucrative" pearl fishing in the Gulf.¹ While historical documentation does show that Francisco de Ortega was not the most genteel of expeditionaries, he is not deserving of the foregoing statements, and were he or his immediate family alive when Father Burrus's article appeared, a suit for libel, slander, and defamation would probably have been filed (and won). That not being possible, this article must serve to give this much-maligned explorer his "day in court."

Historical Background to Ortega's Voyages

By the mid-sixteenth century, Spanish exploration of the Pacific coast of the Californias had proved the area to be of little interest for colonization or economic development. After 1565, however, this unpromising coast was considered to be of great strategic importance as a site on which to establish



a safe supply port for the Manila galleons. By the time these galleons made landfall near the end of their grueling annual voyage from the Philippines to Acapulco, carrying highly valued cargo of merchandise including silks, porcelains, lacquerware, and silver, their crews were often in desperate straits and required reprovisioning. Further, some form of possession was necessary to defend Spain's claim to the Californias against English encroachment, but the climate of the northern California coast and winds and currents contrary to northerly sailing diminished enthusiasm for settlement. Although voyages in the Gulf of California by Francisco de Ulloa and Hernando de Alarcón in 1539 and 1540 had demonstrated the peninsularity of California, belief in its insularity persisted, with some navigators suggesting that the mouth of the Colorado River was only a narrows which would shortly widen to an inside passage between the "island" of California and continental North America.

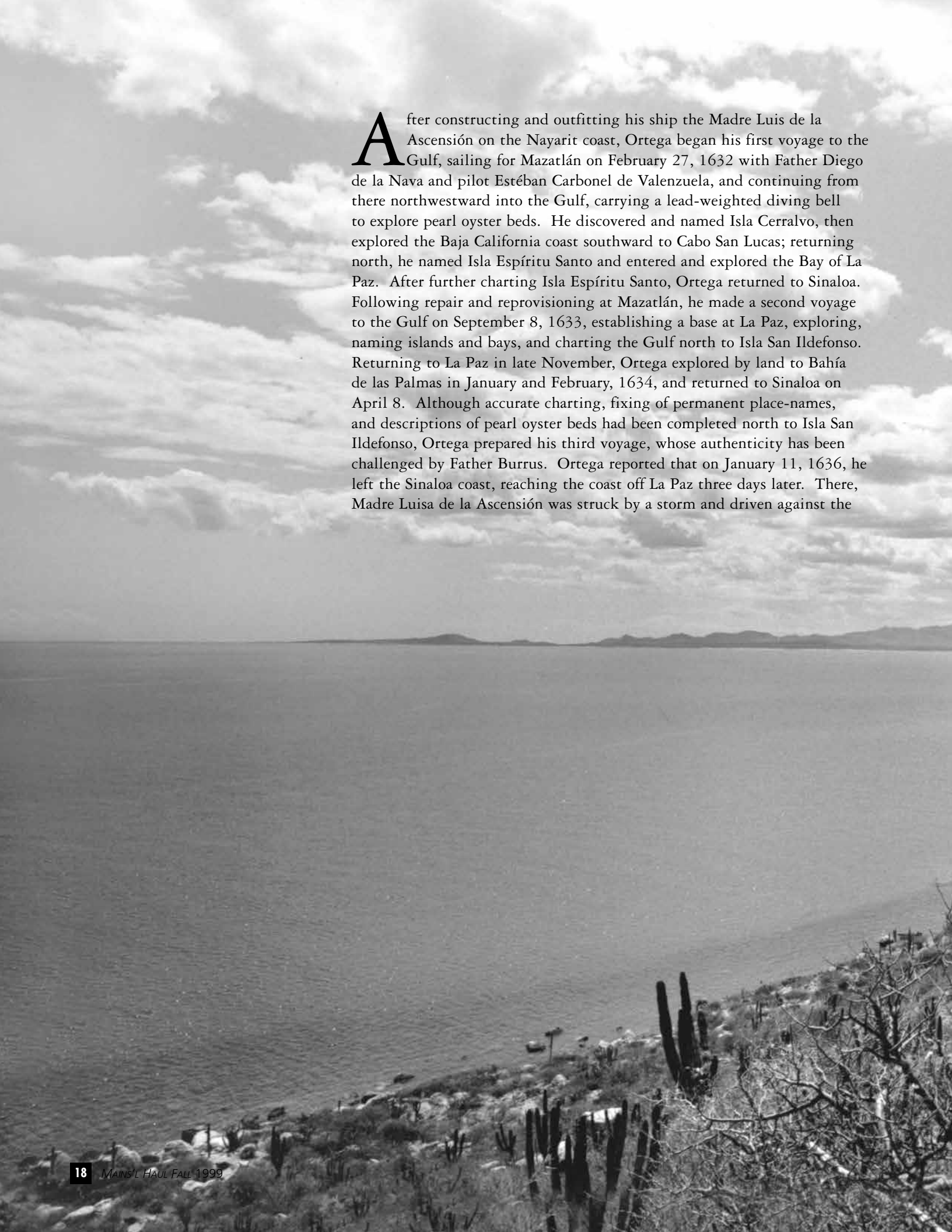
This concept that California was in fact an island received renewed popularity thanks to the wishful thinking of Fray Antonio de la Ascensión, who was the second cosmographer on the voyage of Sebastián Vizcaíno to southern Oregon in 1602-1603. He believed that the Gulf of California, thanks to its warmer climate and more favorable currents, would provide an ideal passage northward to the end of the island of California. There, awaiting discovery, lay the entry to the Strait of Anián, the reputed water passage from the Pacific to the Atlantic. Establishment of a safe port for Manila ships at the entry to this strait would permit the galleons to sail directly to Spain, and communication with this port could best be achieved via the Gulf of California.

The wide acceptance of this fanciful concept resulted in a diversion of maritime exploration in the Californias from the Pacific coast to the Gulf. To finance these expeditions, the crown granted their commanders exclusive rights to fish and trade for pearls, a known resource in the region. In exchange for this monopoly, contractees were to settle the region, chart the coasts, and discover the entry to the elusive Strait of Anián. In 1611, Tomás de Cardona was licensed under these conditions, and in 1615 Nicolás de Cardona, his nephew, and Juan de Iturbe explored the Gulf of California as far north as Isla Tiburón. Upon their return to Acapulco, however, their ship was captured by the Dutch pirate Joris van Spielbergen, and, following several attempts to continue their enterprise, the Cardonas lost their license. Petitions ensued, and hearings were initiated in 1628 which resulted in the transfer of the monopoly in November, 1631 to Francisco de Ortega and his partners.



California is shown as an island in this 1625 English map.

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After constructing and outfitting his ship the *Madre Luis de la Ascensión* on the Nayarit coast, Ortega began his first voyage to the Gulf, sailing for Mazatlán on February 27, 1632 with Father Diego de la Nava and pilot Estéban Carbonel de Valenzuela, and continuing from there northwestward into the Gulf, carrying a lead-weighted diving bell to explore pearl oyster beds. He discovered and named *Isla Cerralvo*, then explored the Baja California coast southward to *Cabo San Lucas*; returning north, he named *Isla Espíritu Santo* and entered and explored the Bay of *La Paz*. After further charting *Isla Espíritu Santo*, Ortega returned to Sinaloa. Following repair and reprovisioning at Mazatlán, he made a second voyage to the Gulf on September 8, 1633, establishing a base at *La Paz*, exploring, naming islands and bays, and charting the Gulf north to *Isla San Ildefonso*. Returning to *La Paz* in late November, Ortega explored by land to *Bahía de las Palmas* in January and February, 1634, and returned to Sinaloa on April 8. Although accurate charting, fixing of permanent place-names, and descriptions of pearl oyster beds had been completed north to *Isla San Ildefonso*, Ortega prepared his third voyage, whose authenticity has been challenged by Father Burrus. Ortega reported that on January 11, 1636, he left the Sinaloa coast, reaching the coast off *La Paz* three days later. There, *Madre Luisa de la Ascensión* was struck by a storm and driven against the

shore where she was badly damaged. Following forty-six days of repair and rebuilding, Ortega attempted to continue his expedition on March 10, sailing and charting northward to Isla Tortugas before returning to Sinaloa on May 15. Although the voyage was a failure for Ortega—he was bankrupted by failing to recover sufficient pearls and by the wreck of his ship—he successfully charted and permanently named the islands, principal points of land, and bays in the Gulf of California.

The Authenticity of Ortega's Third Voyage

Father Burrus, employing two reports of Ortega's third voyage published by this writer in 1970, "Descripción y demarcación de las Islas Californias..." [hereinafter, "Demarcación"] and "Relación circunstanciada de los tres viajes..." [hereinafter, "Relación"],² argues that the contradictions, inaccuracies, and "impossible claims" found in the two documents shows that they were "fictitious" and "forged." He further states that the only reliable information in the documents relative to Ortega is his biographical data, that he could not have rebuilt his vessel after it had broken up going aground south of Bahía de La Paz, and observes sardonically that the "fierce" Indians of La Paz were "for once most docile and cooperative."

Father Burrus, as the leading specialist in Jesuit history in New Spain, particularly attacks Ortega's account of the voyage on the grounds that Father

Bahía de la Ventana, possibly the site of Ortega's disputed shipwreck.
Courtesy Harry Crosby.



Roque de Vega, the priest who reportedly accompanied the expedition, not only could not have communicated with the Indians as claimed, but never actually existed. In the documents of the voyage, Vega is mentioned on four occasions as a member of the Society of Jesus; however, since no Jesuit by that name ever appeared on the rolls of the Society in New Spain, Father Burrus presumes therefore that Vega was a pure invention. Similarly, the failure of Father Vega's name to appear in documents of the jurisdictional dispute over California between the bishops of Guadalajara and Durango (Guadiana) or in the work of contemporary chronicler Andrés Pérez de Ribas, S.J., also seems to support the concept that the priest was a fictitious character.

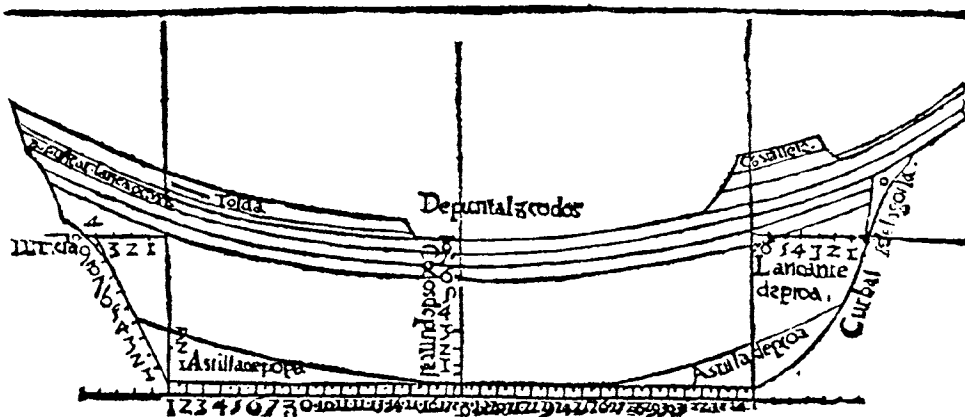
Ortega's efforts to survive the disaster and complete his voyage, and his occasional good fortune after his shipwreck are also objects of ridicule to Father Burrus. He mockingly terms "marvelous," "miraculous," and to "surpass all belief" incidents including the use of a diving bell, the escape from injury of all those aboard when the ship dragged its anchor and went aground, the floating to shore of supplies and the priest's Mass kit, the rebuilding of the ship, the continuation of the voyage, and its termination due to cold weather. Correctly noting Ortega's often gross errors in latitude readings, lesser errors in judging distances, as well as discrepancies between the "Demarcación" and "Relación," and claiming that the third voyage was expressly prohibited by the viceroy, Marqués de Cadereyta, Father Burrus concludes his arguments that the voyage was pure fiction.

All of the foregoing, and other conclusions of Father Burrus in his article notwithstanding, Ortega did in fact make the voyage he claimed to have made, in a manner more or less as he stated. A more precise, contextual analysis of the documentation used by Father Burrus, as well as of material which has subsequently come to light, within a framework based upon known aspects of maritime history and Spanish administrative law in the seventeenth century, clearly demonstrates that most of Ortega's actions and claims were totally reasonable, and that the "impossible," "incredible," and "miraculous" would have been within his ability to perform.

While exaggerations, false hopes, inaccuracies, and contradictions may make historical documents dubious, they are not factors which absolutely prove them to be fictitious and forged. Considering the extraordinary

penalties, including death, for the fabrication or forgery of official documents in Spanish domains, the risks would have far surpassed the benefits.³ Furthermore, the original "Descripción" was attested to by the captain and alcalde mayor of Sinaloa, Francisco de Bustamante, by Father Juan Romero, S.J., a Jesuit missionary in Sinaloa, three residents

This woodcut was intended to show how Spanish shipwrights in the Americas, like Ortega, computed the proportions of a ship's hull. From Diego García de Palacio's 1587 *Instrucción náutica*.



of the province, eight members of the expedition, as well as Ortega and Vega, and later copied and certified by royal scribe Joseph de Cuenca on October 27, 1636 and by the secretary of government, Luis de Tovar Godínez, on November 11 of the same year.⁴ The

“Relación”, signed only by Ortega, was, like the “Demarcación,” an official document remitted to the viceroy, and was accompanied by a third report, the “Descripción mui circunstanciada de los Comederos de Perlas que descubrió...” of October 20, 1636, which also was based in part upon the third voyage.⁵ Were these documents false, this conspiracy to defraud the monarchy would have involved high government officials, priests, and sworn notaries. It is most unlikely, particularly given the extraordinary security relative to California as evidenced by the Vergara-Carbonell trials of 1635, that Ortega could have fabricated his story and fooled “all of the people, all of the time.”⁶

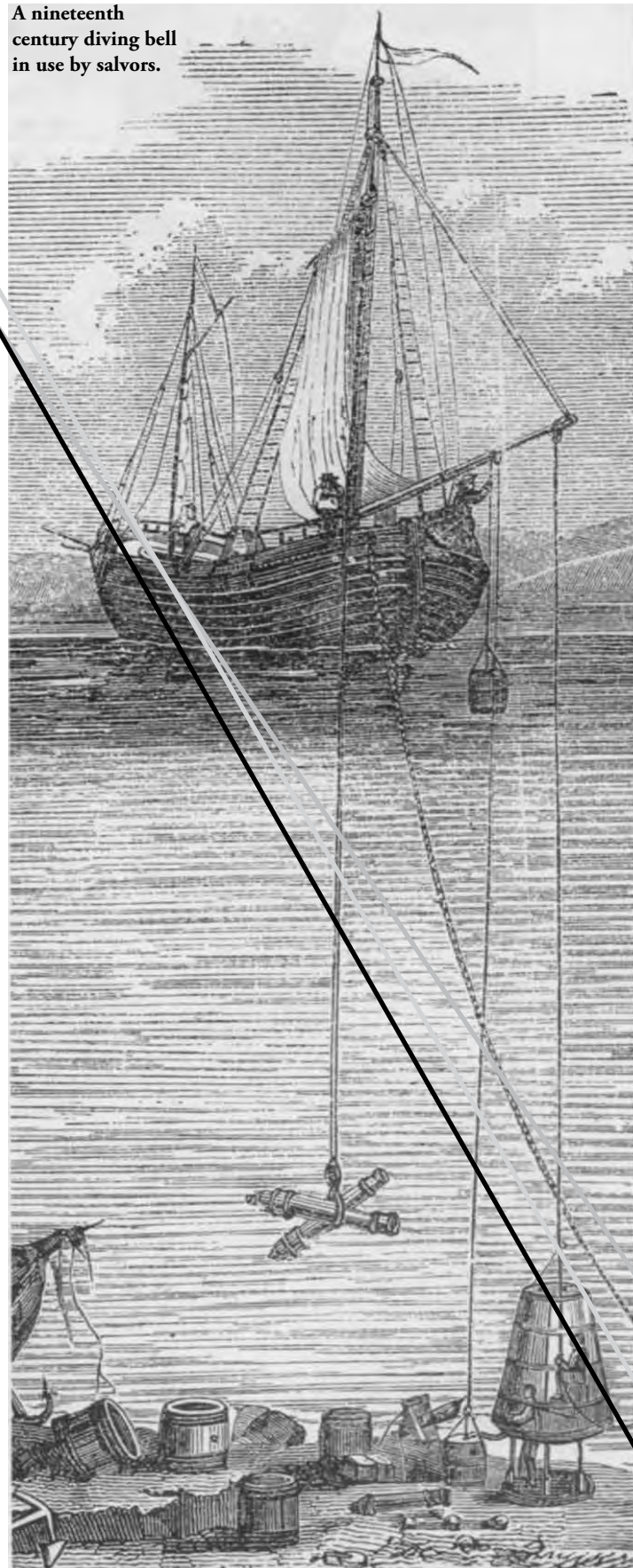
While there is not enough available material for a full-length biography, there is more documentation relative to Ortega than supposed by Father Burrus.

Ortega was a *carpintero de ribera* (shipwright), and with his brother Hernando and his cousin, Domingo de Savala, he was employed in Nayarit by Sebastián Vizcaíno’s son-in-law, Martín de Lezama, to build a ship for exploration in the Gulf of California. There was a conflict between the men and Lezama, and the latter claimed that in November of 1628 the three had attempted to kill him.⁷

Thus, clearly Ortega was knowledgeable in the field of shipbuilding, a rather rustic individual, and a man of good fortune who somehow escaped conviction for the crimes alleged against him. He obtained his license to carry out exploration through influential businessmen who were willing to finance his venture, and his skills were those of a seaman, shipbuilder, and pearl fisher, not a practiced celestial navigator.⁸ Ortega’s skills are evident in his construction of a diving bell, a device long in use by salvors on the coasts of Europe. Contemporary diving bells, such as that invented by Richard Norwood in 1612, were simple weighted, inverted casks which trapped air, permitting the occupants to salvage or rake up pearl oysters through the open bottom; most likely the Ortega design followed this pattern.⁹ Prior to his first voyage in 1632, Ortega claimed the device permitted two persons to descend to any depth and remain for ten to twelve days, but evidently these claims were found to be exaggerated for they were not repeated in relation to his second or third voyages.¹⁰

Since all ships conducting lengthy voyages or exploring uncharted waters carried virtually everything necessary to build a ship except lumber, [see the preceding article – *ed.*] certainly a man of Ortega’s experience could plausibly have repaired a smashed hull using salvaged planking and lumber from the mesquite, palo blanco, palo fierro, or palo brea trees which abound in the area south of La Paz, within the forty-six days he claimed. As regards the reported recovery by Ortega and his men of much

A nineteenth century diving bell in use by salvors.





In the Indians of the southernmost part of California as Returning from Fishing & another on his Barklee

Native Baja Californians,
from George Shelvocke's 1726
A Voyage Around the World.

of their supplies, trade knives, and other items, it is not surprising that much would float, since almost everything carried aboard ship was packed in wooden barrels or crates, and normal wave action tends to wash flotsam ashore.¹¹ Once *Madre Luis de la Ascensión* was afloat again, Ortega and his crew could have survived as he claimed; sailing close to shore, he could easily put in at night, camp ashore, send men out to forage for small game, shellfish, and also to fish during the day as did the local Indians, and thus, unlike survivors on the open sea, provide an appropriate diet for his crew of twenty. One piece of evidence indicating Ortega's direct knowledge of the area he claimed to have explored after the wreck is his record of the position of pearl oyster beds he discovered, which is extremely accurate and conforms with later explorations.¹² Ortega's feat of skill is extraordinary, but less so than the earlier California survival sagas of the twice shipwrecked Sebastián Rodríguez Cermeño, who sailed makeshift vessels in 1587 and 1595 from Cabo San Lucas and Drakes Bay, respectively, to the coast of Nayarit.¹³ Certainly if Father Juan de Ugarte, S.J., trained as an agriculturist in Honduras, could build the ship *El Triunfo de la Cruz* from native materials in Baja California and sail it from Loreto to the Colorado River delta and back to La Paz in 1720, an experienced shipwright such as Ortega, using salvaged planks, keel, and iron, could do the same in 1636.¹⁴

Ortega's calculations of latitude reached in the Gulf of California are indeed grossly erroneous, so much so that, compared with headway, they themselves support the simple veracity of the document, for even the most untrained could recognize their impossibility under sail. Apart from simple mistaken dictation, they can only be explained by the fact that Ortega was not a trained navigator or cartographer, nor even a trained observer. With wishful thinking, he may have hoped that he had gone further north than had his predecessor Nicolás de Cardona, who had also claimed an absurd latitude, in the attempt to reach the end of the reputed "island" of California and discover the Strait of Anián.¹⁵ The unlikely-sounding cold weather he reportedly encountered in the northern Gulf in late May may not have been particularly unusual during the years of the "Little Ice Age," especially with a north wind out of the still snow-covered highlands of California and Arizona, snow-melt runoff filling the Colorado River, and those at sea accustomed to the warmer clime of Sinaloa.¹⁶

As for the mysterious Father Roque de Vega, he was in fact the expedition's chaplain, and a parish priest (*presbítero*) of the diocese of Guadalajara. He was referred to incorrectly as a Jesuit on four occasions in the "Demarcación," a document which was composed by a scribe, not a member of the expedition, but he is referred to simply as a priest an equal number of times. Tellingly, Vega's signature lacks the customary S.I. or IHS of Spanish Jesuits. Because the black cassocks of diocesan clergy and Jesuits were virtually identical, and the expedition set out from an area ministered by Jesuit missionaries, the confusion of an unspecialized scribe, appointed solely for the single voyage, is certainly possible. In the "Relación," personally authored by Ortega, Vega is referred to as "*presbítero*," just as he refers to himself in legal documents in Guadalajara in 1611 and 1618.¹⁷ Vega was not licensed to establish missions, but was to serve as chaplain for the crew of Ortega's ship, and his efforts at evangelization were, as in the case of his predecessor Father Diego de la Nava, a part of his vocation.

How he communicated with the Pericú people of La Paz can only be

speculated upon. He probably followed the methods employed by thousands of other priests in dealing with Indians and by other clergy who visited La Paz, such as Nava, and later, the Jesuit Fathers Eusebio Francisco Kino, Juan de Ugarte, Jaime Bravo, and Clemente Guillén, since none of them spoke Pericú either; there seems to be no reason to believe that Vega's capacity was unusual.¹⁸ The Pericú were certainly not "fierce" since their pacifism was the cause for the name "La Paz" itself, and friendly relations had been established on the second voyage by Ortega and Nava. The contact with Indians claimed on the third voyage is substantiated by the distinction Ortega draws between the Pericú language of La Paz, isla San José, and isla Espíritu Santo, and the Cochimí spoken in the region of Loreto, a division noted by later observers and ethnographers.¹⁹

That Vega was not mentioned in the lengthy 1682 testimony relative to the dispute over ecclesiastical jurisdiction in California, which arose in 1633, is unsurprising because the question was settled by royal provision in 1634, and any citation after that date of the subsequent sending of priests or the licensing of regular clergy for California would have been irrelevant and superfluous.²⁰ Also, the fact that Vega is not mentioned by the chronicler Pérez de Ribas does not seem notable, since he does not mention Ortega or Nava either, both of whom indisputably existed.²¹

Though there are indeed differences between the “Demarcación” and “Relación,” the two documents of this voyage, these are not surprising either, since the former was written by a scribe as a full report based on logs and notes upon return from the voyage, subsequently submitted as evidence to secure a new license, while the latter was written by the captain as an abbreviated, extemporaneous account or overview of events (*circunstanciado*) several months later; under any circumstances, the differences cannot be fairly termed “radical.” The principal difference, the greater horror of the wreck in the “Demarcación,” is probably the reaction of an inexperienced scribe rather than a seasoned seaman.²² Finally, Ortega was not specifically prohibited from

further voyaging in the Gulf by the viceregal order of November 11, 1636, as Father Burrus suggests, but rather all contenders, none specifically named, were halted.²³

The foregoing observations clearly reestablish the veracity of Ortega's reports of the voyage, clear him of the charges that he never reached Baja California in 1636, and refute the assertion that his ship was actually wrecked on the mainland coast or sold. The mere facts that a chaplain was erroneously called a Jesuit on four occasions and that latitude readings were extremely exaggerated is not sufficient to invalidate the entire voyage. Furthermore, on February 19, 1661, based upon the testimony of these three voyages, and favored by the *fiscal* Dr. Manuel de Escalante y Mendoza and *oidor* Lic. Francisco Calderón y Romero, Viceroy Conde de Baños issued an order that no impediment be placed against Francisco de Ortega for the building of boats and the hiring of voluntary Indian labor for the purpose of fishing for pearls in the Gulf of California, and granted a license permitting him to fish for pearls in those beds which he had recorded.²⁴ Although Ortega did not proceed under the terms of this new license, probably due to age, its mere issuance gives further credence to his claims of a quarter-century earlier and establishes him as a major explorer of the Californias. If not, then his evident defrauding of two important royal officials and a viceroy, after all of the fraudulent activity attributed to him by Father Burrus, places Ortega among the most daring, skilled, and convincing of perjurers, impostors, frauds, and con men of Spanish America, for his claims still cannot be documentarily, geographically, or physically disproved.

1 Father Ernest J. Burrus, S.J., "Notes and Comments," *Hispanic American Historical Review* 52 (May, 1972): 272—283.

2 The substantive arguments put forth in this article were presented to Father Burrus in 1984. W. Michael Mathes, ed., *Californiana II: Documentos para la historia de la explotación comercial de California, 1611—1679* (Madrid: Ediciones José Porrúa Turanzas, 1970): 453-467, 480-486. The originals are not extant, but contemporary copies are found in Archivo General de Indias, Sevilla, [hereinafter AGI] Patronato 30 and Guadalajara 133.

3 *Recopilación de Leyes de los Reynos de las Indias* (Madrid: Julian de Paredes, 1681), Ley 3, título 8, libro 7, fol. 296.

4 AGI, Patronato 30 and Guadalajara 133, respectively.

5 *Californiana II*, 468-476.

6 While constructing a ship for a voyage to the Gulf, Francisco Estéban Carbonell, a Valencian, was accused of being French and imprisoned for almost five years prior to acquittal. *Ibid.*, 487-615, 623-690.

7 Parecer de Martin de Lezama;

Petición de Nicolás de Cardona. *Ibid.*, 149-151, 366-367.

8 *Ibid.*, 278-337, 386-401.

9 Richard Norwood, *The Sea Mans Practice* (London: George Hurlock, 1637). For a modern replica, see: *National Geographic* 175:4 (April, 1989): 462-463. The diving bell was known from Classical times. A successful submarine, a sealed vessel with contractible sides to adjust for pressure and a hollow mast leading to the surface for air, was invented by the English navigator William Bourne in 1578; see William Bourne, *Inventions or Devices* (London: Thomas Woodcock, 1578). An elongated bell propelled by oars through leather gaskets and containing air bags was used by the Fleming Cornelius Drebbel in 1621; see Cornelius Jacobszoon Drebbel, *Tractatus duo* (Hamburg: H. Carstens, 1621).

10 *Californiana II*, 408, 429-430, 454. Nevertheless, modifications of the Norwood design using hoses or tubes for air permitted longer periods of submersion.

11 W. Michael Mathes, ed., *The Conquistador in California:*

- 1535 (Los Angeles: Dawson's Book Shop, 1973): 29-79; W. Michael Mathes, ed., *Californiana I: Documentos para la historia de la demarcación comercial de California, 1583-1632* (Madrid: Ediciones José Porrúa Turanzas, 1965): 228-239, 298-303.
- 12 *Californiana II*, 469-476; Relación del viaje de Francisco de Lucenilla: 20 de septiembre 1668. Ibid., 955-982. Miguel León-Portilla, ed., Miguel del Barco *Historia Natural y Crónica de la Antigua California* (México: Universidad Autónoma de México [hereafter UNAM], 1973): 136-144.
- 13 *Californiana I*, 66-80, 128-150, 163-178.
- 14 Roberto Ramos, ed., *Tres Documentos Sobre el Descubrimiento y Exploración de Baja California por Francisco María Piccolo, Juan de Ugarte y Guillermo Stratford* (México: Jus, 1958): 15-65.
- 15 "Descripciones hidrográficas hechas por Nicolás de Cardona: 4 de junio 1632," *Californiana II*, 248-263. For a discussion of the strait and its relationship to California, see: W. Michael Mathes, "The Mythological Geography of California: Origins, Development, Confirmation and Disappearance", *The Americas* XLV (January, 1989): 315-341.
- 16 Father Burrus also challenges Ortega's estimates of the circumferences of the islands of Tortugas and San Lorenzo, but these are without major inaccuracies; the former is approximately 113 kilometers in circumference, and the latter some 398 kilometers; unlike isla Angel de la Guarda, the latter has fresh water.
- 17 Poder de Padre Roque de Vega, 30 May 1611. Archivo de Instrumentos Públicos, Guadalajara. Protocolo de Andrés de Venegas, Tomo 1606-1618, ff. 99-100v.; Reclamación de Padre Roque de Vega, 29 March 1618. Archivo de la Real Audiencia-Judicial. Caja 30-1-395.
- 18 *Californiana II*, 270-277; Ernest J. Burrus, ed., *Kino Reports to Headquarters* (Rome: Institutum Historicum Societatis Jesu, 1954); Miguel León-Portilla, ed., *Testimonios Sudcalifornianos* (México: UNAM, 1970).
- 19 W. Michael Mathes, "Some New Observations Relative to the Indigenous Inhabitants of La Paz, Baja California Sur", *Journal of California Anthropology* 2(1975), 180-82; Fermín Reygadas and Guillermo Velázquez Ramírez, "Investigación arqueológica reciente en los municipios de La Paz y Los Cabos," *Memoria VI, VII y VIII Semanas de Información Histórica de Baja California Sur* (1985): 97-118.
- 20 The 1682 dispute over the jurisdiction of California between bishops Juan de Santiago de León Garabito of Guadalajara and Bartolomé de Escañuela of Durango arose from the 1633 attempt of Bachiller Juan de Zúñiga of the archdiocese of México to baptize in La Paz without a license. The complaints of Ortega and Nava caused the issuance of a royal provision of July 13, 1634 granting jurisdiction to Leonel de Cervantes y Carvajal, bishop of Guadalajara, based on the act of possession made by Diego de la Nava, presbítero and vicar of Guadalajara, during Ortega's second voyage. This jurisdiction was established prior to the third voyage, and the question was not raised again until Bishop Escañuela did so relative to Kino's planned mission to California almost fifty years later. "Auto sobre la toma de posesión de California: 5 de abril 1683;" "Autos sobre la jurisdicción espiritual de California: 1634-1682." W. Michael Mathes, ed., *Californiana III: Documentos para la historia de la transformación colonizadora de California, 1679-1686* (Madrid: Ediciones José Porrúa Turanzas, 1974): 65-67, 163-207.
- 21 Andrés Pérez de Ribas, *Historia de los triumphos de Nuestra Santa Fee* (Madrid: Alonso de Paredes, 1645).
- 22 There is also no mention of the latitude of the wreck in either document, and no statement of the duration of the voyage, or that Ortega returned directly to Sinaloa, in the "Relación."
- 23 *Californiana II*, 739-742. Viceroy Marqués de Cadereyta declined a gift of pearls from Ortega, as Father Burrus notes, but not as a "tactful" gesture; in so doing he complied with the basic legal concept that such gems were royal property, and thus unlawful for him to accept. "Asiento y capitulación de compañía." *Californiana II*, 328-337.
- 24 AGN. General de Parte, Tomo 11, exp. 63, ff. 64-65; exp. 64, ff. 65-65v.

Sixteenth century ships.

When The Chileans Invaded Baja California

by Carlos López Urrutia

For several years in the early nineteenth century, the dominant naval power in the Pacific was not Spain, nor one of the other European powers, nor yet the United States: it was Chile. During the wars of independence which forced Spain to give up her American empire, the new nation's squadron captured or forced the surrender all but two of the Spanish warships on the west coast of South America, and privateers flying the Chilean flag reduced Royalist sea trade to a trickle. In the series of little-known events which are the subject of this article, the young Chilean navy even flexed its muscle on the shores of Baja California, helping push this isolated Royalist province into the new Mexican nation. Some of the accounts of these events are based on Mexican documents, published here in English for the first time.¹

Chile built her Navy by purchasing ships in England, by capturing Spanish prizes, and by hiring some very talented help. Lord Thomas Cochrane, a Scottish captain who had gained fame and fortune in the Napoleonic Wars but had fallen out of the Admiralty's favor, was recruited by Chilean agents in England to take command of the new navy. In 1818, while awaiting Cochrane's arrival, the first Chilean Squadron sailed under the command of Admiral Blanco Encalada, who captured an eleven-ship Spanish convoy sent to reinforce the Peruvian viceroy, then under threat of attack by General José de San Martín, the Argentinean Liberator.²

Assisted by British, American and Chilean officers, Cochrane brought the Chilean Navy up to standards of discipline and performance similar to those of the Royal Navy, and his captains were all former Royal Navy lieutenants or commanders. Assisted by privateers, the fleet cleared the coast of Spanish shipping.

His landing operations became legendary in South America, as the strongholds of Pisco, Valdivia and Arica fell to his amphibious attacks. He blockaded Callao, preventing the Spanish Pacific Squadron from sailing, and the squadron captured several merchant ships and cut out the Spanish flagship Esmeralda from under Callao's guns. His fleet of sixteen ships and nine men of war transported San Martín's Army to Peru.

In February, 1822 the squadron reached the coast of México, searching for the Spanish frigates Prueba and Venganza, the last two Royalist warships in the Pacific. For their part, the frigates themselves had sailed from Acapulco in search of Cochrane in order to surrender. Admiral Cochrane was welcomed to México, and even invited by the newly established Emperor Iturbide to visit the capital, but he was in a hurry to return to the Southern Hemisphere. The long voyage from Peru had exhausted his supplies, and although he was able to get some goods at Acapulco, his pursers were unable to purchase enough beef and flour there to supply his six ships. The local governor, Basilio De la Góndara, suggested that further supplies could be obtained in Baja California. The admiral therefore ordered Captain Robert Wilkinson of the sloop Independencia to sail north, taking along the brig Araucano. Wilkinson was to go to Loreto, the capital of Baja California's missions, where the father superior could authorize him to buy and butcher the cattle that he needed.

México, however, was in a chaotic state after twelve years of continuous war, and distant provinces such as the Californias, Texas and New Mexico had little or no communication with the capital. Out on this periphery, the Spanish flag still flew, and citizens of the newly independent nation were largely in the dark as to the events



Lord Cochrane had a long and colorful career in and out of the Royal Navy.

Cabo San Lucas, at the tip of Baja California.

Courtesy Harry Crosby





A Baja California Indian, thirty years after the Chileans' visit.

in México proper.

In his instructions to Wilkinson, Cochrane mentioned that a silver-laden Spanish ship was reportedly about to sail for Manila from San Blas, on the Mexican mainland, and could potentially be captured. Wilkinson decided to send the Araucano, under the command of Roberto Simpson, directly to Loreto to begin buying cattle and preparing the meat for jerky. In the meantime, he and the Independencia would cruise slowly in front of San Blas and keep an eye out for the ship at the tip of Baja California, where the mission and town of San José del Cabo were located.³

For several days the Independencia tacked back and forth, slowly sailing north, until sighting Cabo San Lucas. Not finding the Spanish ship, Wilkinson coasted towards San José. Along the way, Indian fishermen they encountered told them that a Spanish warship was anchored there. Relying on deception and the element of surprise, Wilkinson decided on a plan of attack, running in his guns and covering the gun ports with sailcloth. To complete the Independencia's disguise, he hoisted the Union Jack.⁴

In the afternoon of February 17, 1822, the Chileans entered the bay and sighted the enemy vessel, a brig of war flying a command pennant and a large Spanish flag. She was anchored a considerable distance from shore, and Wilkinson was able to approach close enough so that the Spanish captain could communicate through a speaking trumpet. In broken but peremptory English, the captain demanded to know what this English ship was doing in the waters of His Catholic Majesty, ordered him to anchor alongside, and directed that a boat be sent immediately with the ship's papers. In compliance with this last order, Wilkinson ordered that a boat be manned—but carry instead an armed party of sailors and marines under the command of Lieutenant Richard Vowell. As their oars hit the water, the Union Jack was run down, and the starred flag of Chile rose in its place. More unpleasant surprises awaited the Spaniard, for shortly the sailcloth dropped from the Independencia's gun ports and eight cannons pointed at him, their gunners standing by with lighted matches in hand. The captain struck his colors and some of those on deck jumped overboard, such was the terror which tales of the Chilean insurgents inspired in those waters.

The first task of the boat was to pick up the men floating in the water, who likely would have drowned, for the distance to shore was over two miles. Those rescued expressed surprise, expecting to be greeted with shots instead. Wilkinson invited the captured captain aboard, and in friendly conversation learned that the ship was actually a Mexican merchantman, the San Francisco Javier or Alción, which traded between Mazatlán and Upper California. She flew the Spanish flag and pennant, her captain insisted, because it was the only way the presidios and missions would allow him to trade. According to him, these places had ignored Mexico's independence and remained loyal to Spain.⁵ The Chilean captain also found out that the people aboard the "Spanish" ship were locals who had been assisting in replacing her rudder.

The presence of these local citizens as hostages gave Wilkinson

confidence that he could now attempt to operate on land, despite the apparent loyalty of the province's people to Spain. That same night, he ordered the capture of the village, and at midnight, a boat loaded with sailors reached the beach. The Chileans captured the village without firing a shot, and took as prisoner Don Antonio Quartara, the Governor of San Blas, surprised while playing cards at the house of the local missionary with the priest and another officer.

Three days later the *alcalde* of Santiago, a village forty-eight miles distant, reported to Baja California's governor José Argüello that,

In answer to your request I can only say that I have not heard any further news, neither from the *alcalde* nor from a soldier who is in San José, the son of old man Carlón who lives at that mission. It was said that at one in the morning, armed men came to the house of the father and had taken out Don Antonio Quartara with his assistant and had taken them to the ship and there has been no news about that.
May God guard you.
San Tiago, 20 February at 10 o'clock at night.
Salvador Castro.⁶

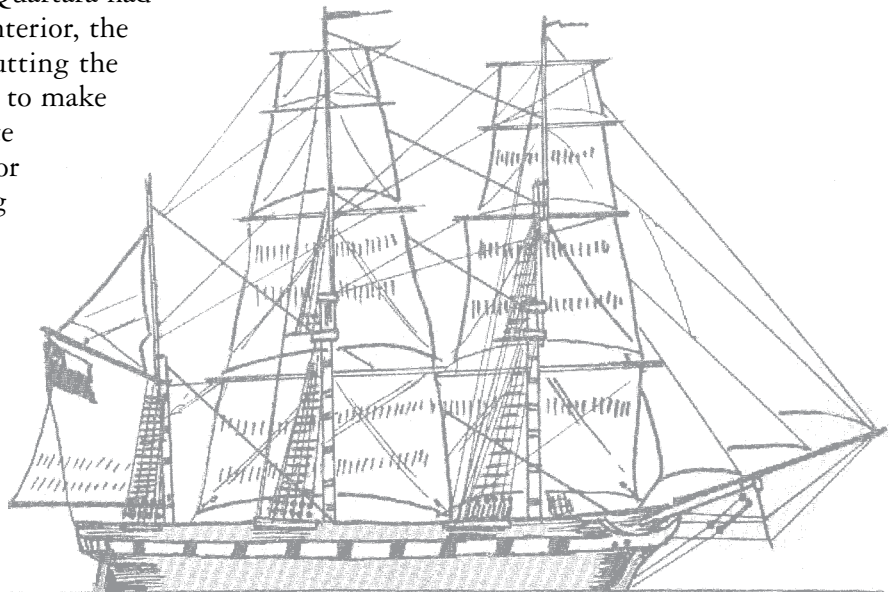


Captain Robert Wilkinson,
ex-Royal Navy.

Since the captured ship was Mexican and not Spanish, Wilkinson allowed the captain to retain command but ordered him to remain in port. He also set Quartara and his assistant free. In his account of the campaign, Lieutenant Vowell reports that Quartara was in San José on business and was governor of San Blas, though he is not recognized as such in the Mexican documents. In any case, he was an important man. These two formerly Royalist officers quickly befriended their erstwhile captors, professing their enthusiasm for Mexican independence. Presumably motivated by this as well as the business opportunity at hand, both volunteered to act as agents in the purchase of cattle and flour. Since Quartara had just brought a herd of cattle from the interior, the sailors were put immediately to work cutting the meat in strips and hanging them to dry to make jerky. Quartara even offered to negotiate with the governor and the father superior of the missions, who were in the mining settlement of San Antonio. He also warned them that in a nearby bay there was a brig or schooner that, if not stopped, could sail to San Blas with the news of the Chilean arrival and prevent the departure of the treasure ship Cochrane was seeking to ambush.

Wilkinson therefore ordered Lieutenant George Campbell, an American serving in the Chilean navy, to take a landing party

The *Independencia*





Baja California's rugged landscape is unforgiving to the unprepared.

overland to Todos Santos and sink this vessel. The distance was over seventy miles, however, and Campbell and his patrol were poorly prepared for the desert and carried no food. They nevertheless managed to reach the village, boarded the small brig, and sank it. His mission accomplished, Campbell and his men turned toward San José. His sailors were exhausted and hungry, and in the next village he stopped to feed them. He apparently had second thoughts that the ship had sunk completely, however, so he and a sailor rode back to check. But when the local inhabitants saw him returning, a mob congregated and attacked them, knocking them from their horses and killing them. Encouraged by the vengeance they had taken, the villagers organized and armed themselves with guns, knives and lances and went in search of the rest of Campbell's unsuspecting detail. The hapless Chileans, who had neglected to post a guard, sat eating fish and eggs when they were surprised by a discharge from one of their own, unguarded, weapons. In the brief *mêlée*, some were killed, others wounded and a few captured without injury. After burying their dead and aiding the wounded, they were marched towards the interior with their hands tied to the tails of horses.⁷

Rafael Amador, the *alcalde* of Todos Santos, wrote to Governor Argüello:

Todos Santos, 21 February 1822

Killing of Chilenos

I report to you that yesterday eleven armed men arrived at the house of the father, according to them Chileans, and their English captain. The priest stayed in his house and received them in a proper and friendly way as priests do. He let them stay all night and fed them well. In the morning they went to the beach and holed the schooner belonging to Manuel Salgado. After that, they went back to the father and had breakfast, requested horses, mounted and left. But once mounted, the captain and one of them went to the beach where they found two women and went after them. At that time, Manuel Salgado, Felipe Montes and others who had gone to salvage what they could of the schooner, went to help the women and when [the Chileans] drew their weapons, they had to kill them, and then, rapidly, they informed me. I gathered more people and we went to the house of the father where the rest were. It was necessary to spill blood and there were three dead, three wounded and the rest prisoners. I communicate this to you, so you can tell the governor to come and help because we are at great risk. We don't have one cartridge.

May God guard you for many years.

The Constitutional *Alcalde*. Rafael Amador⁸

Wilkinson sent Lieutenant Francisco Monroy to San Antonio to speak to Governor Argüello and request the release of the prisoners. The governor, however, refused to see him and jailed the officer together with the sailors he had come to liberate. This placed Wilkinson in a difficult situation, aggravated by lack of news from the Araucano which was supposed be somewhere in the Sea of Cortez. Fortunately for the

Chilean captain, the father superior of Baja California's Dominican missions shortly arrived in San José with word of the Araucano. Father Miguel Gallego had received distressing news of several landings in his province and believed that the whole Chilean Squadron with Cochrane, the Devil himself, would soon be landing.

In reality it was only the Araucano, which in search of cattle had contacted several villages and missions. Thinking that Cochrane's wrath would soon descend on the land, the Father Superior decided to cooperate and befriend the commodore. He first arranged for the prisoners to be released, presumably negotiating this with Argüello, although Wilkinson believed he simply ordered it. Convinced that the Spanish cause was lost and that the only way to put an end to privateer and naval attacks was to declare independence, he asked Wilkinson to assist him and became his ally.

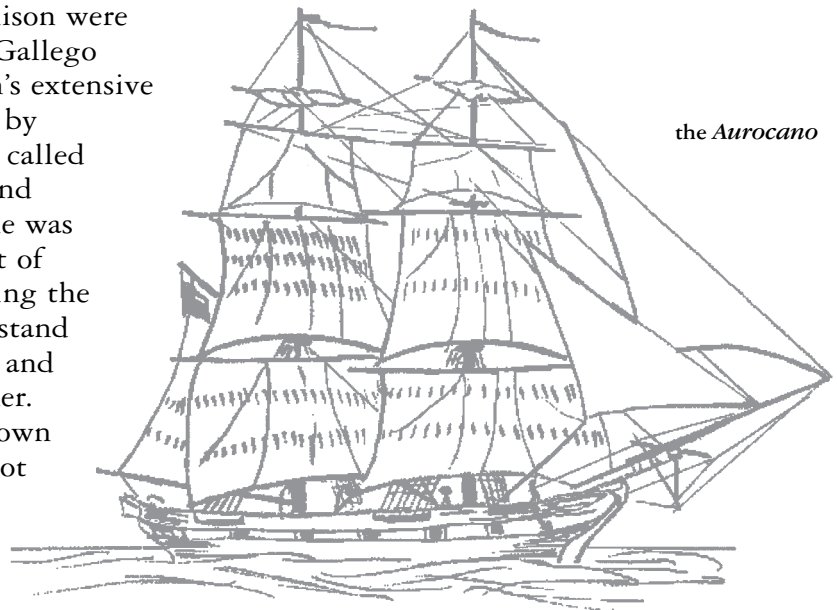
A call was sent out into the countryside and in a few days, Vowell reported, 1,500 horsemen rode into the village, armed with old Spanish rifles and lances. Wilkinson ordered the landing of some barrels of pisco, a potent Chilean liquor, and readied his ship to render the proper honors.

The English-speaking officers were impressed with the fervor of the occasion. In the midst of the silent crowd, the missionary stood on the church stairs and shouted to those present if they desired independence. The crowd roared back its assent, the men shaking their lances and shouting vivas to México, the priest and the Chileans. At that moment, on a signal from shore, the Independencia fired a salute with all her guns. The startled townspeople, unfamiliar with such protocol, responded by firing back at the ship, but she did not fire a second salvo and soon the populace joined the celebration, in which the pisco flowed freely.

Once the ceremony was over, the priest invited the captain and his officers to a banquet which, according to Vowell, consisted "of such a variety of dishes such as I had never seen in any party. The local cuisine rose to heights never seen before and the dishes, specially turtle, ham and venison were excellent."⁹ The meal finished, Father Gallego invited all the officers to see the mission's extensive vineyards, sugarcane fields and orchards by horseback. During the visit, Wilkinson called one of his officers and ordered him to send all the sailors back to the ship because he was afraid that the celebration might get out of hand. The father superior, however, seeing the officer gallop away, and unable to understand English, thought he was being betrayed and would shortly be robbed or taken prisoner. He, too, spurred his horse towards the town as fast as his mount could carry him. Not knowing what was happening, the officers followed him at full gallop. "This was enough," reported Vowell, "to increase to the limit the



Besieged in Loreto, the *Araucano's* captain Roberto Simpson and a group of men made their escape by boat.

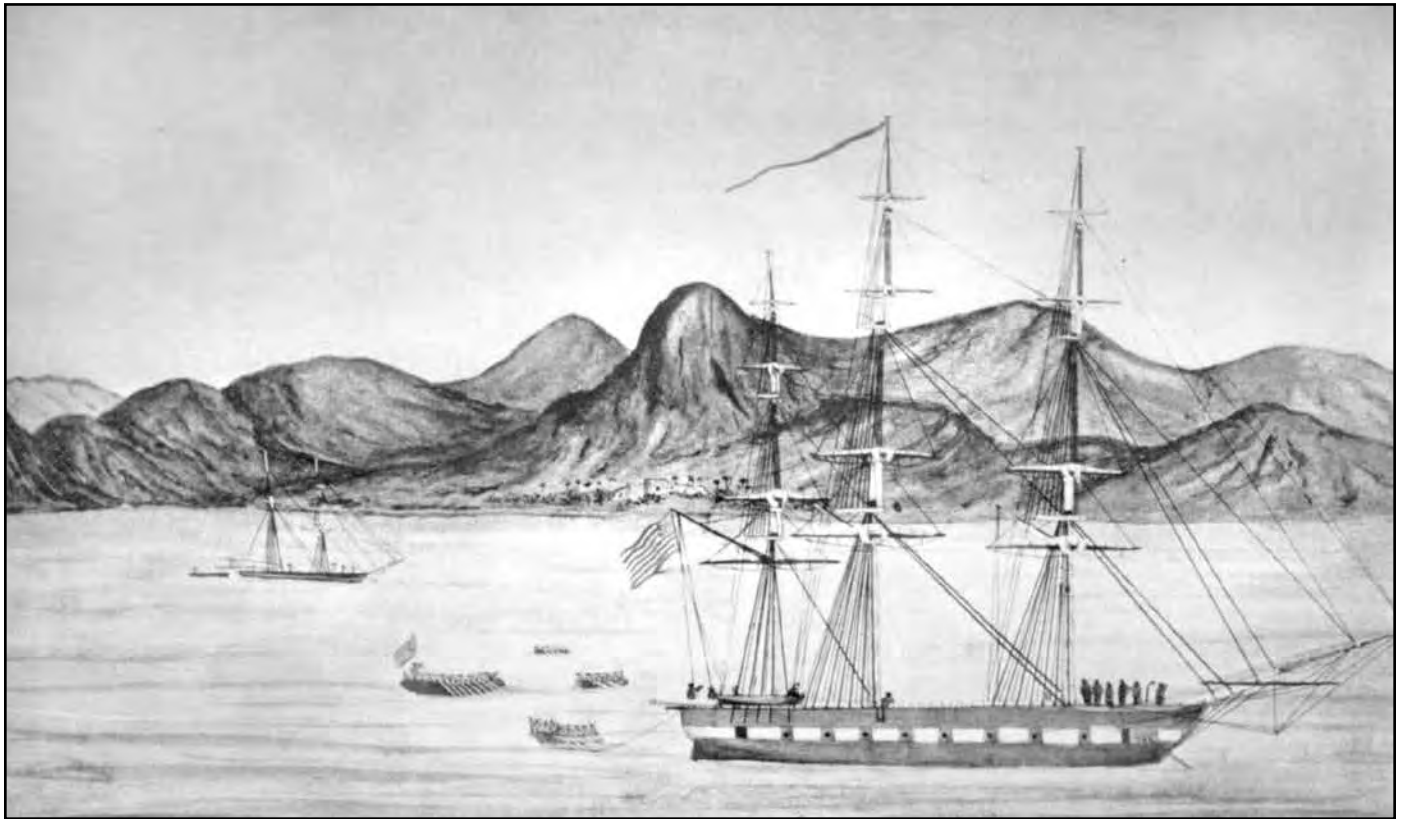


the *Aurocano*

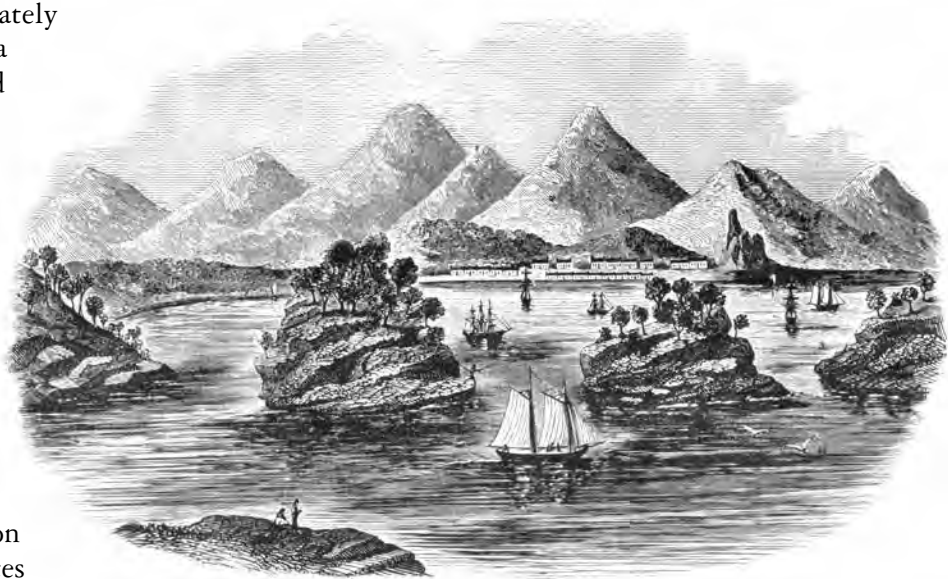
fears of the poor friar who, with his habits flowing in the wind, caused great alarm in the town, when they saw him cross the main street racing his horse, pursued, as the local Indians thought, by the heretic Englishmen.”¹⁰

It was difficult to convince the good missionary, but Quartara finally managed to prevail upon him that the heretics had not tried to rob or arrest him. In the end, after some courteous thanks and good-byes, the officers returned to their ship. Since nothing had been heard from the Araucano except the news that armed parties had been observed along the coast, Wilkinson decided to send Lieutenant Vowell north by land on a scouting mission to try to locate the ship. Quartara volunteered to go with him as his guide. The two dressed in deerskins like the local populace and, thus disguised, rode unmolested. Luckily, they encountered a sailor who was en route to San José, sent by Captain Simpson of the Araucano to bring the commodore alarming news: the brig’s English sailors had mutinied and, leaving Simpson and the Chileans ashore, had sailed away as pirates, after sacking, burning and robbing the town of Loreto. This situation had placed Simpson in a perilous position, because the local population, not understanding what had happened, surrounded them and kept up an almost constant attack. Vowell and Quartara hurried back with the bad news. In the meantime, astonishingly, Simpson and a group of his men rowed and sailed the two hundred miles between Loreto and San José in an open boat. On his arrival, Simpson reported to Wilkinson that his men had landed in Loreto, occupied the presidio, and had been drying the meat as planned when the mutiny stranded them.¹¹

Twenty-five years after Roberto Simpson escaped, foreign sailors landed at Loreto again. In 1847, at the close of the Mexican War, the USS *Dale* captured the town, as drawn by gunner William Meyers.



Wilkinson sailed immediately with the *Independencia* and on March 4 arrived in Loreto and reinforced the remaining Chileans, who were sheltering for protection in the mission church. Convinced by Wilkinson of the true situation, Ensign José María Matta of the Loreto presidio, who had defended his territory first against the invaders and then against the pirates, joined Wilkinson and Simpson, and together they proclaimed Mexican Independence to Loreto's citizens on March 7, 1822, under circumstances like those which had taken place in San José.



The port of Guaymas in 1854, looking much as it did when the Chileans visited.

The *Independencia* then sailed to Guaymas, on the Mexican mainland, where she was welcomed, and where the Chileans purchased a good supply of flour at three pesos per mule load (about three hundred pounds), before returning to Loreto.¹² After loading the beef jerky and a few barrels of salted meat there, the *Independencia* sailed south to Guayaquil, where Wilkinson was informed that the rest of the squadron had sailed for Chile. After a short stop in Northern Peru, the corvette anchored in Valparaíso on June 29, 1822, a cold winter's day in the Southern Hemisphere.

Thus ended the only Chilean expedition to the Northern Pacific, having struck a small, final blow at the once mighty Spanish empire. Governor Argüello would later complain that he had lost his silver dinnerware and there is little doubt that his house was ransacked and looted, as Simpson confirmed when he stated that he authorized the sacking because "it was Spanish property."¹³ While their relations with the people of the peninsula could charitably be characterized as a series of occasionally violent misunderstandings, the Chileans had played a part in bringing Baja Californians a step closer to participation in the political life of mainland México. That the two ships of the Chilean squadron contributed to that historical milestone has never been recognized by most Mexican historians. Though the Chilean Squadron left no trace in Mexico's history books, they did leave their mark on the map: the bay in which they landed, where a modern tourist hotel rises today, is christened Bahía Chileno.

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- 1 Though it was virtually extinct by 1830, the Chilean Navy briefly numbered a dozen warships and twenty-five transports. Chile experienced a major resurgence as a naval power in 1875.
- 2 Cochrane was delayed in England for some time awaiting the completion of the first steam gunboat, *Rising Sun*, being built for Chile. Though not completed in time to see action, she became the first steamship in the Pacific.
- 3 Munitments of the Rt. Hon. Earl of Dundonald, Scottish Records Office. Document 2125. Orders to Wilkinson to cruise two months in front of San Blas. Several other reports by captains Wilkinson and Simpson pertaining to the Baja expedition can also be found in this collection. The Archivo Nacional in Santiago de Chile has several volumes of Cochrane's documents. Most of them have been recently published as *Archivo Histórico Naval* (Valparaíso: Imprenta de la Armada, seven volumes to date). There are no documents concerning the cruise to California in the Chilean Archives.
- 4 Richard Longeville Vowell, *Campañas y Cruceros* (Buenos Aires: Francisco de Aguirre, 1972): 21. The account of this and other incidents relies heavily on that of Vowell, a British subject serving in the Chilean marines, who left us the most vivid and detailed narrative of the expedition.
- 5 Under the rapidly unraveling 1821 Plan of Iguala, which allowed Royalists and Mexican nationalists to coexist in México, the captain had every right to fly the Spanish flag. The ship, owned or commanded by one Zertaje, had just returned from San Francisco and Monterey, where she is recorded to have been in December, 1821. News of her capture soon reached Alta California, where it caused considerable alarm. See Bancroft, *History of California* Vol. III: 475. See other references to this ship in California State papers, MS VI 45 and MS III, 233-6, XI, 173-177.
- 6 Archivo de Baja California [hereinafter ABC], legajo 14, documento 26 bis. Febrero de 1822. This is the only document that mentions the capture of San José del Cabo. Lieutenant Vowell's account of the event closely parallels that of the "son of old man Carlón" in that the occupation was peaceful and there were no robberies or pillage by the Chileans in San José. Mexican historians, however, offer different interpretations. José N. Martínez states that "A ship flying the Spanish flag was anchored here and this gave him the excuse to sack and plunder the town to the extent that not even the church was spared." Martínez believed, incorrectly, that Cochrane was in command of this ship. (Martínez, *Historia de Baja California*, México, 1960: 316) Likewise, Fernando Jordán wrote, "When the stunned Californians of that generation saw him arrive [he too believed Cochrane was on board], they became so impressed that they started talking about becoming Chileans and renouncing being Mexicans." Jordán may be correct, for the documents indicate that the Chileans were soon admired, respected and accepted as friends. Jordán, *El otro México* (México, 1987): 74.
- 7 ABC, legajo 16, documento 26, Febrero 21, 1822.
- 8 Archivo de J.M. Martínez, La Paz. Historian Hubert Howe Bancroft wrote that the Chileans had instructions to capture the padre, loot the mission and burn the brig. None of these supposed instructions were carried out, proof enough they had not been issued. Bancroft also believed that there was only one survivor. Bancroft, *North Mexican States and Texas* (San Francisco: 1899): 708.
- 9 *Campañas y Cruceros*, 26.
- 10 *Ibid.*, 27.
- 11 The pirate *Araucano* sailed initially to Hawaii and then Tahiti, where she was finally captured.
- 12 There are several documents concerning the events at Loreto. ABC, legajo 14, documentos 30 and 33 deal with preparations for defense against attack by the Chileans; documento 36 deals with a sunken Chilean launch at Puerto Escondido. There is some confusion amongst the documents at this point, for some indicate that Simpson remained in Loreto, because a *parlamento* was signed between him and Matta at this time. "Parlamento con el capitán de la Armada chilena Roberto Simpson," ABC, legajo 14, documento 34.
- 13 The list of the items stolen from Argüello's house is in ABC, legajo 14, documento 32.

The First Surfers in Baja

By Serge Dedina



Captain Scammon himself.

Although California surfers like to think of themselves as the pioneers of surfing in Baja California, native Cochimi and Hawaiian surfriders predated them by over a century. The indigenous inhabitants of Isla Cedros used rafts made from driftwood, native softwood timber and tule reeds for hunting sea otters, fishing and navigating the treacherous area between the island and the *rancherías* (the Spanish term for villages) of the Central Desert region. Seri fishermen of the upper Sea of Cortez often paddled their elegant narrow rafts, made of bundled tules, while standing up—a challenge not unlike balancing atop a surfboard, especially during the often choppy conditions found in the region of Isla Tiburón and the Midriff Islands.¹

Disease had wiped out most of the peninsula's native population by the 1850s, when American and European whalers, often carrying Hawaiian crew members, searched its coasts for gray whales. Hawaiians, or Kanakas as they were then called, signed on as crew members of whaling ships that sailed from Hawaii to San Francisco and down to Mexico. Captain Charles Scammon, who hunted whales with his Kanaka crewmen for many years along Baja's Pacific coast, provides the earliest account of wave riding in the peninsula.²

In late 1857 two whalers, Scammon's *Boston* and the *Marin*, anchored off the entrance to Laguna Ojo de Liebre, searching for a passage across the shallow bar into the lagoon where gray whales annually calve at the end of their migration south.³ The scouts located a passage, but because the whales had not yet arrived, the crews of both brigs spent their time attending to chores and searching the deserted coast for firewood. During one such shore detail, the ship's carpenter became careless while bathing and capsized his boat, to which three other boats were made fast, just outside the surf line. Fearing for his life, he swam for shore and left the boats drifting out to sea. Captain Scammon recalled that,

The alarm was given to the party on shore, and it was a disheartening sight to behold the four boats drifting through the breakers, for everyone knew that without them our voyage would be fruitless. There were several Kanakas among the crew, who immediately saw the necessity of saving the boat: and selecting pieces of plank, to be used as "surf-boards," put off through the rollers to rescue them, when the anchor, which had been dragging all the while, brought up, and the current swept both carpenter and Kanakas out of reach. They then made for the shore, which all of them regained in an exhausted condition, except the carpenter who was never seen again.⁴

One can only speculate if these "planks" were actually surfboards brought by the crew for recreational use from Hawaii, where surfing had a long history. One wonders, too, whether the Hawaiians also took advantage of any free time while at San Juanico Bight to the south, a popular anchorage for whalers, to ride the "right-handers" of Punta Pequeña, today famed as one of the finest waves for surfing along the entire coast of the Californias.

1 See Richard Felger and Mary Beck Moser, *People of the Desert and Sea: Ethnobotany of the Seri Indians* (Tucson: University of Arizona Press, 1985).

2 *Kanaka* is Hawaiian for person; in the nineteenth century it came to denote native Hawaiians. Benn Finney and James D. Houston, *Surfing: An History of the Ancient Hawaiian Sport* (Rohnert Park: Pomegranate Artbooks, 1976): 100.

3 Laguna Ojo de Liebre ("Jackrabbit Spring Lagoon"), is now also referred to as Scammon's Lagoon.



Scammon's drawing of a whaleboat's contents.

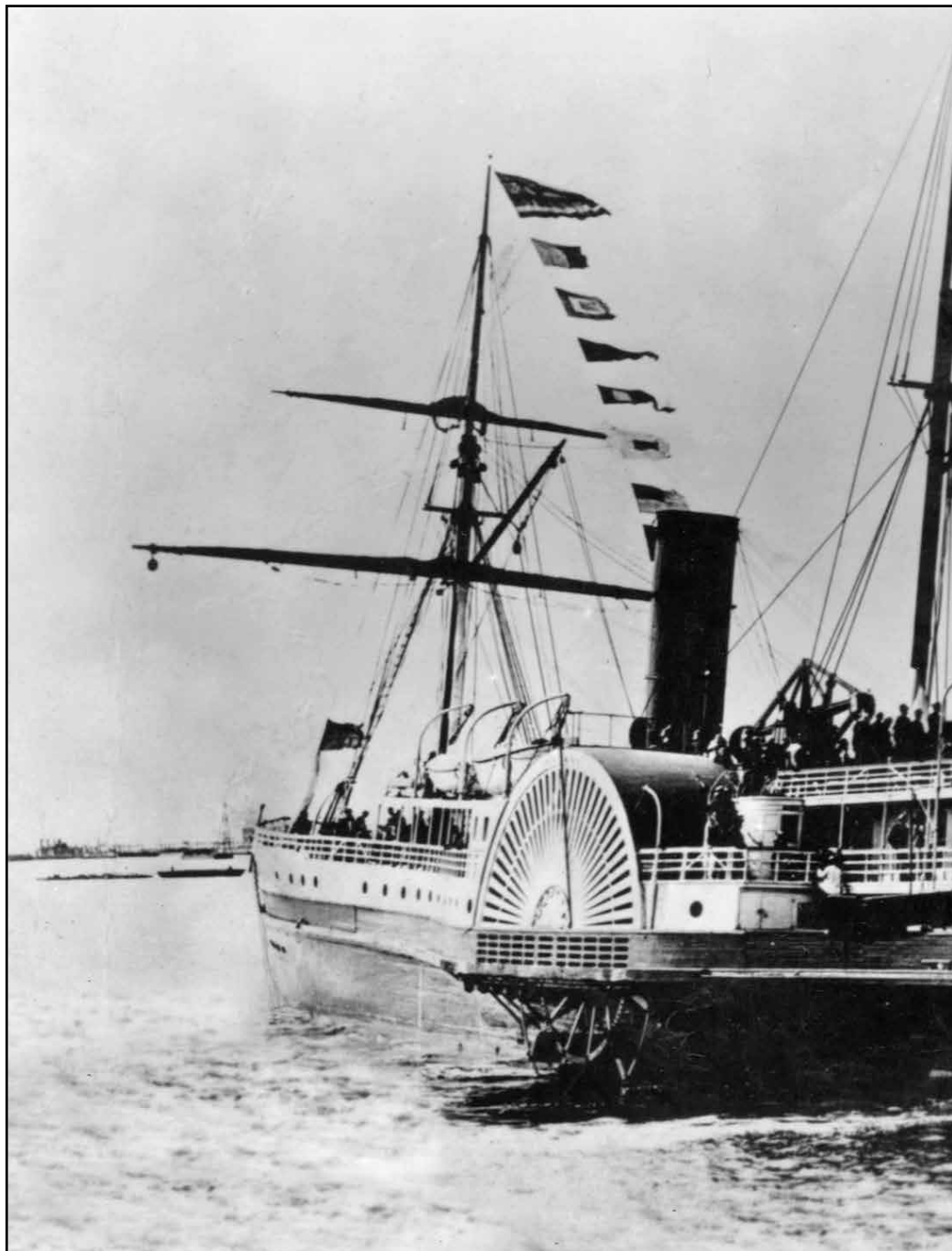
Serge Dedina, Researcher in the University of Arizona's Department of Geography and Regional Development, is the Conservation Director of WildCoast, an international organization preserving the last coastal wildlands of the Californias. He is the author of the forthcoming, *Saving the Gray Whale: People, Politics and Conservation in Baja California*.

Maritime Trade Between the Californias

in the Late
Nineteenth
Century

By Karina Busto Ibarra

The 1,450 ton *Orizaba* provided the first regular steamship service between the Californias, and was a frequent visitor to San Diego's waterfront.



Until very recent times, the sea provided the only reliable communications link between the geographically isolated peninsula of Baja California and the rest of Mexico and the United States. In the late nineteenth century, Baja California became increasingly tied economically to her northern neighbor, thanks to several navigation companies which the Mexican government subsidized in order to link the peninsula with the mainland by sea and help build the territory's





Bahía Magdalena, on the Pacific Coast.

From Arthur Walbridge North's 1908

The Mother of California.

Courtesy Wahrenbrock's Book House.

economy through trade with American territories.

This maritime trade between the Californias was intensified by several causes; first, the expansion of European and American monopolies, second, the new economic policy of the Mexican government of Porfirio Díaz, and third, the lure of the peninsula's scattered natural resources, particularly the gold and copper in the northern region, and silver, salt, pearl oyster shells and pearls in the southern region.

Historical background

In the late nineteenth century, the capitalist system was undergoing a process of change throughout the world, characterized by the need of European and American powers to economically conquer other territories by expanding their monopolies over the less-developed countries. In this phase of economic expansion, the great empires of Europe and America sought to create new markets for their surplus of domestic manufactures, and to obtain raw materials for the development of their industries. Some Latin American countries, including Mexico, became raw material producers for the world and importers of manufactured goods from France, Germany, Great Britain and the United States, nations whose industries were growing rapidly.

Mexico herself was in the throes of political and economic changes, motivated by the government's desire to secure greater political control over the country and influenced by the needs of international trade. Porfirio Díaz, the Mexican president from 1876 to 1910, put into practice a policy of rapid economic expansion and modernization.¹ The Díaz regime pursued two strategies to sustain this economic growth: first, it sought to expand and economically link the domestic markets in different regions of the country; and second, to encourage foreign trade. Among the most important actions which the government took to further these strategies was to grant concessions to foreign companies which would invest their capital in Mexico. Subsidies were given to railway and navigation companies in order to develop the country's communication systems and facilitate trade, both internally and abroad.

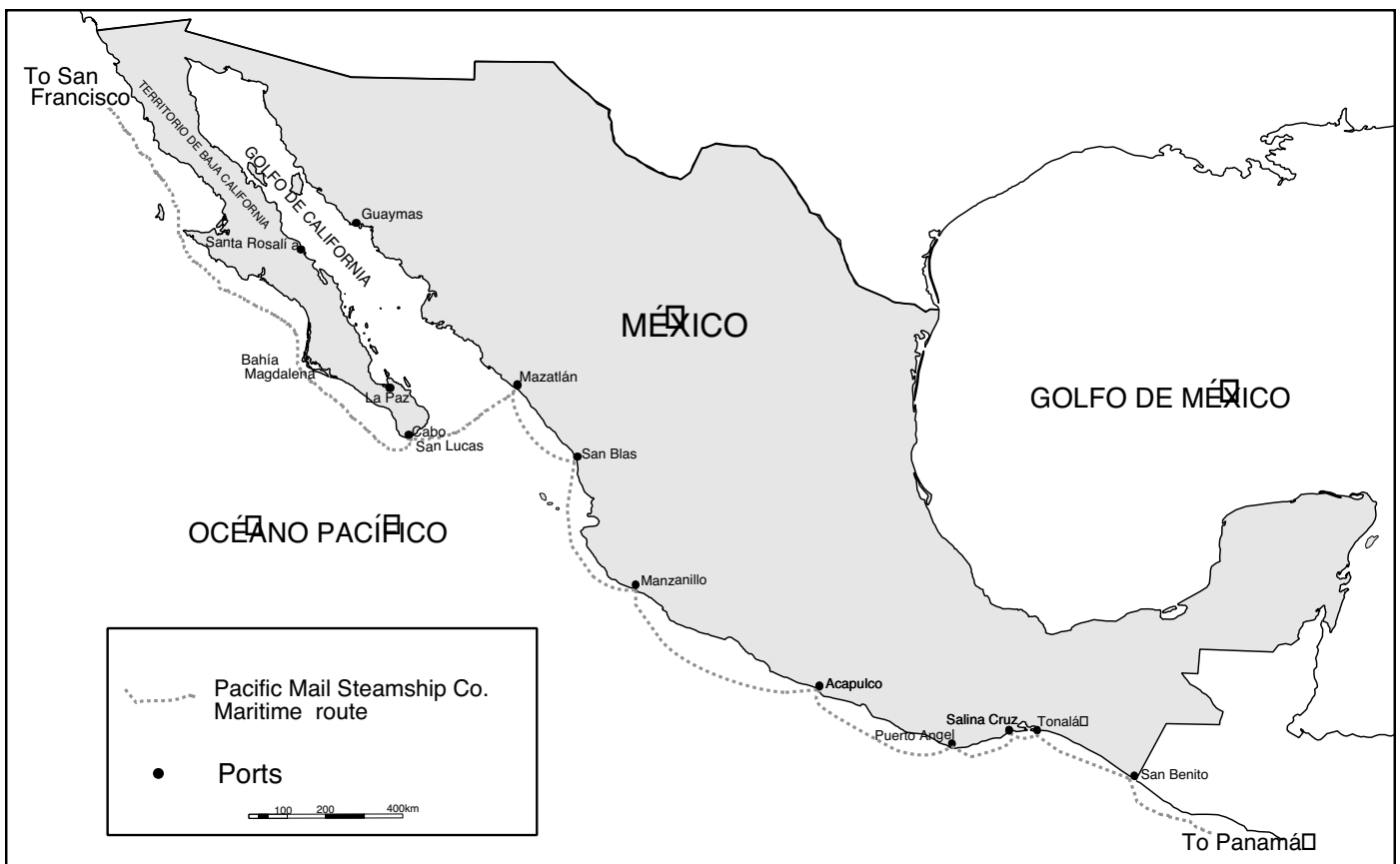
The railway network, whose construction was mainly in the hands of foreign investors, sought to economically integrate the mining centers and the agricultural regions, and to link them with the centers of distribution of goods and with the United States border. Similarly, the development of the maritime network was directly related both to commercial activity and the need to expand communications among Mexican ports on the Gulf of Mexico and on the Pacific coast. For this reason, the Mexican government subsidized navigation companies, which received payments to cover certain routes and thus ensure the transportation of the region's goods and passengers.

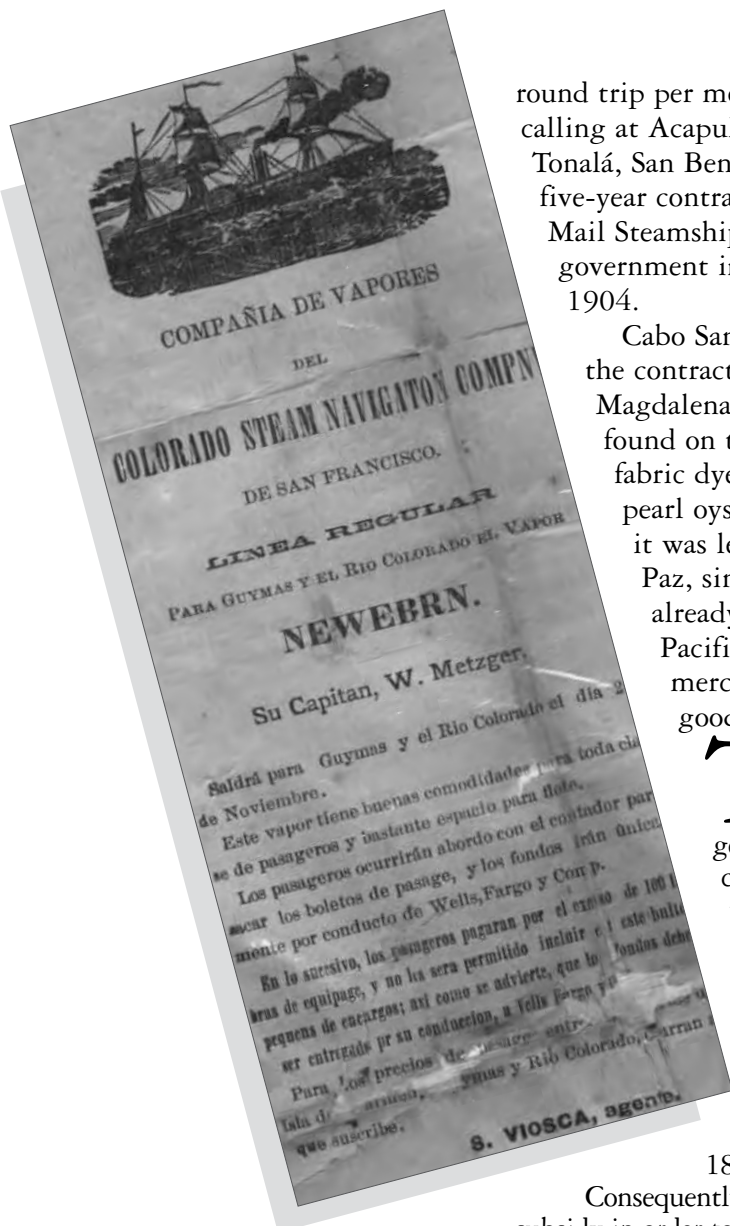
Although most of these companies were foreign, there were also important concessions granted to Mexican nationals, particularly on the Gulf of California, where businessmen such as Joaquín Redo, Luis A. Martínez and Juan B. Abaroa, from Mazatlán, Guaymas and Baja California respectively, had the financial capability to develop their activities.

The Navigation Companies

A number of companies took advantage of this offer of a guaranteed income to establish navigation routes stretching south from San Francisco and San Diego to Mexican ports on the Pacific and the Gulf of California, in some cases extending their reach to Central America. Subsidized companies were subject to all Mexican laws and regulations on maritime trade, and were required to fly the Mexican flag, to carry a post office agent in charge of the mail, to charge half-price fares to civil and military employees traveling on government business, and to carry aboard a Mexican youth assigned by the government to learn nautical skills. In the event of war, subsidized companies were permitted to cease service without losing their concessions, while the government was authorized to equip and utilize their vessels for wartime purposes. In exchange, companies were exempt from federal tonnage, lighthouse, anchorage and pilot fees, among others, paying the latter only when a steamship's captain requested a pilot, and exempt from paying for the right to import food, machinery and coal necessary for the vessels' service.²

The Pacific Mail Steamship Company was the first American navigation company to regularly connect San Francisco with Mexican ports. On February 28, 1872, this company signed a two-year contract with the Mexican government to make monthly trips between Panamá and San Francisco, calling at the Mexican ports of Acapulco, Manzanillo, Mazatlán, Cabo San Lucas as well as others which the company deemed suitable. In an era when the peso and dollar were fixed at a one-to-one exchange rate, the subsidy was set at 2,000 pesos per round trip.³ In 1875, a new contract was signed requiring the company to make one





The Colorado Steam Navigation Company ran this announcement in the La Paz newspaper *La Equidad* in 1875.

Archivo Histórico Pablo L. Martínez, La Paz.

The Civil War-era wooden steamship *Newbern* was a familiar sight in San Diego and Mexican ports for over fifteen years. This veteran ended her days carrying California's commerce northwards for the Oregon Improvement Company.



round trip per month, eliminating the stop at Cabo San Lucas, but calling at Acapulco, Mazatlán, Manzanillo, Puerto Angel, Salina Cruz, Tonalá, San Benito (Chiapas) and San Blas. The subsidy for this five-year contract was set at 2,500 pesos per month.⁴ The Pacific Mail Steamship Company renewed this contract with the Mexican government in 1880, in 1892, and in 1900; it finally expired in 1904.

Cabo San Lucas was the only Baja California port named in the contract, but Pacific Mail's steamships also served Bahía Magdalena and the port of La Paz, from which orchilla, a plant found on the peninsula's west coast which was used to make fabric dye, and other natural resources including silver and pearl oysters, were shipped to San Francisco. It appears that it was less important to subsidize steamship service to La Paz, since trade between that port and San Francisco was already being carried by unsubsidized sailing ships.⁵ The Pacific Mail Steamship Company also transported European merchandise to Mexican and American ports by shipping goods overland through Panamá.

The Colorado Steam Navigation Company was another firm important for both trade and transportation, but one which operated without a government subsidy. Beginning in 1852, this American company linked the Californias with Arizona by way of the Gulf of California. The route from San Francisco to Fort Yuma was plied by the steamships *Newbern* and *Montana*, with ports of call at Cabo San Lucas, Mazatlán, Guaymas and La Paz. Upon arriving in the Colorado Delta, merchandise was transferred to smaller craft that navigated upriver on the Colorado to Yuma, its final destination.⁶ After railroad service was established between San Francisco and Yuma in the 1870s, however, the profitability of the sea route dropped.

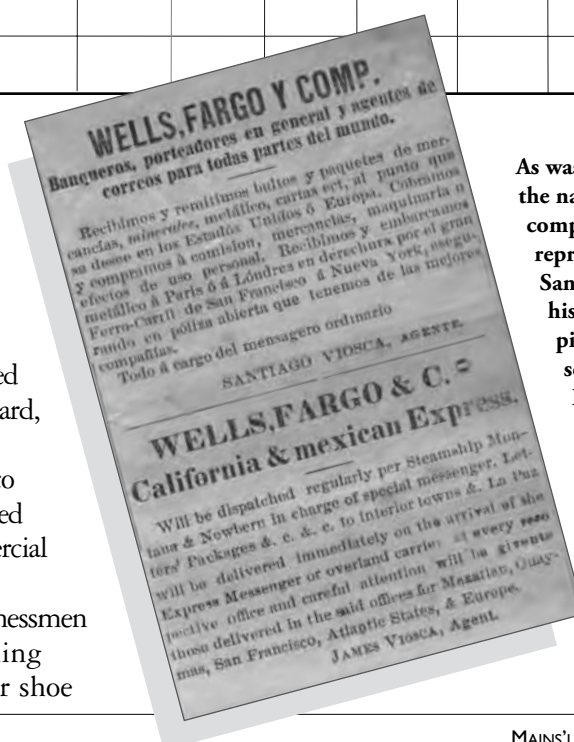
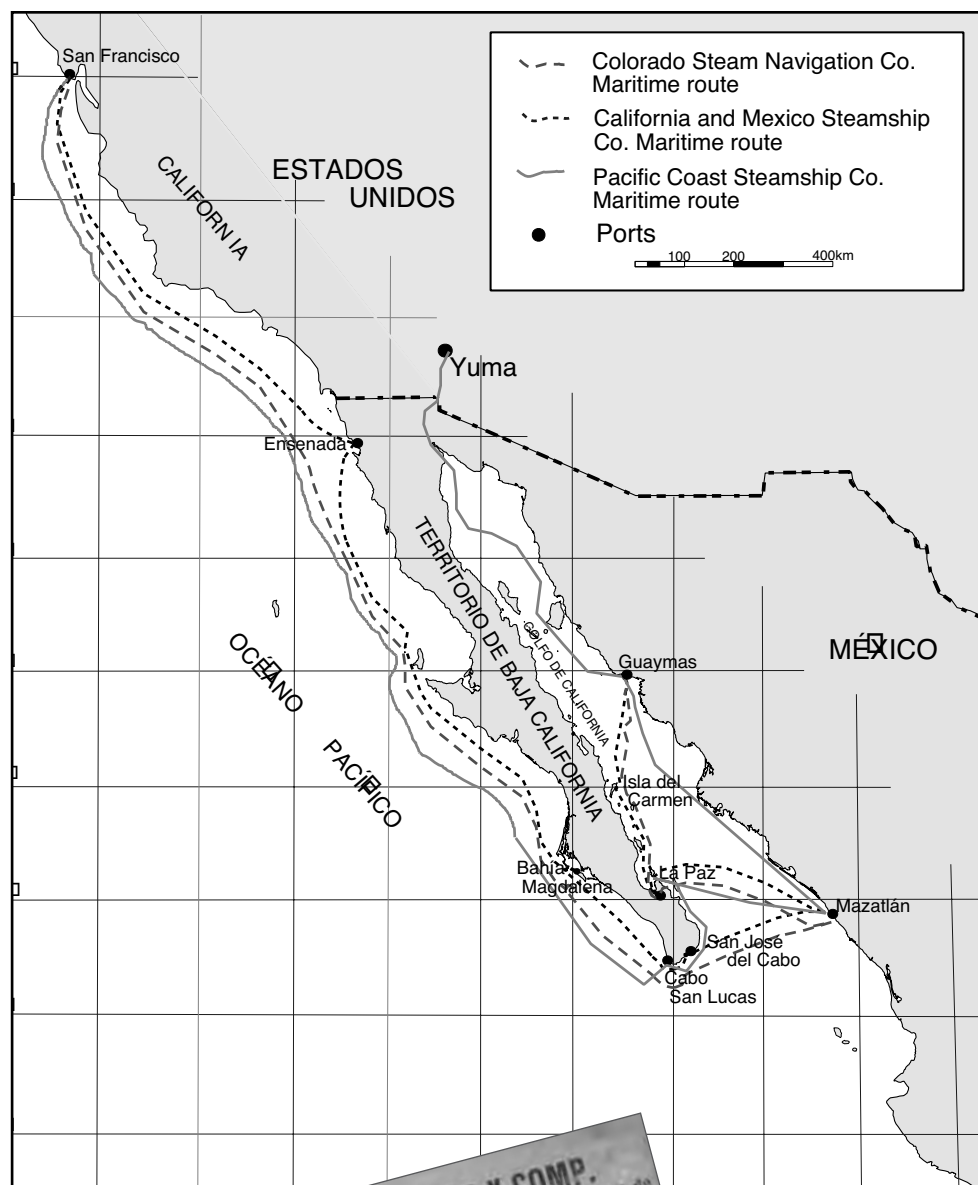
Consequently, the Mexican government found it necessary to offer a subsidy in order to maintain communication and trade among the Gulf ports. In December, 1877, the government signed a three-year contract including a 2,000 peso subsidy with a new firm, the American-owned California and

Mexico Steamship Company, which continued to operate its predecessor's ships *Newbern* and *Montana*. This company was required to make a round trip every thirty-five days from San Francisco to the ports of La Paz, Mazatlán, Guaymas, Bahía Magdalena and Cabo San Lucas. Though not required to by contract, the vessels of the California and Mexico Company were the first to regularly call at Ensenada de Todos Santos in the northern part of the territory, though it was not officially listed as a port of call until 1882.⁷

Another American-owned company subsidized to connect San Francisco with Mexican ports was the Pacific Coast Steamship Company, which signed a contract with the Mexican government on August 12, 1891 to make a monthly round trip from San Francisco to Guaymas, with ports of call at Ensenada, Bahía Magdalena, San José del Cabo, Mazatlán and La Paz. The contract required that the company employ a first class steamship of at least 900 tons to carry mail, with a capacity of at least one hundred passengers.⁸ The old *Newbern*, of 943 tons, fulfilled these terms, and the company served the ports on this route until 1907.

The Colorado Steam Navigation Company, the California and Mexico Company, and the Pacific Coast Steamship Company appear to have been closely linked, because the *Newbern* belonged to each of them in turn and the vessel *Montana* was the property of the first two companies. Their representatives in Mexico, too, remained the same: in Mazatlán, E.G. Kelton, in Guaymas, J. Willard, and in La Paz, Santiago Viosca.⁹

Santiago Viosca typifies foreign businessmen in Mexico during this period. An American entrepreneur who settled in La Paz and involved himself in a wide range of commercial activities, particularly involving Baja California's natural resources, Viosca had close relationships with local businessmen and was married to a Mexican woman. By the beginning of the twentieth century, Viosca operated a leather shoe



As was typical for the navigation companies' Mexican representatives, Santiago Viosca had his fingers in many pies, including serving as Wells Fargo's agent in La Paz.

*Archivo Histórico
Pablo L.
Martínez,
La Paz.*

A plume of smoke rises from a steamer at the end of the Pacific Coast Steamship Company's wharf in downtown San Diego about 1890. To the left of the building, a small trolley waits to take passengers down the long pier, built on the shallow mud flats.

factory whose products found a good market on Mexico's mainland, ran Wells Fargo and Company's shipping service, was the American vice-consul in the port of La Paz, served as commercial representative of the American-owned El Progreso Mining Company which extracted silver in Southern Baja California, and was the lessee of the salt mine on Isla del Carmen in the Gulf, where the North Pacific Transportation Company loaded ships with salt for ballast or sold it in La Paz.¹⁰

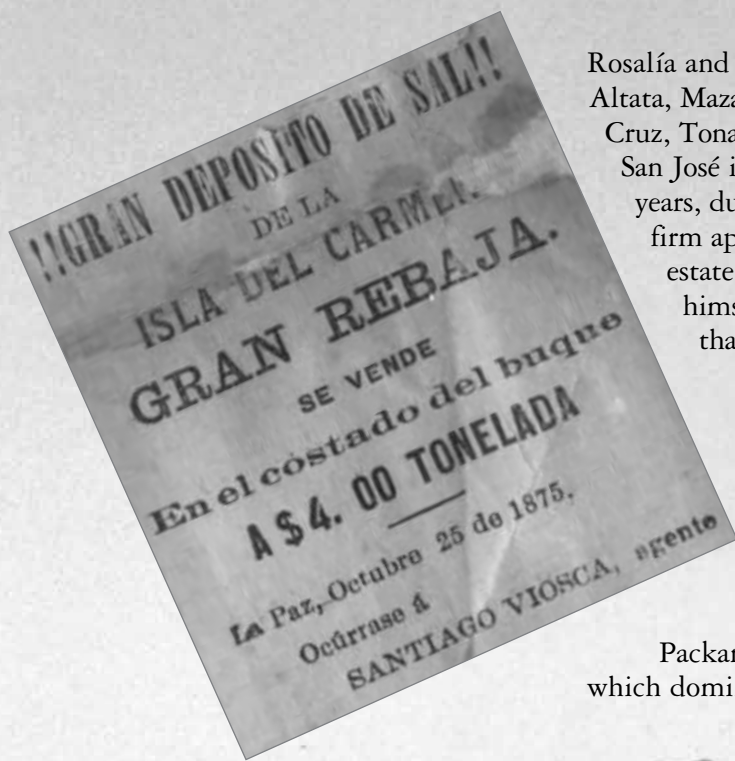
Two other subsidized firms, Luis Hüller and Company and the Baja California Development Company, also plied routes between California and Mexican ports, but unlike the others they made San Diego their northern terminus, for these companies were devoted more to commercial land development than to trade. Though other companies called at San Diego, (the Pacific Steamship Company's



wharf was a major feature of the waterfront) San Francisco stood alone in the nineteenth century as the West Coast's manufacturing hub and distribution center for American and European goods.

Beginning in 1884, the American Luis Hüller held a concession to large tracts of land in northern Baja California in order to establish agrarian, mining and industrial colonies in the territory. On April 16, 1886, his company contracted to provide steamship service for the transportation of European colonists to Mexico, covering a route between San Diego and the port of San José, Guatemala. The company was entitled to 8,000 pesos for every round trip in the first five years, 6,000 pesos in the following five years and 4,000 in the remaining ten years. Its vessels were required to call at Ensenada, Isla de Guadalupe, Bahía de la Magdalena, Cabo de San Lucas, San José del Cabo, La Paz, Santa





Rosalía and Mulegé in Baja California, and at Guaymas, Agiabampo, Altata, Mazatlán, San Blas, Manzanillo, Acapulco, Puerto Angel, Salina Cruz, Tonalá, and San Benito on the mainland, Isla Socorro, and finally San José in Guatemala.¹¹ The contract, however, expired in only two years, due to the company's failure to meet its obligations. Hüller's firm appears to have been a casualty of the feverish and unstable real estate speculation which swept the region in the 1880s, and Hüller himself appears to have been less a trade and transportation agent than a land speculator at heart.

On November 29, 1887 the Mexican government signed a new contract with the British-owned Lower California Development Company to make three comparatively short round trips a month between San Diego, San Quintín and Ensenada, in exchange for a subsidy of 150 pesos per round trip. This contract was renewed in 1893 and every five years thereafter until 1907, when the subsidy was enacted in perpetuity.¹² J.H. Packard of Ensenada was manager and director of the company, which dominated commercial activity in the port of Ensenada, ran its

Isla del Carmen, on the Gulf, site of a salt mine.

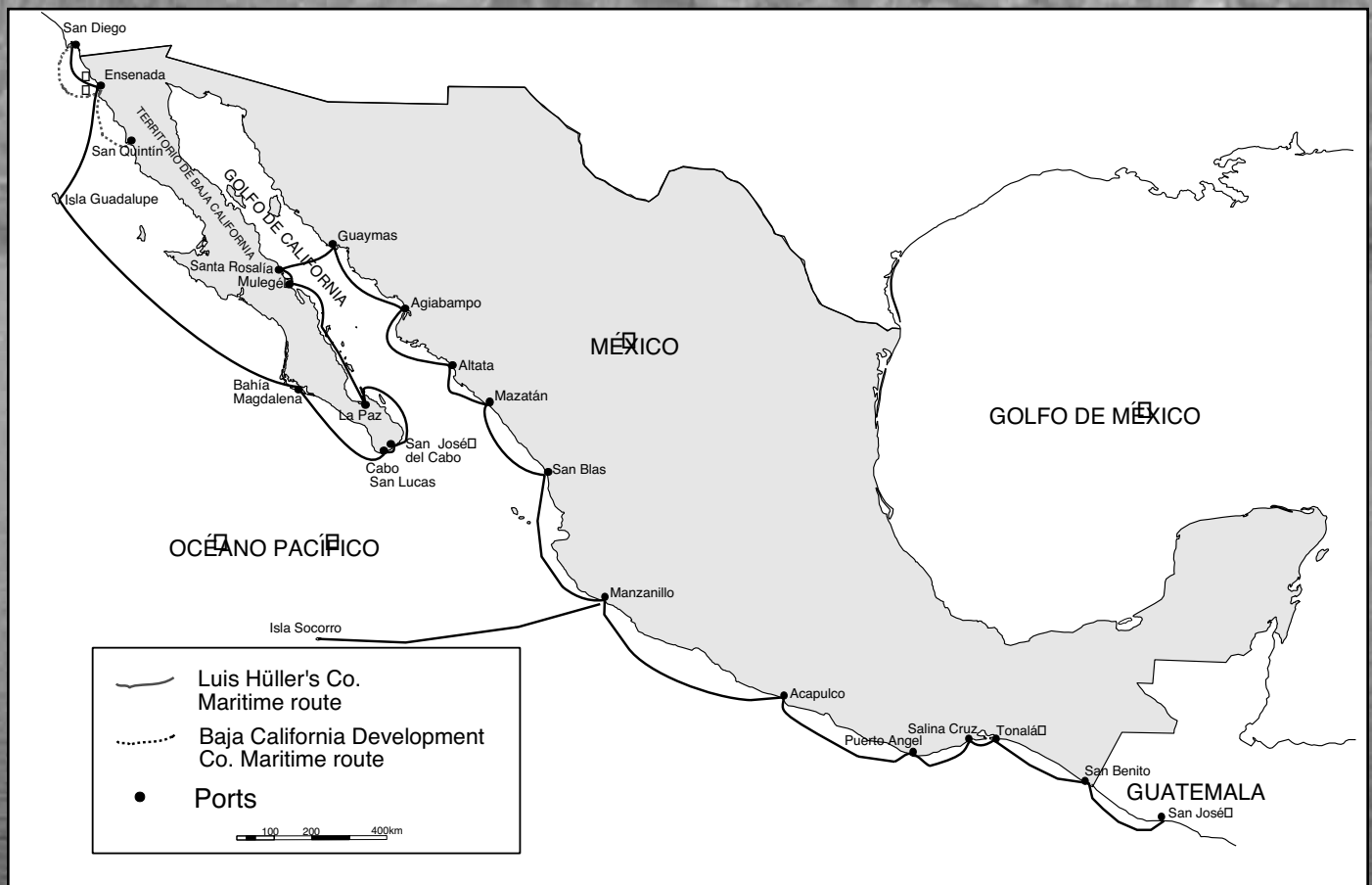
Courtesy Harry Crosby.

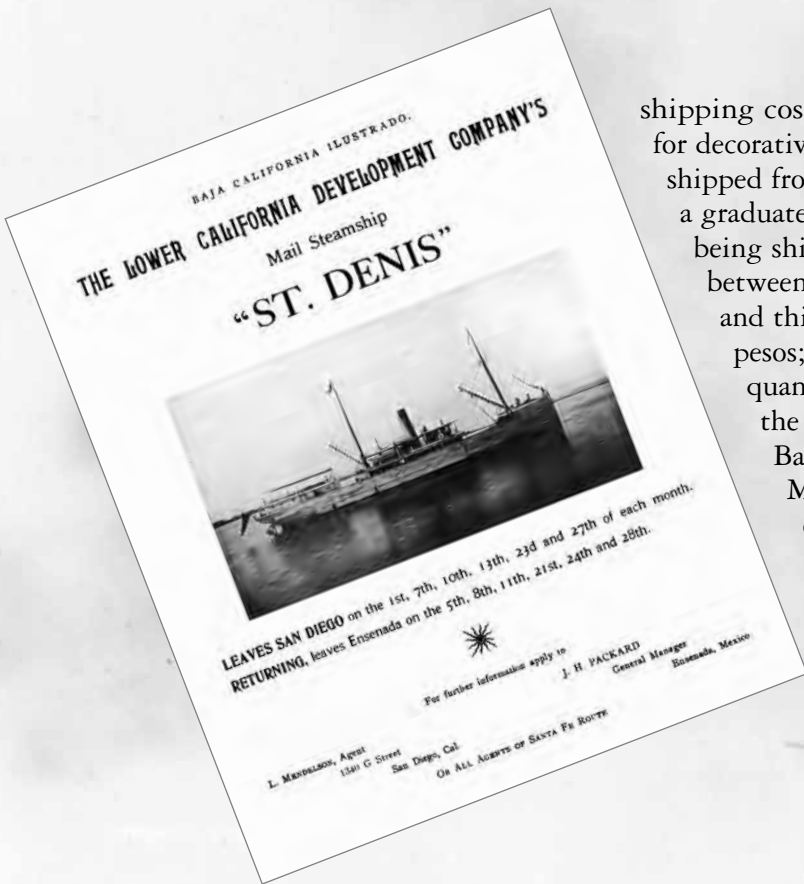
own banking house, and operated the Peninsular Railway and Telegraph Company, Ltd., linking San Quintín, Ensenada, Tijuana and the mining settlement of El Alamo by telegraph.¹³

Trade between the Californias

In the late nineteenth century, six navigation companies carried virtually all communications and trade between California and Baja California, and knit the region together economically. The ports of Baja California were important for international trade because they possessed a number of resources that were attractive to the industrialized countries, such as silver, pearl oyster shells and pearls, orchilla plants for making fabric dye, copper and salt, all of which were exported to San Francisco.¹⁴ Also carried in smaller quantities from southern Baja California to San Francisco was damiana, a native plant used for making tea and liquor, cascalote, tree bark used for tanning leather, guano for fertilizer, leather, and occasionally fruit, wine, and panocha, a sugar cane product used as a sweetener.

The examples of pearl oyster shells and orchilla suggest typical



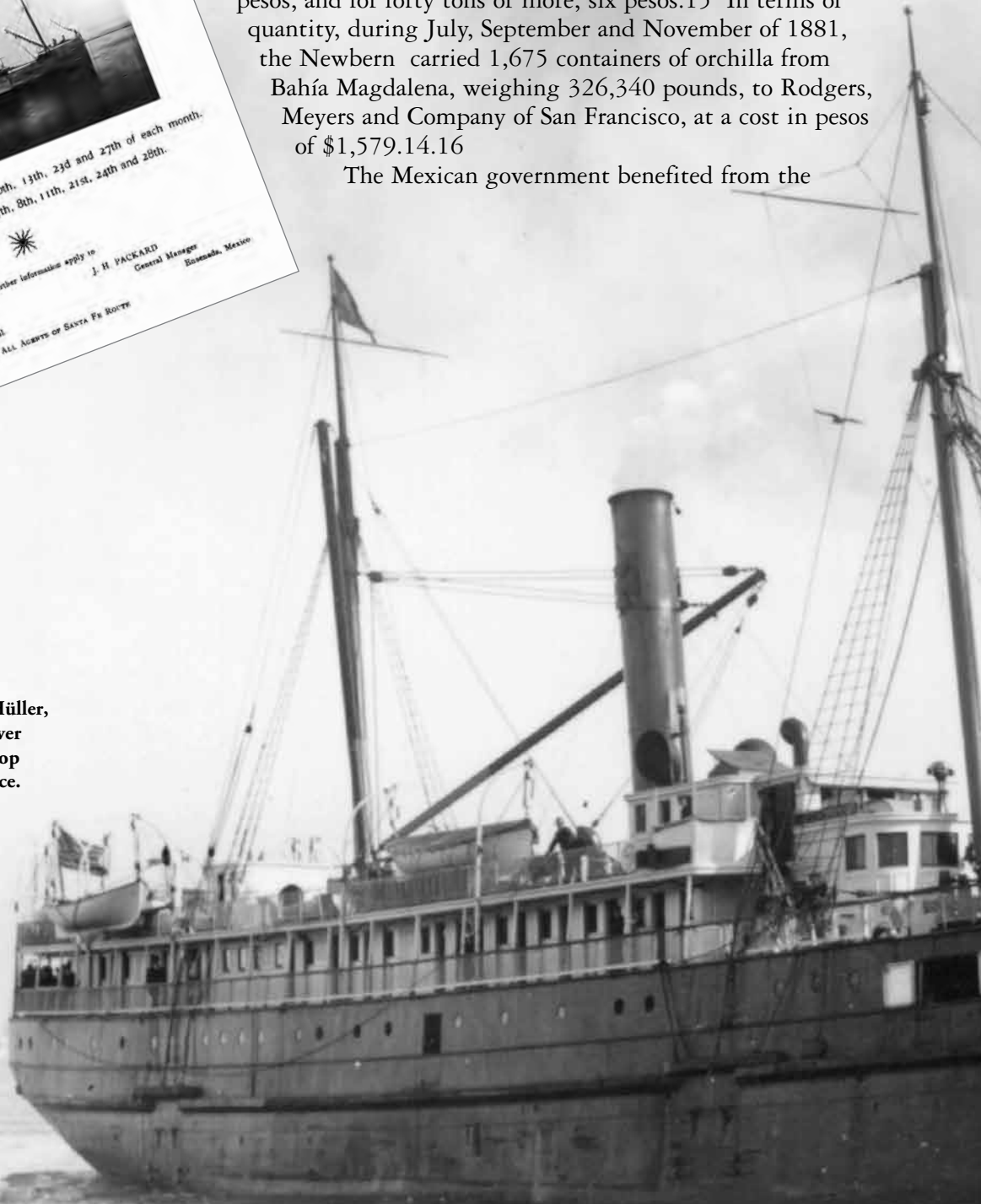


shipping costs and quantities of these exports. The shells, used for decorative purposes in inlaid furniture and other items, were shipped from La Paz to San Francisco throughout the 1880s on a graduated scale of fees, which diminished as the quantity being shipped rose: for ten tons or less, ten pesos per ton; between ten and twenty tons, nine pesos; between twenty and thirty tons, eight pesos; between thirty and forty, seven pesos; and for forty tons or more, six pesos.¹⁵ In terms of quantity, during July, September and November of 1881, the *Newbern* carried 1,675 containers of orchilla from Bahía Magdalena, weighing 326,340 pounds, to Rodgers, Meyers and Company of San Francisco, at a cost in pesos of \$1,579.14.¹⁶

The Mexican government benefited from the

The regularly scheduled visits of the *St. Denis* were touted as an advantage to potential settlers and investors in northern Baja California.

The *City of Topeka's* owner, Luis Hüller, was a real estate speculator who never made good on his promise to develop northern Baja California's commerce.



navigation companies through the collection of import and export duties, generating income for the federal and municipal governments. The most important customs collection stations in Baja California and on the Gulf of California were located in the ports of Ensenada, La Paz, Mazatlán and Guaymas, which in turn supervised smaller customs stations.

La Paz and Mazatlán were the region's biggest markets for goods shipped from San Francisco, amongst which were silk, wool, and cashmere



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FIG. 5.—CUSTOMHOUSE, GUAYMAS.

The navigation companies benefited the Mexican government financially in the form of import and export duties paid. *From Bell and Mackenzie's 1923 Mexico's West Coast and Lower California.*

Courtesy Wahrenbrock's Book House

fabrics, and luxury goods including German guitars and mandolins, French perfumes, German pottery and toys, glassware, American and French ribbons, different types of lace, decorative items, American and European groceries, drugs and patent medicines, furniture, and miscellaneous luxury items from New York and Europe. Industrial development in southern Baja California, such as mining and pearl oyster harvesting, also depended on these shipments, which included hardware, lumber for construction, equipment for naval and civilian vessels, diving gear, and supplies for farmers and miners.¹⁷ For example, in 1876 the *Montana* steamed into La Paz from San Francisco carrying 100 barrels of blasting powder consigned to Santiago Viosca.¹⁸

This commercial relationship between the Californias was crucial for the development of Mexican ports, and spurred the internal trade which was simultaneously developing in the Gulf, where the existence of Mexican navigation companies helped integrate economically expanding ports into a domestic commercial network. This domestic trade was as important to Baja California as its foreign trade, since the barren and geographically isolated territory depended on the mainland for many of its basic necessities. Unlike the Mexican mainland, connected by railways with American markets, Baja California depended solely on maritime transportation to facilitate its development, enabling the territory to participate in international trade by exporting its diverse raw materials and contributing significantly to the economic growth of the Mexican Northwest.

Karina Busto Ibarra, of La Paz, Baja California, earned her undergraduate degree in history in the Universidad Autónoma de México, La Paz.

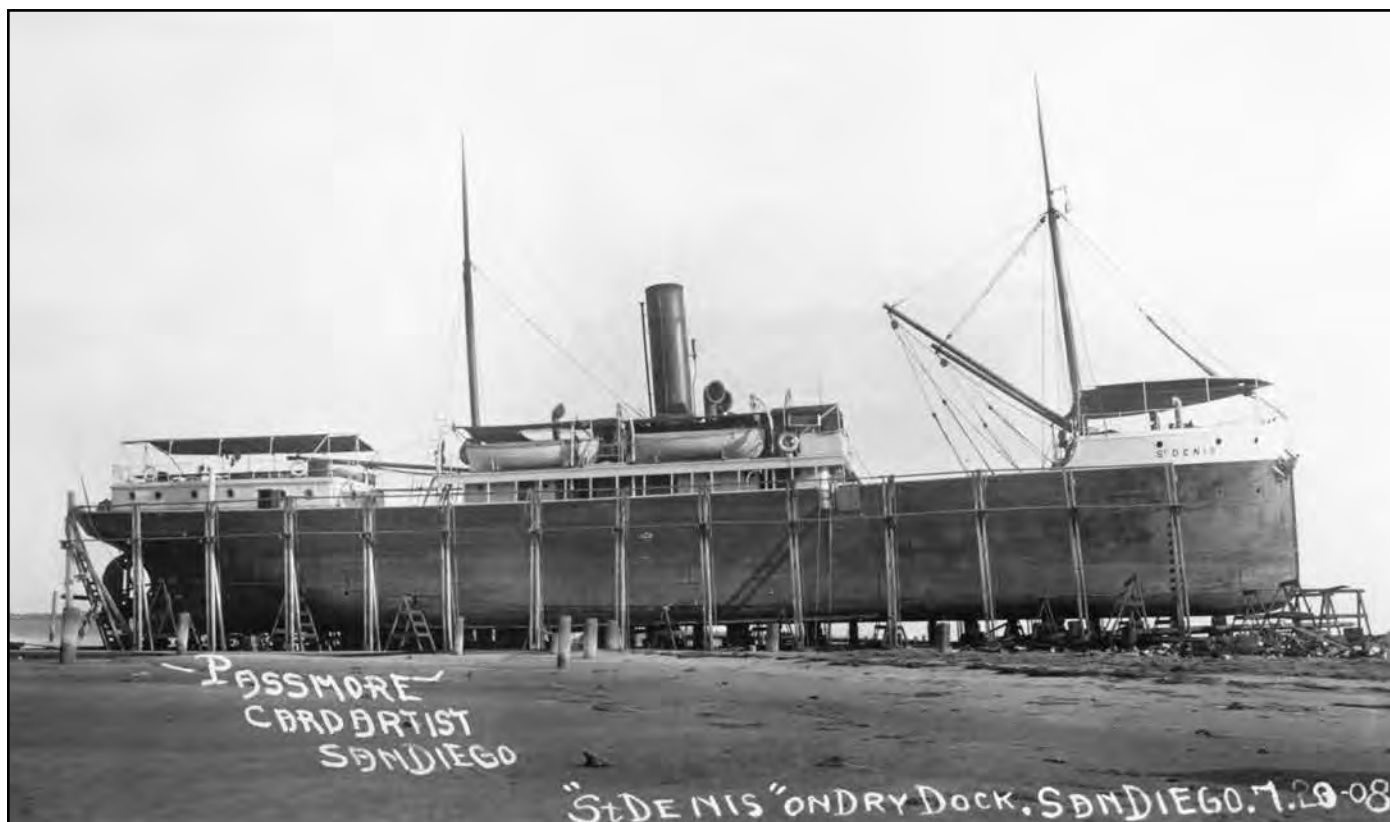
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- 1 Before the *porfiriato*, or Díaz regime, Mexico had endured decades of economic and political instability and social unrest. Although previous governments had visualized plans for economical expansion, not until this period did the state of the country's internal and external affairs permit their realization.
- 2 The only fee to which the vessels were not exempt was the *Timbre*, a postage stamp tax.
- 3 "Líneas de vapores subvencionadas," *Memoria de la Secretaría de Hacienda y Crédito Público, 1874: LXXXVI*, Archivo General de la Nación (hereafter AGN). Throughout the period discussed in this article, figures for pesos and dollars were equivalent.
- 4 "Subvenciones de vapores extranjeros y nacionales y medidas otorgadas para facilitar el comercio exterior," *Memoria de la Secretaría de Hacienda y Crédito Público, 1877-1878: 41*, AGN.
- 5 "Contratos a líneas de vapores," La Paz, 1880, Procesos penales, exp. 17, Archivo del Juzgado de Distrito de Baja California Sur (hereafter AJDBCS).
- 6 Karina Busto Ibarra, "Uniendo fronteras: el vapor americano *Newbern* en su ruta San Francisco, California-Mazatlán, 1875-1896," (paper presented at the conference "La frontera, una nueva concepción cultural," III Coloquio Internacional Miguel Méndez, La Paz, B.C.S., February 1999).
- 7 "Due to an arrangement by the company with the Supreme Government, the steamship will stop on its way up and down at Ensenada de Todos Santos located on the border of the territory. The freight charge from said Ensenada to all the ports mentioned [San Francisco, Magdalena, Cabo San Lucas, Mazatlán, La Paz and Guaymas] and vice versa will be \$10.00 [pesos] per ton. Freight and passenger disembarkation will be delivered and received alongside the steamship. Any freight service will be paid in advance."
- 8 "Boletín Oficial," La Paz, abril 30 de 1882, Año V, Num. 12, La Paz, 1882, Procesos penales, exp. 22, AJDBCS. The California and Mexico Company's ships also regularly visited Isla Carmen, in the Gulf, site of a salt mine.
- 9 "Contrato celebrado entre el C. General Francisco Z. Mena, Secretario de Estado y del Despacho de Comunicaciones y Obras Públicas, en nombre del Poder Ejecutivo de los Estados Unidos Mexicanos, y el Sr. Lic. Alfonso Lancaster Jones, en representación de la Compañía de Vapores de la Costa del Pacífico," diciembre 17 de 1896, Comunicaciones, exp. 5, vol. 298, Leg. IV/V- /L-12/FF136, Archivo Histórico Pablo L. Martínez (hereafter AHPLM).
- 10 Karina Busto Ibarra, "Comercio marítimo en La Paz y Santa Rosalía, Distrito Sur de la Baja California, durante el régimen porfirista," bachelor's thesis (La Paz, B.C.S., México: Universidad Autónoma de Baja California Sur, March 1999): 45-46.
- 11 "Contrato celebrado entre el C. Ministro de Fomento, General Carlos Pacheco, en representación del Ejecutivo Federal, y los señores Luis Hüller y Cía., para el establecimiento de una línea de vapores entre el puerto de San Diego, de los Estados Unidos de América, y el de San José, de la República de Guatemala, y para la conducción de inmigrantes," México, enero 19 de 1886, AHPLM, Fomento, vol. 208 bis, doc. no. 2, leg. IV/V- /L-01/FF-43.
- 12 "Líneas de navegación contratadas para el servicio postal," *Anuario Estadístico de la República Mexicana*, 1897, 1898, 1900, 1901 and 1907, AGN.
- 13 J.R. Southworth, *Baja California Ilustrada* (La Paz: Gobierno del Estado de Baja California Sur, 1989): 23.
- 14 The exception is copper mined at Santa Rosalía by a French company, which was carried first by ship from Santa Rosalía to Guaymas, then by train to New Orleans, and thence to France.
- 15 "Boletín Oficial," La Paz, 30 de abril 1882, Año V., Num. 12, La Paz, 1882, Procesos penales, exp. 22, AJDBCS.
- 16 "Precios de embarque de orchilla," La Paz, 1882, zProcesos penales, exp. 22, AJDBCS.
- 17 Busto Ibarra, "Comercio marítimo," 95-102.
- 18 "Introducción de pólvora para minas al puerto de La Paz," La Paz, 29 de abril de 1876, Gobernación, exp. 88, Leg. IV/V-132/L-4/3-FF, unnumbered document, AHPLM.





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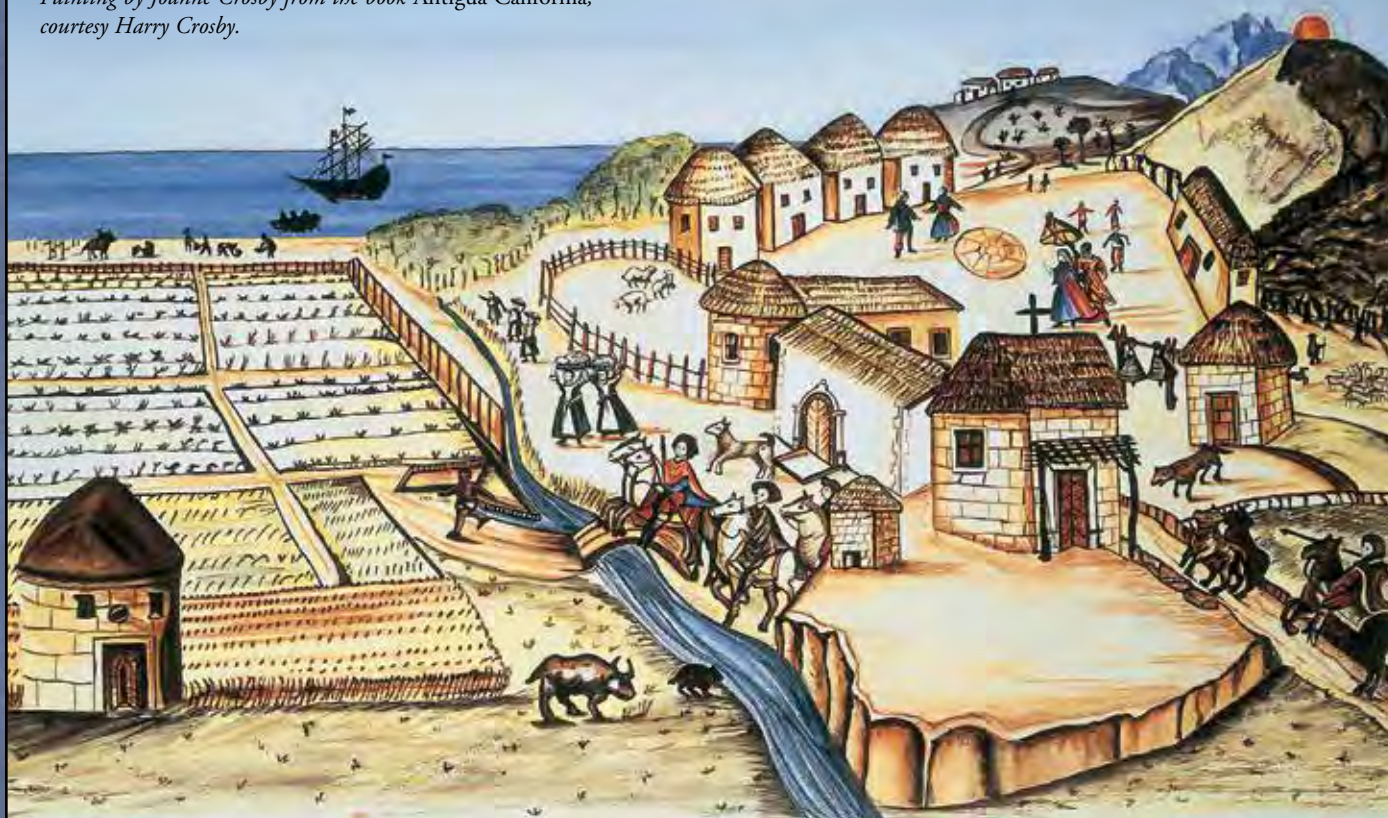


These models of the *Auracano* and *Independencia* are proudly displayed in Valparaíso, Chile in the Museo Naval.



A Spanish ship stands off San José del Cabo in this copy of an eighteenth century watercolor by the Jesuit missionary Ignacio Tirsch.

Painting by Joanne Crosby from the book Antigua California, courtesy Harry Crosby.





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