

**S.S. Monumental City: An Historical and Archaeological
Survey of the First Transpacific Screw Steamship**

A Thesis
Presented to the Faculty of the Department of History
East Carolina University

In Partial Fulfillment
of the Requirements for the Degree
Master of Arts in History

By
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April 1998

ABSTRACT

Daniel James Warren S.S. *Monumental City*: The History and Archaeology of the first Transpacific Screw Steamship. (Under the direction of Gordon P. Watts) Department of History, East Carolina University, April 1998.

This thesis presents an historical and archaeological survey of the steamship *Monumental City*, lost 15 May 1853 off Tullaburnga Island, Victoria, Australia. The *Monumental City* operated on the California Gold Rush routes, and was the first screw propelled steamship to cross the Pacific Ocean to Australia. Its loss in 1853 influenced laws governing foreign steamship operations and maritime safety in Australia. The historical study provides an in depth look at the three year career of the *Monumental City*, focusing on vessel's operations on the California and Australian Gold Rush routes, the impact of its loss, and aspects of its construction. Today the remains of the *Monumental City* rest in the waters off Tullaburnga Island. In 1994, a maritime archaeological investigation was carried out to archaeologically document the *Monumental City's* remains. This treatment of that archaeological study presents the goals, methods, and findings of the investigation. As part of the report, area geomorphology, known salvage of the shipwreck, and previous archaeological studies at the site are also discussed.

ACKNOWLEDGEMENTS

I am indebted to many individuals around the world for their assistance and support in the preparation of this thesis. I would like to express my gratitude to my thesis committee members, Michael Palmer, Michael Carrafiello, Mark Staniforth, and especially my thesis advisor Gordon Watts for their support, comments, and most of all their patience during the production of this thesis. To Gordon Watts, and Mark Staniforth go special thanks for the efforts they put forth that allowed me to work in Australia with full support, without which I could never have completed this project.

I am also deeply indebted to the Thomas Rivers Foundation of East Carolina University. Their generous travel grant allowed me the time in Australia to successfully conduct a project that some had said I would never be able to do.

To my colleagues in Australia, I am also forever indebted to them for their assistance and guidance while I was in their country. I would like to thank all the staff of the Australian National Maritime Museum for their support, including access to their extensive library of maritime literature, and the use of their equipment. I would like to especially thank Paul Hunley, Keiran Hosty, Lindsay Shaw, and Antonia Syme for assisting me with this project, and for allowing me the benefit of their experience and knowledge. In addition I wish to thank the library staff for helping me find the research materials I needed.

My gratitude also goes out to the members of the Victoria Archaeological Survey's Maritime Archaeological Unit for their logistical support and assistance in conducting the archaeological investigation on the *Monumental City*. I would especially like to thank Director Shirley Strachan, and the personnel who took part in the project, Victoria State Underwater Archaeologist Peter Harvey, Dive Safety officer Mick Jackiw, Tony Armstrong (a.k.a. Mum), and Ken Gurney for all the work they did to insure I had a successful and memorable project. I would also like to say thank you to all the volunteers who freely risked life and limb with the rest of us to make the project succeed, including a special thanks to Jim Anderson for his photo documentation of the project.

For their special help with my historical research of the *Monumental City* I wish to thank Jim Delgado of the Vancouver Maritime Museum for allowing me access to his files on the steamship, Steamship Historical Society, the Australian National Library in Canberra, the Mariner's Museum, and Maryland Historical Society.

Finally, I would like to thank all my family and friends who have stood by me while I worked on this project. Their advice, support, and occasional threats gave me the incentive to never quit moving toward my goal.

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INTRODUCTION

One kilometer from the northeast coast of Victoria, Australia, just south of Cape Howe lies the small island of Tullaberga. Exposed to the open ocean, waves and swells rolling in from the Tasman Sea mercilessly pound the tiny island occasionally obscuring it from view with a wall of water and foam. It was here off the southern tip of the island, in May of 1853, that the screw steamship *Monumental City*, the first screw steamship to cross the Pacific, ended a brief three year career. Through an error in navigation the steamer grounded on the reefs off the southern end of Tullaburnga. Unable to get free of the reef, the small steamer was beaten by the sea, finally breaking up and taking 33 passengers to their deaths in one of Australia's worst maritime disasters.

Since the loss of the *Monumental City*, historians have paid little attention to the steamer. Not having a lengthy career, or being directly involved with an important maritime development, many past maritime historians have only given the vessel cursory acknowledgement as the first screw steamship to cross the Pacific. Today, however, maritime archaeologists and historians are taking another look at this short-lived screw steamer.

It is the purpose of this thesis to discuss the findings and results of a 1994 archaeological investigation of the S.S. *Monumental City* shipwreck site, and provide an historical examination of the steamship *Monumental City*. Chapter One begins with an examination of the history of the vessel. From its development in Baltimore to its loss in Australia, that history shows it had a significant impact on international maritime history

beyond being the first screw steamship to cross the Pacific Ocean. Chapter Two examines the construction of the *Monumental City*, using both archival documentation and archaeological information, providing a detailed picture of the vessel's attributes and the arrangement of her machinery. Chapter Three sets the stage for the archaeological interpretation by providing a brief discussion of the historical, geological, and environmental aspects of the region where the shipwreck is located. Chapter Four describes the goals, methods, and findings of the 1994 archaeological investigations. A discussion of known salvage and previous archaeological work is included as part of this chapter. Chapter Five concludes the thesis providing interpretations of the findings presented in Chapter Four, as well as conclusions about the *Monumental City*, and recommendations for further research.

CHAPTER 1

HISTORY AND IMPACT

Baltimore Origins

The *Monumental City* was a business venture. A syndicate of Baltimore businessmen, most associated with mercantile or trading firms, financed the steamer's construction to take advantage of the opportunities associated with the California Gold Rush. They expected the vessel to make a profit transporting goods and gold seekers between Central America and San Francisco. To insure quality in their investment, these men contracted with experienced local firms to build the ship they named, to honor Baltimore, *Monumental City*.¹

The task of constructing the *Monumental City* was given to local shipwright John Robb. Robb was well known in Baltimore and throughout the region as a master shipwright experienced in building numerous types of vessels. He owned what was locally known as 'Robb's Yard' in the Fells Point region of Baltimore.² A native of Nova Scotia, Robb came to Baltimore in 1825. He worked as a foreman during the construction of the frigate *Baltimore* before acquiring a small shipyard near the old Philadelphia Railroad

¹National Archives. "Baltimore Tonnage Admeasurement April 1848-April 1854" Records of Marine Inspection and Navigation, Records Relating to Merchant Vessel Documentation, 1774-1958, Record Group 41.

²*Baltimore American and Commercial Daily Advertiser*, 28 January 1867.

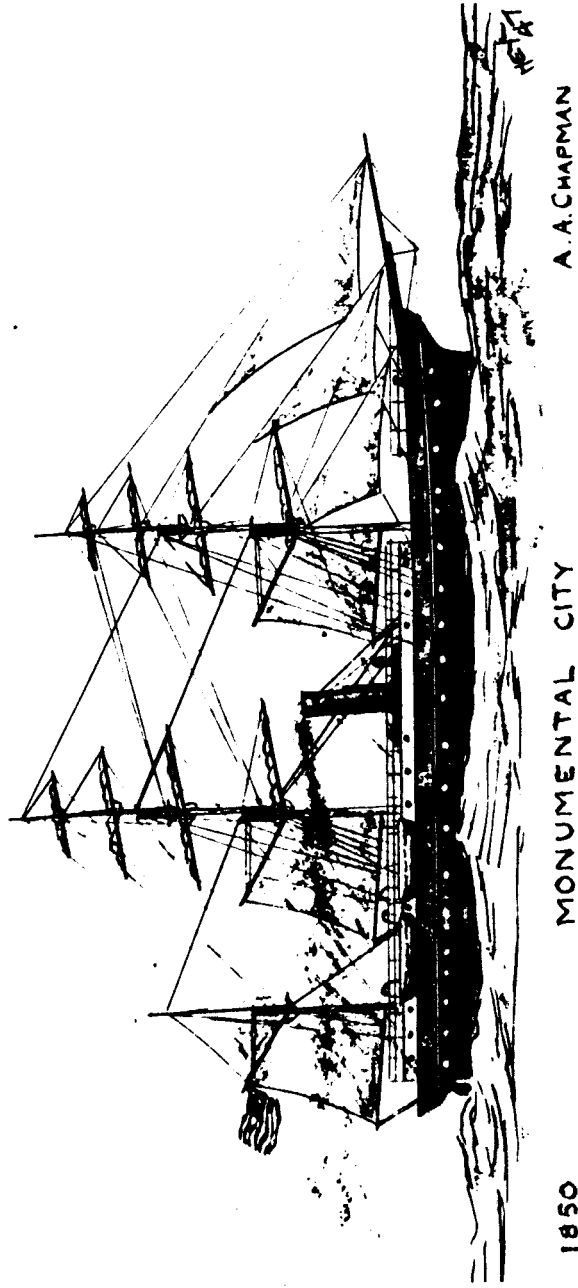


Figure 1. *S.S. Monumental City*. (Courtesy of the Mariner's Museum, Newport News, Va.).

Yard in Baltimore. After running this yard for a time, Robb acquired the larger ship works at Fell's Point. Captain Robb, as he was known, operated this yard until he retired from the business in 1865. Robb died two years later from complications with pneumonia. During his career he built hundreds of ships, including the steamships *Baltimore*, *Palmetto*, *Tennessee*, *William Jenkins*, and, of course, the *Monumental City*.³

Robb wasted no time on the *Monumental City*. The keel was laid in June 1850 and barely four months later, at a cost of \$50,000, the new steamer was ready.⁴ At 6 p.m. on 9 September, after a two hour delay, the *Monumental City* slid off the ways into the water with such "ease and grace" that the *Baltimore Sun* later commented "a more beautiful launch we never saw."⁵ After the launching, a celebration ensued and "a right merry time had the workman after their day of toil."⁶ The following day the *Monumental City* was transferred to the Vulcan Works to receive her steam machinery.

Formerly the Watchman and Bratt Company, that ironworks was renamed the Vulcan Works in 1846 after it was purchased by English engineers James Murray and Henry Hazlehurst.⁷ Both Murray and Hazlehurst were experienced Civil Engineers and Machinists. James Murray's former association with the Baltimore and Ohio Railroad

³*Baltimore Sun*, 29 January 1867.

⁴*Sun*, 7 September 1850.

⁵*Baltimore American*, 9 September 1850; *Sun*, 9 September 1850.

⁶*Sun*, 9 September 1850.

⁷"Murray and Hazlehurst - Vulcan Works" Unpublished Manuscript MS2264. Maryland Historical Society, 1.

may have helped the Vulcan Works win several lucrative contracts with the B & O.⁸

Under the management of Murray and Hazlehurst the Vulcan Works was more successful than ever, becoming one of the top iron works in the region.

The Vulcan Works encompassed over two acres including five fully equipped workshops, and a 275 foot wharf. It had a foundry with two cupolas capable of casting up to fifteen tons of metal.⁹ The wheel shop could produce up to twenty-five rail car wheels per day. The blacksmith shop contained twenty-five forges and was capable of manufacturing any metal structure or fitting required. The firm also operated three machine shops equipped to work and shape metal, as well as, separate workshops for construction of boilers and rail cars.¹⁰

The Vulcan Works employed nearly 250 local artisans on a full time basis.¹¹ This combination of skilled personnel and extensive facilities made it possible for the plant to manufacture products related to all aspects of iron work including rail cars, bridges, lighthouses, and especially steam machinery.¹² In 1849 Murray and Hazlehurst designed and constructed the first oscillating steam engines built in America for the steamship

⁸"Murray and Hazlehurst - Vulcan Works", 3.

⁹Ibid., 3; Cupolas are large furnaces for melting metal.

¹⁰Ibid.

¹¹*Sun*, 17 March 1852.

¹²"Murray and Hazlehurst - Vulcan Works", 5.

Republic.¹³ The firm also held several government contracts to produce boilers and steam machinery for the Navy's new steam frigates being built during 1849 at the Norfolk and Philadelphia Naval Yards.¹⁴

All of the *Monumental City's* machinery was manufactured and installed at the Vulcan Works for a cost of \$30,000.¹⁵ By the time the steamer was launched, many of the components were finished or near completion. Installation of the steam systems took just over a month. By mid-November 1850, although not entirely finished, the *Monumental City* was ready to be tested at sea.¹⁶

Monumental City took to the sea under her own power for the first time on 14 November 1850. During a brief excursion down the Patapsco, the steamship averaged a speed of 7.5 statute miles per hour.¹⁷ The next day the *Monumental City* cleared Baltimore, under command of Isaac Norris, for an extended test cruise down Chesapeake Bay and out to Cape Henry, Virginia.¹⁸ Traveling solely under steam power, the *Monumental City* reached Point Lookout at the southern tip of Maryland late on Saturday

¹³"Oscillating Engines" *Journal of the Franklin Institute*. Vol. 51, series 3 #21, January 1851, 420; "Murray and Hazlehurst - Vulcan Works", 2.

¹⁴"Murray and Hazlehurst - Vulcan Works", 2.

¹⁵"Description of the Steamer *Monumental City*" *Journal of the Franklin Institute*. Whole number Vol.50, series 3, December 1850, 400.

¹⁶*Sun*, 19 November 1850.

¹⁷"...Steamer *Monumental City*" *Journal of the Franklin Institute*. Vol. 50, 401.

¹⁸*Sun*, 19 November 1850; Isaac Norris was also part owner of the *Monumental City*.

16 November 1850. Poor weather forced the steamer to anchor at Point Lookout for several hours. Worsening weather conditions made it inadvisable to continue to Cape Henry, so Captain Norris turned his vessel northward back towards Baltimore.¹⁹ Despite making a brief stop at Cove Point, north of Point Lookout, and other minor delays the *Monumental City* was anchored off Bodkin Light outside of Baltimore by midnight on Sunday 17 November, only seven hours after leaving Cove Point. On Monday morning she steamed back to the Vulcan Works where workmen finished additional construction before her departure for the Pacific.²⁰

During her shakedown voyage, the *Monumental City* steamed over 150 miles. Accounts, although varying, indicate that steamship operated at speeds between seven and twelve statute miles per hour against strong tides and sometimes near gale force winds. The steam machinery performed well with boiler pressures averaging thirteen pounds per square inch, and the engines and propeller maintaining between thirty-two and thirty eight revolutions per minute throughout the trip.²¹ All on board were impressed with the vessel's performance. The *Baltimore Sun* reported that the passengers on the *Monumental City* "...after seeing her performance under various untoward circumstances,

¹⁹*Baltimore American*, 19 November 1850.

²⁰*Sun*, 19 November 1850.

²¹*Sun*, 19 November 1850; *Baltimore American*, 19 November 1850; "...Steamship *Monumental City*" *Journal of the Franklin Institute*. Vol. 50, 401-402; There are conflicting accounts of the speed of the vessel as given by the Baltimore newspapers and the Franklin Institute.

voted her the fastest propeller in the world...”²² This praise was reverberated by the *Baltimore American and Daily Commercial Advertiser’s* comments that the *Monumental City’s* performance “elicited the unqualified commendation...of experienced nautical men who were on board.”²³

The *Monumental City’s* sea trials were overall a success, however, they were not without problems. Two hours into the voyage the steamship ran aground on a shoal called Nine-foot Knoll near Bodkin Light, south of Baltimore, due to compass deviations caused by the vessel’s iron steam machinery. The *Monumental City* remained stranded until early on 16 November when she was floated off the shoal with no apparent damage and continued down the bay. An examination of the hull after the trials confirmed it was undamaged.²⁴ Problems also occurred with the *Monumental City’s* engines and boilers. At least once during the voyage a furnace became so clogged that the fires had to be extinguished until it was completely cleaned. Additionally, frequent stops were made to clear coal chips that became clogged in the water valves of the oscillating engines. These cinders were accidentally blown into the cylinder then pushed into the valves by the action of the piston. The chips could only be removed when the engines were stopped.²⁵ These problems were either considered minor, or in the case of the compass error, temporarily

²²*Sun*, 19 November 1850.

²³*Baltimore American*, 19 November 1850.

²⁴*Sun*, 23 November 1850.

²⁵“...Steamship *Monumental City*” *Journal of the Franklin Institute*. Vol. 50, 401.

corrected, and did not affect the departure of the *Monumental City* for the west coast.

Delays with the final fitting of the *Monumental City* deferred her departure for California by one month. Originally scheduled to leave on 19 November 1850, the steamer was not completed and registered with the Baltimore Port Surveyor until 5 December.²⁶ Finally, on 19 December 1850, *Monumental City*, destined for California via Rio de Janeiro, and Valparaiso, steamed out of Baltimore Harbor, never to return.²⁷

Ho! For California

The *Monumental City* cleared Baltimore in good weather and with the cheers of the crowd that had gathered to bid her farewell.²⁸ All went well until engine problems developed three days into the voyage. The engine blow-off valve pipe clogged causing the boilers to become fouled with seawater and making the engines inoperable. Continuing on under sail, the ship was struck by a near hurricane force gale. The storm snapped the rudder linkage and carried away a mainstay sail leaving the steamer adrift. For nearly twenty-four hours the vessel drifted aimlessly in the tempest. As the gale abated, a temporary rudder and blow-off valve were fashioned and the ship made for Bermuda, arriving there on 30 December 1850.²⁹ Fully repaired, *Monumental City* departed

²⁶National Archives, "Baltimore Tonnage Admeasurement...", RG 41.

²⁷*Sun*, 20 December 1850

²⁸*Ibid.*

²⁹*Royal Bermuda Gazette*, 31 December 1851.

Bermuda on 17 January 1851 to resume her passage to California. Thirty six days later, on 22 February, the *Monumental City*, after coaling at Pernambuco was only sixty hours out of Rio de Janeiro. At Rio, passengers were disembarked and provisions replenished. Leaving Rio on 8 March 1851, the steamer continued southward, stopping at Montevideo before entering the Strait of Magellan. Passing through the Strait, the *Monumental City* called at Port Famine, possibly for coal and provisions, before entering the Pacific and turning northward. The *Monumental City's* first port of call in the Pacific was Valparaiso, where she arrived on 27 April 1851 in “damaged condition.”³⁰ The *Monumental City* left Valparaiso on 9 May 1851, continuing northward to California. Arriving in San Francisco two months later, 192 days after leaving Baltimore, the *Monumental City* soon began her career on the isthmus routes, bringing hopeful immigrants to the California gold fields and revenue to her owners.³¹

West Coast Career

There is a misconception that the *Monumental City* was built for the Hawaiian trade, but this trade was not established so the vessel was put on the gold rush routes. Apparently stemming from a single 1851 Daily Alta Californian newspaper article and expanded by later historians writing about the *Monumental City*, the idea is unfounded.³²

³⁰*Sun*, 23 June 1851

³¹*Daily Alta California*, 10 July 1851.

³²*Ibid.*; The same article announcing the arrival of the *Monumental City* also made this speculation.

All evidence, excepting the 1851 article, indicates the *Monumental City* was intended from the start to operate between Central America and San Francisco. The *Journal of the Franklin Institute*, as well as the Baltimore newspapers, state that the steamship would be carrying passengers between Panama and San Francisco.³³ The most compelling evidence that the *Monumental City* was built for isthmus work is an ad for Vanderbilt's Nicaragua Line from the *Daily Alta California* of 9 August 1851 stating that "This elegant steamer [*Monumental City*] was built under the supervision of her experienced commander, expressly for this route."³⁴ Finally, it is unlikely that the owners of the *Monumental City*, being businessmen, would risk a venture on an undeveloped trade disregarding the opportunities for profit presented by the California Gold Rush.

On the gold rush routes the *Monumental City* operated as an independent steamship, working for both Cornelius Vanderbilt's steamship companies, and the Empire City steamship line. Smaller and somewhat slower than many of the paddle steamships on the routes, *Monumental City* functioned as an intermediate steamship, meaning that the steamer carried passengers to and from the isthmus ports between the monthly departures of a companies larger steamers.³⁵ Begun in 1850 by the Pacific Mail Steamship Company to handle the increasing number of immigrants coming to the goldfields via Panama,

³³*Sun*, 19 November 1850; *Baltimore American*, 19 November 1850; "...Steamship *Monumental City*" *Journal of the Franklin Institute*. Vol. 50, 400

³⁴*Daily Alta California*, 9 August 1851.

³⁵John H. Kemble, *The Panama Route 1848-1869*. (New York: Da Capo, 1972), 89.

intermediate steamers supplemented the sailing of a company's larger steamships.

Through the use of these smaller steamships, companies were able to offer travelers bi-weekly service to and from isthmus crossings in both Nicaragua and Panama.³⁶

The *Monumental City* began her west coast career working for Cornelius Vanderbilt's Peoples Independent Line on the Nicaragua Route. Established by Vanderbilt in 1850 to give the Panama Route competition, the passage across the Isthmus of Nicaragua offered the would be immigrant to California several advantages over that across the Isthmus of Panama. The Nicaragua route shortened the distance from New York and San Francisco by nearly 400 miles and from New Orleans by over 500 miles. The route also offered a more pleasurable trip through the mild climate of the Nicaragua highlands as compared to the steamy jungles of Panama.³⁷ Most importantly, however, all but eighteen miles of the Nicaragua Route could be traversed by water. The short distance overland could be covered in less than a day, unlike the three days of overland travel it took to cross Panama. Despite its advantages, the Nicaragua Route remained relatively obscured because Vanderbilt failed to attend to its development.³⁸

Immigrants traveling to California along the Nicaragua Route would begin their journey in New York or New Orleans. At these ports, they would catch steamships that

³⁶Kemble, *The Panama Route 1848-1869.*, 89; James Delgado, *To California by Sea*, (Columbia, South Carolina: University of South Carolina, 1990), 59.

³⁷Kemble, *The Panama Route*, 58-59.

³⁸Delgado, *To California by Sea*, 59.

would take them to the eastern terminus of the route at San Juan del Norte on the east coast of Nicaragua. Arriving there, they would leave the steamships and travel by small boat up the San Juan as far as Lake Nicaragua. At the lake, a steamboat would transport them to the opposite shore. Once across, they would make the short overland journey to either San Juan del Sud or Realejo where they would connect with the northbound steamship that would carry them to San Francisco.³⁹

After a month of waiting while cargoes were picked up by consignees, the *Monumental City* steamed out of San Francisco Bay on 15 August bound for the western terminus of the Nicaragua Route at San Juan del Sud.⁴⁰ In September 1851 the steamship was still at San Juan del Sud waiting for passengers.⁴¹ Sometime in late September or early October, the *Monumental City* left San Juan del Sud, not for San Francisco but for Panama, now apparently employed by the Empire City Steamship Line.⁴² What led to this abrupt change of employer is not known. The *Monumental City* remained in Panama taking on passengers until 16 October 1851. Departing Panama, the steamship headed north carrying 310 passengers, including 45 women, sixty more than her capacity. After making stops at Acapulco and San Diego, the *Monumental City* finally arrived in San

³⁹Kemble, *The Panama Route*, 59.

⁴⁰*Daily Alta California*, 15 August 1851.

⁴¹*Daily Alta California*, 24 September 1851.

⁴²*Daily Alta California*, 9 September 1851.

Francisco on 15 November 1851 having had a “ long and unpleasant voyage.”⁴³

While employed with the Empire City Line, the *Monumental City* ran on the Panama Route. Once an important link between Spain’s seaborne empires, the trail across the Isthmus of Panama fell into relative disuse as Spain’s New World colonial empire dwindled.⁴⁴ In the late 1840s, the route over the Isthmus again came into importance as part of the communication system linking the eastern United States and the newly acquired west coast territories.⁴⁵ When gold was discovered in California in 1848, the Isthmus of Panama became more than just a link between two parts of a nation, suddenly it became the gateway to the California gold country. During the gold rush, over two-thirds of the immigrants going to California crossed the Isthmus of Panama. Even following the gold rush, the route remained an important communications link between the east and west coast, and the most expedient means of travel until the transcontinental railroad was completed in 1865.⁴⁶

Travelers across the Panama Route would arrive at the Chagres on the Caribbean side of the Isthmus. The anchorage at Chagres was one or two miles off shore, so travelers and their luggage were taken ashore in the ship’s boats and the launch of the steamer *Orus*. Once on shore, they would hire a canoe and begin a two day journey up

⁴³*Daily Alta California*, 19 November 1851.

⁴⁴Kemble, *The Panama Route*, 1-10; Delgado, *To California*, 47.

⁴⁵Delgado, *To California*, 47.

⁴⁶Kemble, *The Panama Route*, 1.

the Chagres River to Cruces. Arriving at Cruces, travelers would arrange to have their baggage forwarded by mule to Panama. After seeing their supplies off, they would begin the journey overland themselves. Walking from Cruces, Panama could be reached in about two days, or if one chose they could rent a mule to ride for a minimal fee. Arriving at Panama travelers would wait until the northward bound steamer took them to San Francisco.⁴⁷

Almost immediately after *Monumental City's* return to San Francisco, the Empire City line posted advertisements that the steamer would leave for Panama on 1 December. The change of employers also brought about a change in command, with Edgar Wakeman replacing Isaac Norris as captain of the *Monumental City*. Keeping to past form of never leaving on time, the steaming of the *Monumental City* was postponed indefinitely just a day before her scheduled departure because a severe illness had incapacitated Captain Wakemen.⁴⁸

The *Monumental City* was delayed in San Francisco until mid-December 1851 when she steamed out of the harbor for Panama under the command of Walter K. Cressy.⁴⁹ Arriving in Panama sometime in early January of 1852, the *Monumental City*

⁴⁷Joseph Gregory, *Gregory's Guide for California Travelers Via the Isthmus of Panama*. (1850; reprint, San Francisco: Book Club of California, 1949): For more detailed histories of the Panama Route or the Gold Rush sea routes see John Haskell Kemble's *The Panama Route* and James Delgado's *To California by Sea*.

⁴⁸*Daily Alta California*, 1 December 1852.

⁴⁹Either Wakemen was still too ill to make the voyage or he had gone down one way to take command of the *New Orleans*, another steamer on the Panama Route.

remained there until 18 January. Leaving Panama on the 18th, *Monumental City* steamed northward making stops first at Realejo and then at Acapulco. After departing Acapulco, the steamer continued towards San Francisco until 12 February when engine problems forced the vessel to put in for repairs at Mazatlan. Upon completion of those repairs, the *Monumental City* cruised up the California coast, stopping at San Diego on 28 February. When the *Monumental City* arrived in San Francisco on 4 March, forty-five days after departing Panama, the newspapers exclaimed relief, as it had been thought that she had been lost.⁵⁰

By mid-March the *Monumental City*, now under contract with Vanderbilt's Nicaragua New Steamship Line, was being readied for another voyage to San Juan del Sud.⁵¹ Scheduled to leave on 20 March 1852 in company with the *Tennessee*, the *Monumental City* was unavoidably detained and did not depart San Francisco until four days later.⁵² The *Monumental City* did not leave San Juan del Sud for San Francisco until 27 April. In mid-May word came via the steamship *Tennessee* that the *Monumental City* was in Acapulco with many sick aboard.⁵³ On 18 May the *Monumental City* returned to San Francisco after a twenty-four day Journey from San Juan del Sud. On board her were 450 immigrants, nearly twice her capacity. On the voyage from Central America

⁵⁰*Daily Alta California*, 5 March 1852.

⁵¹*Daily Alta California*, 18 March 1852.

⁵²*Daily Alta California*, 25 March 1852.

⁵³*Daily Alta California*, 10 May 1852.

numerous deaths occurred, mostly from outbreaks of dysentery that resulted from the conditions of overcrowding.⁵⁴

Following May of 1852, the *Monumental City* no longer appeared on the list of ships operating on the gold rush routes. No mention of the vessel occurs in San Francisco papers until November of 1852 when notices announced that the *Monumental City* had been recently overhauled and was now offered for sale. In eleven months of operation on the gold rush routes, the *Monumental City* carried over one thousand immigrants from Nicaragua and Panama to the California goldfields. During this period, the steamer was involved in two legal cases and was plagued by design problems.

The first legal case the *Monumental City* was named in was libel suit filed against the steamer's owners by William Robertson. Robertson, in the suit, claimed to have conducted over \$2000 worth of repairing and refitting work on the *Monumental City* during 1851 and had never received payment. The owners of the *Monumental City* argued in their defense that the work had been carried out as a co-partnership. Several motions were filed, and the court ordered that the *Monumental City* be taken into custody for a time beginning on 13 December, which delayed the steamer from leaving San Francisco.⁵⁵ The lawsuit eventually went to court and was dismissed in March of 1852.

In April 1852, less than a month after the above legal action had been settled, the *Monumental City*, presumably by name only, was involved in a scheme to defraud

⁵⁴*Daily Alta California*, 18 May 1852.

⁵⁵*William Robertson v Steamer "Monumental City"*, US N. Dist. California, 191 (1852).

travelers going to the California goldfields. According to an account in the *New York Express*, members of a fraudulent New York firm, A.H. Pride and Company, falsely represented themselves as having chartered the *Monumental City* and sold tickets to numerous immigrants for northbound voyages from Panama to San Francisco on the steamer. Arriving in Panama, these people found their tickets useless, and were stranded at the Isthmus with neither money to return to New York, or to continue on to San Francisco. When the victims of the fraud finally returned to New York, the scheme was exposed and members of the fake company were arrested.⁵⁶

In addition to legal problems, the *Monumental City* was hampered by design problems that kept the steamer from successfully competing on the gold rush routes. One significant problem was the *Monumental City's* engines. Originally developed for paddle steamships, the *Monumental City's* oscillating steam engines were unreliable in powering the screw steamship. The poor performance of the *Monumental City's* engines resulted in the steamship having longer passages than the paddle steamships on the route.⁵⁷

Size was another significant problem for the *Monumental City*. The screw steamship was just too small to adequately compete with the larger paddle steamships that operated during the gold rush. Those steamships, such as the *Tennessee*, were built to carry more than 500 and later over 1000 passengers. The *Monumental City* had been

⁵⁶*New York Express*, 2 April 1852.

⁵⁷Staniforth, Mark. "SS Monumental City - First Steamship to Cross the Pacific" in *Iron Ships & Steam Shipwrecks: Papers from the First Australian Seminar on the Management of Iron Vessels and Steam Shipwrecks*. (Western Australia Maritime Museum: Fremantle 1985), 164.

designed only to carry approximately 250 first and second class passengers.⁵⁸

Consequently, the *Monumental City* routinely exceeded the number of passengers she was designed to carry, sometimes by as much as double, in order to profitably compete on the routes. This overcrowding resulted in rancid conditions that led to outbreaks of disease such as the epidemics of, fever and diarrhea that killed ten passengers and incapacitated many others on the vessel's last voyage.

As larger and more reliable paddle steamships came into use on the gold rush routes, the design problems discussed above made it increasingly difficult for the *Monumental City* to compete.⁵⁹ Problems competing on the routes may have been a factor in the decision of the owners to dispose of the steamer, but they were probably not the main reason the *Monumental City* was put up for sale. Instead, it is likely that the decision to sell the steamship was made because the owners could not find work. The *Monumental City* had operated on the gold rush routes as an intermediate steamer. At the end 1852, because of the decline of immigrants coming to the goldfields, the Pacific Mail Steamship Company, and most likely other steamship companies, no longer needing intermediate steamers to keep pace with the flow of people over the Isthmus routes. As a result, the biweekly service was discontinued.⁶⁰ Unable to compete against the faster and larger paddle steamers on the regular steamer schedule, it is very likely that the

⁵⁸*Baltimore Sun* 19 November 1850.

⁵⁹Staniforth, "SS Monumental City", 164.

⁶⁰Kemble, *The Panama Route*, 89.

Monumental City ran out of work and her owners put the ship up for sale in an attempt to recoup some of their investment.

Unable to find a buyer for the *Monumental City* after three months, the owners opted for another solution. In January 1853, they announced that “recent intelligence from Australia respecting the unprecedented richness of the Australian mines has induced the proprietors [of the *Monumental City*] to lay on for Sydney and Melbourne.”⁶¹ Originally scheduled for departure on 8 February, the *Monumental City*, true to form, was “deferred owing to a delay in coaling.”⁶² *Monumental City*, now commanded by W. H. Adams, finally cleared San Francisco on 17 February 1853, carrying cargo and passengers for Australia.

On 11 March 1853, the *Monumental City* put into Tahiti, in the Friendly Island Group, for coal and supplies. In Tahiti, Captain Adams had difficulties in getting supplies and was forced to pay thirty dollars a ton for coal. Captain Wakemen of the *New Orleans*, arriving a week later, described that coal as “...good for nothing.”⁶³ Things were so bad in Tahiti, that Captain Wakemen warned in a letter that vessels should get supplies at Honolulu or the Fiji Islands, but should avoid Tahiti because “Here nothing can be had but

⁶¹ Daily Alta California, 31 January 1853.

⁶² Daily Alta California, 5 February 1853.

⁶³ Gerard Ward, ed. *American Activities in the Central Pacific 1790-1870*. (Gregg Press, Ridgewood, NJ: 1967), 143; The *New Orleans*, also bound for Australia, arrived about a week after the *Monumental City* left.

water.⁶⁴

Fifteen days after arriving, the *Monumental City* left Tahiti and continued on towards Sydney. *Monumental City* steamed steadily on her course until heavy weather damaged the rudder forcing Captain Adams to put into Tongataboo in the Tonga Island Group for repairs.⁶⁵ While in Tongataboo the *Monumental City* took on board Captain Cresswell and fifteen passengers and crew of the sailing brig *Rapid* that had recently been wrecked near the island.⁶⁶ Leaving Tongataboo on 9 April, the *Monumental City* arrived off the Sydney Heads fourteen days later on 23 April 1853. The journey from San Francisco to Sydney had only taken forty-seven days of actual running time. During the entire voyage no one had died although some fevers were reported during the beginning of the voyage.⁶⁷

Australia!

Australia in 1853 was an opportune place for American ships. The repeal of the Navigation Acts in 1849 had lifted restrictions that had been in place since the Anglo-American War of 1812-15.⁶⁸ The resulting boom in the Australian coastal trade, as Bach

⁶⁴Ibid.

⁶⁵*Empire* (Sydney), 25 April 1853.

⁶⁶*Empire* (Sydney), 25 April 1853.

⁶⁷"Health Officer's Report, Port Jackson, 23 April 1853" COD 104, Records pertaining to the ship *Monumental City*, Archives Office of New South Wales, Sydney.

⁶⁸Nigel Wace and Bessie Lovett, *Yankee Maritime Activities and the Early History of Australia*. Research School of Pacific Studies Aids to Research Series, No. A/2, (Australian National University; Canberra, 1985).

points out, “attracted several overseas competitors, including American-owned vessels, which were now eligible to trade between New South Wales and Victoria.”⁶⁹ In 1851 gold discoveries in New South Wales and Victoria sparked an Australian Gold Rush and provided more opportunities for ships involved in the coastal trade. It was these opportunities that brought the *Monumental City*, and the other American steamships that followed her, to Australia.

The *Monumental City* was well received on her arrival in Sydney. Being the first steamship from North America to arrive in Australia, the Sydney newspapers provided their readers descriptive accounts of the steamers voyage, and details of her construction.⁷⁰ The papers also speculated that the *Monumental City* would replace the English steamship *Cleopatra* on the coasting trade between Sydney, Port Phillip and Adelaide once the *Cleopatra* returned to England later in the summer.⁷¹ The *Monumental City* remained in Sydney until the first part of May unloading cargo and being readied for work in Australian waters.⁷²

Missing her original departure date of 4 May by one day due to “unavoidable

⁶⁹John Bach, *A Maritime History of Australia*. (Melbourne: Thomas Nelson, 1976); New South Wales and Victoria were, following the repeal of the Acts, considered separate possessions and not restricted by remaining coastal trade restrictions.

⁷⁰These accounts are a valuable source on how the ship was equipped and outfitted, especially following the overhaul in the summer of 1852.

⁷¹*The Shipping Gazette and Sydney General Trade List*, 30 April 1853

⁷²The cargo the *Monumental City* had brought from San Francisco consisted of 100,000 cigars, 11 boxes of merchandise, and 1 case of Colt's pistols. All goods were assigned to the steamer's agent, Peter Strobel.

delays”, nothing unusual for the steamship, the *Monumental City* steamed out of Sydney Harbor carrying 166 passengers on her maiden voyage to Melbourne on 5 May 1853.⁷³ Four days later, having an uneventful voyage down the coast, the *Monumental City* steamed into Port Phillip Bay then onto Melbourne.⁷⁴ It would be the only voyage the *Monumental City* completed in Australia. The Melbourne newspapers like those in Sydney welcomed the *Monumental City* and reprinted the descriptions of the steamer from the *Sydney Morning Herald*. One Melbourne paper *The Argus*, published a letter from the passengers who had traveled from San Francisco, and Sydney to Melbourne on the *Monumental City*. The letter praised the steamer’s crew, as well as, the comforts and accommodations provided on the *Monumental City*. It gave special mention of Captain Adams “for his very able management as a commander on this coast, although a stranger on it, as well as for his kind, affable, and gentlemenlike deportment to us all...” and to the *Monumental City’s* Surgeon, David Roff, M.D., whose skills, the passengers coming from San Francisco to Melbourne felt was the reason that no lives had been lost during the voyage.⁷⁵

Loss of the *Monumental City*

Captain Adams did not linger in Melbourne. Only three days after arriving the

⁷³*Sydney Morning Herald*, 5-6 May 1853; *Shipping Gazette*, 7 May 1853.

⁷⁴*The Argus* (Melbourne), 10 May 1853.

⁷⁵*The Argus* (Melbourne), 10 May 1853.

Monumental City steamed out of Melbourne bound for Sydney on Friday, 13 May 1853, an ominous day for sailing. The *Monumental City* never completed the voyage. Ironically, this was the one of the only times in the *Monumental City's* career that she left port on schedule. Leaving Port Phillip Bay, the *Monumental City* nearly ran aground after confusing two navigational buoys. Other than the problem in Port Phillip Bay, the first two days of the journey were uneventful as the *Monumental City* steamed east along the Victoria coast past Wilson's Promontory and turned northward towards Sydney. During the evening of the second day, in the rain and darkness Captain Adams mistook a point of land called Rames Head on the eastern coast of Victoria for Cape Howe at the southern tip of New South Wales.⁷⁶ Believing he was much farther north than he actually was, Captain Adams ordered his first officer Edward Van Syce to steer north-north-east after rounding the cape, then he retired for the evening. Following orders, Van Syce put the *Monumental City* on the new course heading after rounding the headlands. Between thirty to forty minutes later, Mr. Van Syce heard the sound of nearby breakers. He immediately turned the *Monumental City* eastward, out to sea and maintained that course for about twenty minutes. He then steered the steamer east-north-east for thirty minutes, then north-east for almost an hour. Feeling that the ship was now well away from the shore, Mr. Van Syce turned the steamship back to the original course of north-north-east.

⁷⁶*Sydney Morning Herald*, 7 July 1853; This article presented the findings of the Steam Navigation Board's investigation into the loss of the *Monumental City*.

Fifteen minutes later the *Monumental City* struck the rocks off Tullaburnga Island.⁷⁷

Passengers, most who had been asleep when the steamer grounded, rushed on deck to find Captain Adams trying to free the *Monumental City* using the vessel's engines, but to no avail. Since the weather was calm, and the vessel was not taking on water, Captain Adams decided to wait until dawn before making another attempt to get off the rocks.⁷⁸ It was a decision that would prove fatal for the *Monumental City* and many of her occupants.

As the sun rose over Tullaburnga Island, a gale blew up from the southeast.⁷⁹ The winds and the waves buffeted the *Monumental City* slamming her hull against the submerged reef, and soon she began to take on water.⁸⁰ After a short time, the pumps could no longer keep up and water reached the engines, extinguishing the boiler fires. As the water flooded the ship, it settled by the stern. Captain Adams had the foremast cut away in an attempt to lighten the vessel, and keep it from striking against the rocks.⁸¹ Once Captain Adams realized the *Monumental City* was doomed, he ordered the ship's boats lowered so passengers could be put ashore. The surf, however, was so violent that it smashed two of the boats to pieces, and set one adrift before anyone could get into

⁷⁷Ibid.

⁷⁸*Empire* (Sydney), 30 May 1853.

⁷⁹During the 1994 archaeological investigations of the *Monumental City* the same situation occurred regularly, often preventing examination of the wrecksite.

⁸⁰*Sydney Morning Herald*, 30 May 1853; *Empire* (Sydney), 30 May 1853.

⁸¹Ibid.

them. Finally, the ship's lifeboat was brought up and a single sailor, Charles Plummer, jumped into it and managed to navigate to shore. In that instant, Plummer became the hero of the *Monumental City* disaster.⁸² A line, after some difficulties, finally reached Plummer on the island and a rope secured between the island and the remaining portion of the foremast. Several passengers and most of the crew crossed the rope, with much difficulty, to the safety of the island. Others tried to swim to shore only to die by drowning or being smashed against the rocks. Captain Adams, unable to convince the remaining passengers to cross to the island, left the *Monumental City* around noon, with only a few others crossing over to the island after him.⁸³ By the time Captain Adams left the vessel, only part of the stem remained, as the stern had been washed away and the steam machinery had fallen through the bottom of the hull. The last moments of the *Monumental City* are best portrayed by the words of Mr. Galvin M'Kerrow, the only surviving first class passenger, who left the ship less than thirty minutes before it disintegrated:

“There were still left upon the wreck about twenty people, including four women and three children, and the most heart rendering sight I ever witnessed was these poor people crowding upon the small part of the wreck which remained, without being able to come along the hawser, or those on shore being able to tender them any assistance. For about half an hour no one attempted to land, except the doctor, who was hanging on the hawser when the vessel parted. I was looking intently at them, hoping that they might yet be saved by the stem of the vessel being carried on shore, when suddenly the bow split in two, and precipitated men, women, and

⁸²*Empire* (Sydney), 30 May 1853; Plummer, some years later, again gained notoriety when he led a mutiny on the American whaling ship *Junior*.

⁸³*Sydney Morning Herald*, 30 May 1853.

children among the breakers, where we only saw them for a moment. The whole disappeared in a few seconds, and this fearful tragedy was at length brought to a close. Scarcely a vestige remained of the ship; and out of 80 souls who sailed from Melbourne, I found that 54 had reached the land and that 32 had been drowned.”⁸⁴

The survivors managed to build a fire and dry their clothing during the first night on the island. The next day the survivors searched the island gathering freshwater from among the rocks, retrieving what provisions had been washed ashore, and burying the bodies that had washed ashore.⁸⁵ Two days after the wreck, Tuesday 17 May, Captain Adams took eighteen of the passengers and crew from the island to the mainland less than a mile away. The next day some of the men attempted to return to Tullaburnga to pick up the remaining passengers and crew, but the surf was too rough and they could not get back to the island. Unable to get back to Tullaburnga, Captain Adams and all eighteen men started up the coast for the nearest settlement at Twofold Bay in New South Wales, arriving there in “poor condition” on 20 May 1853.⁸⁶ By Friday, the remaining survivors had fashioned a raft from timbers of the *Monumental City*. A group of them took the raft to shore, retrieved the lifeboat, and brought those remaining on Tullaburnga to the mainland. This group then started northward following the party led by Captain Adams, arriving at Twofold Bay on 22 May 1853.⁸⁷

⁸⁴*Sydney Morning Herald*, 30 May 1853; The official death toll was 33 not 32 as in M’Kerrow’s statement.

⁸⁵*Ibid.*

⁸⁶*Empire (Sydney)*, 30 May 1853; The current location of the town of Eden, New South Wales

⁸⁷*Ibid.*

The news of the loss of the *Monumental City*, the loss of thirty-three of the passengers, and the fate of the survivors unleashed a wave of emotion throughout Sydney and Melbourne. Sympathy and support for survivors, and the families of those who had perished came quickly. In Sydney, the U.S. Consulate General, the Governor General of New South Wales, and other prominent Sydney citizens led the establishment of the *Monumental City* Relief Fund. Donations to the fund included the proceeds from several benefit concerts from prominent musical and theatrical companies, including Rainer's Original Ethiopian Serenaders.⁸⁸

Along with compassion for the survivors came outrage at the Captain and crew of the *Monumental City* for the disaster. This outrage increased when it was made public that the officers of the *Monumental City*, being Americans from an American ship were not subject to laws that governed British steamships in the colony. Throughout June, letters appeared in the Sydney Newspapers, some of which angrily called for an investigation into the disaster, especially the conduct of Captain Adams. At times the letters grew heated, including claims that Captain Adams didn't do all he could to save his passengers because they were not Americans!⁸⁹ Others suggested that the vessel had been intentionally wrecked in order to claim the insurance on the cargo.⁹⁰ Still others called for Captain Adams to be indicted for manslaughter, for the deaths of thirty-three men, women

⁸⁸*Sydney Morning Herald*, 11 June 1853.

⁸⁹*Empire* (Sydney), 1 June 1853.

⁹⁰*Empire* (Sydney), 2 June 1853.

and children. Initially, Captain Adams gave no response to the letters, but finally in order to quell the public outcry against him, he asked the Steam Navigation Board to conduct an inquiry.⁹¹

The Steam Navigation board convened on 8 June 1853 to hear testimonies regarding the wreck of the American Steamship *Monumental City*.⁹² Since the Board had no actual legal authority in the case, it could not issue subpoenas, therefore, witnesses were invited to hearing through postings in the Sydney newspapers. Between 8 and 10 June 1853, the members of the Board of Inquiry heard testimonies from both passengers and crew who were on board the night the vessel was lost. On 7 July 1853, after examining the evidence for nearly a month, the members of the Board of Inquiry issued their judgement. They found Captain Adams to blame for the management of the *Monumental City* the night the vessel ran aground because he had not exercised enough caution on an unfamiliar coast; he had issued orders for course changes when he could not have been sure of his position and when he would not be on deck; and, because he had given command of deck to an inexperienced officer who had never been on the coast before at a time when the deck compasses were not functioning correctly. The Board also stated that they felt that Captain Adams had done everything that he could to save the

⁹¹*Sydney Morning Herald*, 3 June 1853.

⁹²National Archives, Washington, "Records of the Consular Post at Sydney 1839-1913" (National Archives Microfilm Publication M173, Roll 2) Records of the Foreign Service Posts, Record Group 84.

lives of the passengers, and found no fault in him leaving the ship when he did.⁹³ Captain Adams, however, was not blamed for the loss of the vessel. The wreck of the *Monumental City*, according to the Board's ruling, was the fault of the First Officer Edward Van Syce, for failing to notify the Captain after the vessel had nearly run aground earlier in the evening. The members of the board felt that Van Syce's conduct was "unofficerlike and unjustifiable", and regretted that "conduct so reprehensible should remain unpunished."⁹⁴

Impact of the Monumental City's Loss

The loss of the *Monumental City* had a significant impact on maritime matters in Australia, both in the short and long term. The most immediate result was the resurgence of pressure to establish a lighthouse on Gabo Island. Originally part of a New South Wales legislative plan of 1845 to build several lighthouses in Bass Strait, construction was begun on a lighthouse on Gabo in 1846, but was canceled that same year due to insufficient funds.⁹⁵ Less than a month after the *Monumental City* wrecked at Tullaburnga, the Colonial Secretary of issued orders to construct a wooden lighthouse on Gabo island.

Construction began on the structure in October 1853 and was completed in

⁹³*Sydney Morning Herald* 7 July 1853.

⁹⁴*Ibid.*

⁹⁵Victoria Archaeological Survey, "Gabo Island: Background Historical Information", Shipwreck Files "Gabo Island"(Melbourne: Maritime Safety Division, Department of Transport, 1986),6.

November 1853. A Victoria Archaeological Survey report gives the following description of this lighthouse:

“This [the lighthouse] consisted of a prefabricated wooden tower and lantern. The octagonal tower was 20 feet high from ground to verandah.

The lantern was supported by a timber frame structure of eight 12" x 12" uprights. These uprights rested on four timber grillage footings buried approximately 10 feet in the sand. The style of construction is very similar to that known as slow burning warehouse construction of the mid 19th century.

The lantern was 12 feet in diameter with the glazed portion being 6 sided, 7 feet high with each side divided in height into 3 panes by horizontal bars secured between vertical uprights giving a total of 48 separate panes. The roof of copper had a central ventilating shaft surrounded by a weather vane.

An iron pillar and frame supported two tiers of silver plated polished parabolic reflectors. Each reflector contained a brass lamp with a wick burner. The total of 24 lamps illuminated the entire horizon.”⁹⁶

First lit on 28 November 1853, the Gabo Light operated until July 1854 when it failed due to lack of fuel.⁹⁷

Two years later, in 1856, an intercolonial conference recommended that a permanent lighthouse be constructed on Gabo Island (See Figure 2). By 1862 a new lighthouse constructed of dressed red granite from quarries on Gabo Island. This structure, still in use today, is a circular structure that is 46.9 meters high that is part of a complex that includes two living quarters also constructed from granite on the island. The original light was “a new first order lantern and fixed catadioptric lens” obtained from

⁹⁶Victoria Archeological Survey, “Gabo Island”, 6

⁹⁷Ibid., 4

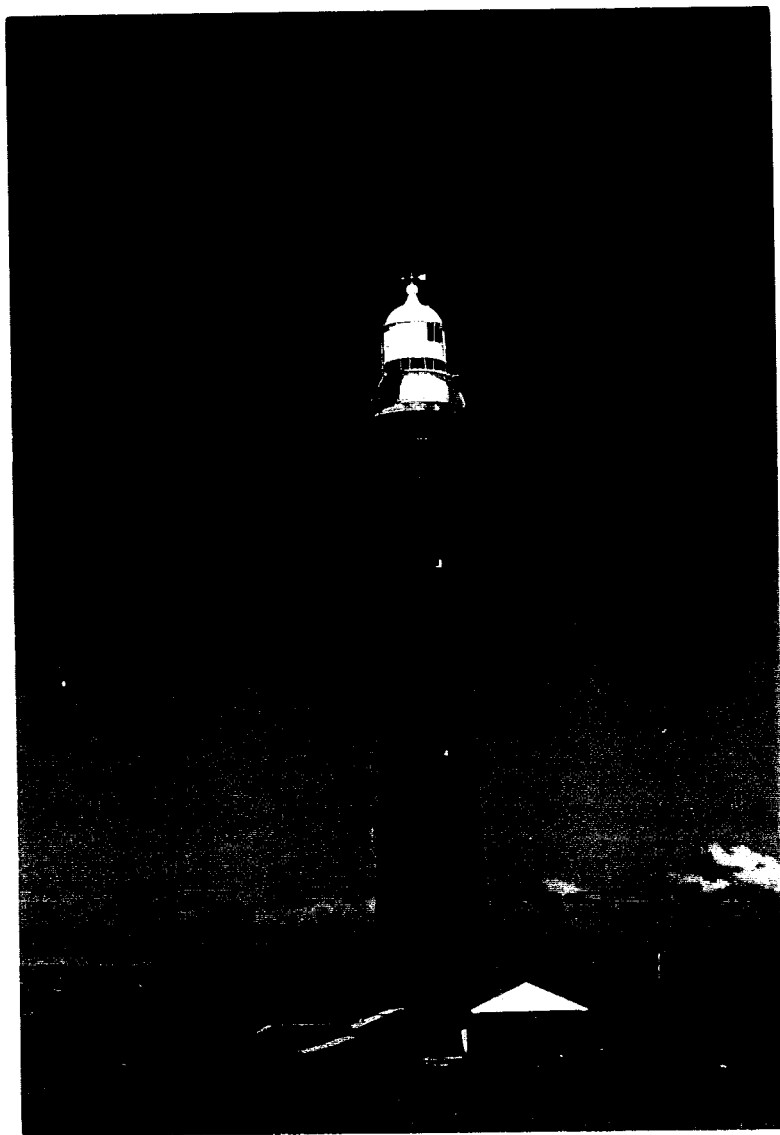


Figure 2. The current Gabo Island Lighthouse. (Photograph by Author).

England.⁹⁸

The second relatively immediate result of the wreck of the *Monumental City* was a change in colonial shipping laws regarding foreign vessels operating in colonial waters. Both government officials and private citizens were appalled and outraged, when it became known, because of the *Monumental City* disaster, that the colonial government had no legal authority over non-British vessels operating in colonial waters. Following the findings of the Board of Inquiry into the disaster, the Governor-General of New South Wales, Fitzroy, remedied this oversight of colonial maritime policy. Following the suggestions of the Colonial Legislative Council, Fitzroy drafted a law by which the Steam Navigation Act passed in 1852 (Local Act 16 Vict. No. 46) would apply to foreign steamships operating in the Australian Coasting trade. This law would require that the masters of foreign ships enter into bonds on clearance and departure which would make them subject to colonial legal jurisdiction.⁹⁹ When this law went into effect in 1853, American shipowners were unhappy about paying the sums required by the law. The U.S. Consulate in Sydney, even voiced a protest to the law, but to no avail. The final result of the loss to the *Monumental City* came sometime later. After a series of similar disasters, changes resulted to the Steam Navigation Board. As a result of these changes, “the powers and responsibilities of the Steam Navigation Board of Inquiry were considerably

⁹⁸Ibid, 6

⁹⁹Irish University Press. “British Parliamentary Papers”, 1854, vol. 19. Doc. 436, 19.

expanded in the late 1850s.”¹⁰⁰

Memoriam

As a footnote to the above history, the wreck of the *Monumental City* has not been forgotten. In a small glade on the southern side of Gabo Island facing Tullaburnga Island, stands a monument of red granite erected sometime in the past by the Governments of New South Wales and Victoria as a tribute to those who perished in the tragedy (See Figure 3). This monument, now fully restored, stands again as a stoic reminder of the tragedy that took place a short distance away, so many years before.

¹⁰⁰Mark Staniforth, *SS Monumental City: First Steamship to cross the Pacific*, Victoria Archaeological Survey Occasional Reports Series, Number 24. (Melbourne: Ministry for Planning and Environment, 1986), 7.

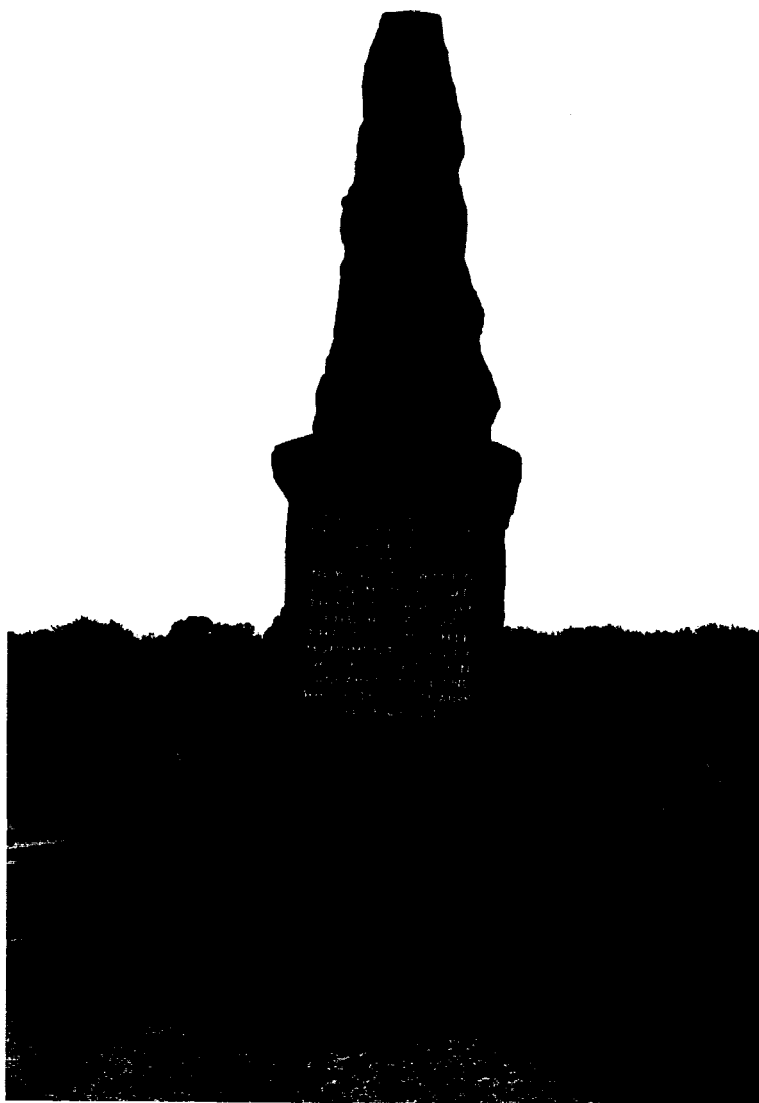


Figure 3. *Monumental City* monument on Gabo Island
(Photograph by Author).

CHAPTER 2

DESIGN AND CONSTRUCTION

Mid-19th Century Steamship Technology

The period between 1840 and 1860, during which the *Monumental City* was built, was one of intensive change and development in steamship design and steam technology. Socio-economic and political events such as the establishment of government subsidized steamship routes and the 1848 discovery of gold in California, initiated an unparalleled period of steamship construction. The advances made during this period would influence steamship design throughout the rest of the nineteenth century.

A major development in the steamship during this period was in hull design. Steamships in the early part of the century were constructed on the model of sailing vessels, as steam was seen as auxiliary to sail at that time. By the 1840s, however, the reliability and efficiency of steam propulsion having been proven, steamships began to take on a different form. They developed unique hull characteristics that emphasized steam rather than wind as the source of propulsion.

Some of the earliest changes in steamship hull design can be seen in the steamer *Southerner* built in 1846. The success of the *Southerner's* design would greatly influence

steamship construction in the coming decades.¹⁰¹ The *Southerner* was 191 feet long with a full bow and transom stern. At 785 tons, she was built heavier than earlier steam vessels in order to withstand the punishment of ocean voyages. Also unlike earlier steamships, the paddle wheels were not placed on the hull, they were integrated into it, with the outer planking enforcing the paddle boxes, and giving them added protection. The *Southerner* was built entirely around her steam systems, even the forward placed pilot house and the reduced sailing rig emphasized the use of steam.¹⁰²

Further changes in hull design can be seen in the steamships *California*, *Panama*, and *Oregon* built to operate on the newly established Pacific Mail Steamship Routes. At around 200 feet in length and displacing approximately 1000 tons these steamers were larger than the *Southerner*. A significant feature of these three steamers was their simpler bow design that would become characteristic of American ocean paddle steamships of this era. The stem was nearly vertical without rake, cutwater, or other attachments common to sailing ship bows, and had a simpler more efficient bowsprit design. These steamers also had a unique hull design, in that their hulls were reinforced against vibration and hogging with diagonal iron strapping.¹⁰³ The construction of these three vessels, according to Ridgely-Nevitt, “marked the coming of age of the American ocean going

¹⁰¹Cedric Ridgely-Nevitt. *American Steamships on the Atlantic*, (Newark: University of Delaware Press, 1981), 98.

¹⁰²*Ibid.*, 98-99.

¹⁰³*Ibid.*, 105.

steamship.”¹⁰⁴

Another major aspect of ocean steamships in this era that differed greatly from their predecessors was their size. Steamships up into the mid-1840s were usually under 200 feet in size. By the late 1840s, ocean steamships of 200 feet or more were commonplace. In the 1850s, American steamship builders stretched the limit of wooden hull construction, building vessels that were up 300 feet long and 1000 tons displacement.¹⁰⁵ The increase in hull size brought with it structural dilemmas for steamship builders. Large hull steamships are composed of many flexible timbers, and inherently weak. Additionally, the concentration of engine weight in the center of the vessel, and “the high length-to-beam ratio and the lack of buoyancy in the fine ends of these ships”, intensified traditional hogging problems.¹⁰⁶ Shipbuilders during this period developed a variety of methods to add strength to hulls so they would withstand engine weight and vibration, the affects of hogging, and the rigors of ocean voyages. One method employed was the use of extensive hog frames, thick wooden beams running laterally along the hull forcing it to keep its shape. Another practice was to secure the frames or planking of a vessel together with iron bolts. The most common method during the 1840s and 1850s, however, was the use of iron diagonal strapping to reinforce the hull

¹⁰⁴Ibid., 110.

¹⁰⁵Ibid., 195.

¹⁰⁶Trevor Kenchington and Colin Whitelock, “The United States Mail Steamer *Humboldt*, 1851-1853:Initial Report, draft, (Musquodoboit Harbor, Nova Scotia: Gadus and Associates, 1996),9.

structure.¹⁰⁷ This method consisted of running long iron bars at 45 degree angles along the interior of the hull in both directions, forming X-braces from the floor frames to the highest deck supports. Then the bars were bolted to each other, and at the points where they crossed frames a bolt was run through connecting the bars, frames, and ceiling planking forming a rigid iron skeleton that lessened the effects of vibration and hogging.¹⁰⁸

The two decades between 1840 and 1860 also saw the increased development and experimentation related to the screw propeller as an alternative means to the paddle wheels for propelling steamships. Although the concept of the propeller was not new in the nineteenth century, it was not until 1836 that successful prototypes were constructed. In that year, almost at the same time, Francis Petit Smith, an English farmer, and John Ericsson, a Swedish engineer, both developed practical working screw propellers.

Francis Petit Smith's design consisted of a double turn of a screw on a shaft placed between the rudder and the sternpost.¹⁰⁹ During the initial trials of Smith's design, using a small boat on a canal, one of the two turns of the screw broke away from the shaft, causing the boat to increase in speed. Further tests with the single turn screw proved successful and Smith was able to get financial backing to form the Screw Propeller Company. Once formed, the company began production of a larger screw steamship

¹⁰⁷Cedric Ridgely-Nevitt. *American Steamships on the Atlantic*, 106.

¹⁰⁸Ibid., 106.

¹⁰⁹Basil Greenhill, "The S.S. *Great Britain* and the coming of Steam Navigation", The Lawrence F. Brewster Lecture in History, November 1990, (Greenville: East Carolina University, 1991), 6.

called the *Archimedes* to use as a test vessel.¹¹⁰ The *Archimedes*, a 237 ton vessel powered by a 80 horse-power engine, was constructed in 1838. Between 1839 and 1840, the *Archimedes* undertook a series of voyages, including the circumnavigation of Britain, to show the efficiency of screw propulsion. The success of these tests eventually convinced the Royal Navy to begin testing screw propulsion.¹¹¹

John Ericsson's propeller was made of a several angled blades placed in an iron ring. It was placed on a shaft that extended past the rudder. Ericsson also conducted successful tests with his screw design. He, however, was unable to get any support for his design in England. In 1839 he left England for the United States where he soon acquired contracts to construct several merchant screw steamships for Boston businessman Robert Forbes. Under contract with Forbes, Ericsson built the screw steamships *Midas*, *Edith*, and *Massachusetts*, all which were only moderately successful in there roles as merchant vessels. Ericsson was eventually granted the contract to build the screw sloop of war *Princeton*, and throughout the coming decades several other contracts for the navy.¹¹²

Smith's and Ericsson's work on screw propulsion initiated a era of experimentation the quickly led to the development of new screw types, including two and four blade screws, during the late 1840s and early 1850s. Their work also resulted in the

¹¹⁰Basil Greenhill, "The S.S. *Great Britain*...",6.

¹¹¹James Croil, *Steam Navigation and Its Relation to the Commerce of Canada and the United States*, (Toronto:William Briggs, 1898)68-69; Basil Greenhill, "The S.S. *Great Britain*...", 6.

¹¹²K. Jack Bauer, *A Maritime History of the United States: The Role of Americas Seas and Waterways*, (Columbia: University of South Carolina, 1988), 99.

relatively quick adoption of screw propulsion by both the United States and British Navies during the 1840s. Commercial interest in screw propulsion did not expand as rapidly although it did receive help when Isambard Kingdom Brunel the designer of the S.S. *Great Britain*, impressed by the performance of Smith's *Archimedes* redesigned the *Great Britain* for screw propulsion making her "the world's first large iron screw-driven fully-powered steamship."¹¹³ Commercial interest in the screw propeller may have been slowed by the several problems related to screw propulsion.

One of the main problems with screw propulsion was gearing. Screw propellers, which require a high rate of revolution, were not compatible with the engines of the period which were designed to turn paddle wheels at relatively low revolutions. To overcome this obstacle, designers installed gear drives to allow the slow revolving paddle engines to be run at higher shaft speeds.¹¹⁴

A second problem, common to the screw propeller occurred at the location that the shaft passed through the hull. As the shaft rotated, supporting the extensive weight of the propeller, it tended to wear away the bearing and open a hole at the waterline. To counter this, an iron stern tube was placed through the sternpost and the shaft ran directly on the iron tube. This still caused significant wear on the tube and shaft that, according to Guthrie, required frequent repairs, but lessened the chance of opening a hole below the waterline. This problem was finally solved when John Penn developed a stern bushing line

¹¹³Basil Greenhill, "The S.S. *Great Britain*...",7.

¹¹⁴John Guthrie, *A History of Marine Engineering*, (London: Hutchinson Educational, 1971), 94.

with lignum vitae in 1854.¹¹⁵

A final problem with the screw propeller was vibration. The flexible wooden hulls of large steamships could not withstand the constant strains of the propeller. This resulted in screw propellers being limited to use only in smaller steamships during this period. It would not be until the development of the iron hull that screw steamers would reach the sizes of wooden paddle wheel steamers.¹¹⁶

The rapid development of steam technology during this period led to many advances in addition to those discussed above. The need for ships to meet the requirements of socio-economic and political events led to extensive experimentation in steamship types. The *Monumental City* is an example of the variety of vessels that were developed during this period as part of the search for more efficient steam designs.

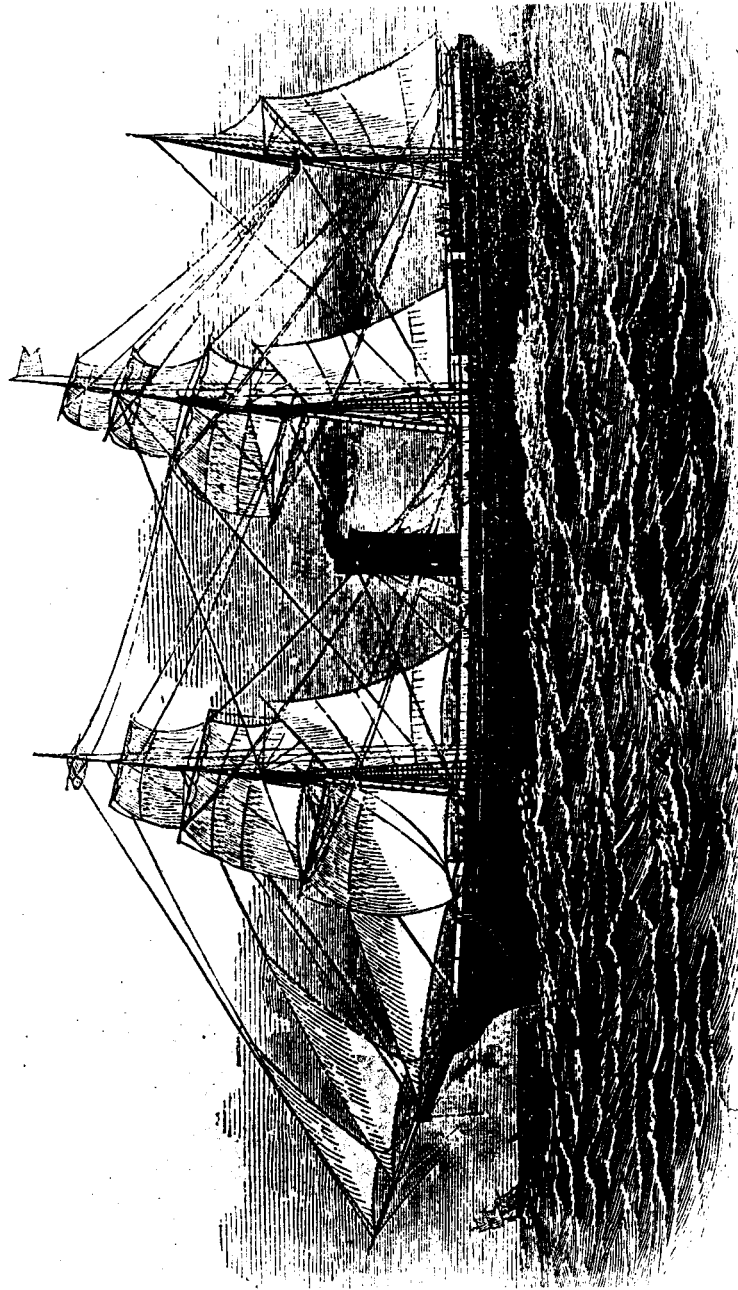
S.S. Monumental City

The *Monumental City* was built to be a top of the line steamship. Its owners claimed that “no effort or expense has been spared in the construction and equipment of the ship.”¹¹⁷ Designed to carry both passengers and cargo, the *Monumental City* was built for luxury and economics. Unfortunately, no detailed plans, drawings, or half-models depicting this innovative steamship have been located. The only contemporary

¹¹⁵John Guthrie, *A History of Marine Engineering*, 95.

¹¹⁶Cedric Ridgely-Nevitt. *American Steamships on the Atlantic*, 348.

¹¹⁷*Sun*, 6 November 1850.



AMERICAN STEAMER, 'MONUMENTAL CITY,' WRECKED ON THE COAST OF AUSTRALIA.

Figure 4. Contemporary drawing of the S.S. *Monumental City*. (Courtesy of the Mariner's Museum, Newport News, Va.).

descriptions of the vessel come from newspaper and engineering journals of the period. The discussion that follows is a compilation based on these contemporary sources, as well as, information gleaned through maritime archaeological investigations of the wrecksite.

Hull Construction

The *Monumental City* was a three masted, single deck, wooden screw steamship. She had an overall length of 174' 10", a beam of 29' 9", a depth of hold of 15', and displacing nearly 737 ½ tons.¹¹⁸ The *Monumental City's* hull was made of American Oak sheathed with copper and secured with iron fasteners. Archaeological evidence, in the form of iron knees found at the wrecksite, suggest the hull was heavily braced, which would not be unusual for a wooden screw steamship of the period.

Contemporary sources indicate the *Monumental City* had a relatively sharp hull with somewhat full waters lines in order to give better handling under sail and better load displacement.¹¹⁹ The few descriptions and drawings of the *Monumental City* suggest the vessel is very similar in shape ,albeit somewhat smaller, to the medium clippers described by David MacGregor in his text *Merchant Sailing Ships 1850-1875*.¹²⁰ According to MacGregor, this type of sailing ship had finer lines than a normal cargo carrier, with more

¹¹⁸National Archives, "Baltimore Tonnage Admeasurement...", RG 41; The *Monumental City's* exact displacement was 737 46/95 tons.

¹¹⁹National Archives, "Baltimore Tonnage Admeasurement...", RG 41.

¹²⁰David R. Macgregor, *Merchant Sailing Ships 1850-1875*. Annapolis, Md: Naval Institute, 1984., Chapter 2, passim.

convex waterlines, and after 1850 they tended to have rounded sterns.¹²¹

Decks and Accommodations

There is conflicting information regarding the number of decks on the *Monumental City*. The steamship is registered as having only one deck, however, other sources indicate that she also had a spar deck. The main deck ran the entire length of the vessel. The spar deck was placed “quite fore and aft”, and had cabins underneath it that were the berths of the officers and engineers. According to the description of the vessel given in the *Sydney Morning Herald* on her arrival there, this deck gave the *Monumental City* the “appearance of a flush vessel.”¹²²

Although the *Monumental City* carried cargo, it was primarily designed to carry people, and its accommodations reflected this purpose. It was initially constructed to carry approximately 250 passengers.¹²³ By 1853 when the *Monumental City* arrived in Australia, the capacity had jumped to 350 people. This consisted of 50 first-class, 100 second-class, and 200 steerage accommodations.¹²⁴ All passenger berths were below deck as the cabins on deck, mentioned earlier, were for the ship’s officers.

Although no descriptions of berthing arrangements for the second class or steerage

¹²¹MacGregor, *Merchant Sailing Ships 1850-1875*, 43-44.

¹²²*Sydney Morning Herald*, 29 April 1853.

¹²³*Baltimore Sun*, 19 November 1850.

¹²⁴*Empire* (Sydney), 29 April 1853.

cabins, the *Sydney Morning Herald* of 29 April 1853, gives the following description of the chief saloon where the first class berths were located:

“The chief saloon is 50 feet in length; there are 22 staterooms, the berths being so arranged as to be suited for the reception of one or two occupants: The saloon is ornamented in a very neat manner, the decorations consisting of gilt cornices, and the panels have delicately carved gilt moldings. On either side of the dining tables are arranged handsome sofas covered with crimson velvet and mirrors are here and there about the saloon. The entrance to the cabin has a very pleasing appearance, the front being decorated with stained glass, on which are allegorical figures representing statues descriptive of the vessel’s name. The stewards pantry and offices are approached by a wide staircase presented to view immediately upon entering the cabin door, but perfectly distinct from the chief saloon.”¹²⁵

These luxurious accommodations, however, are deceiving of what conditions must have been like on the vessel. When the steamer was carrying a full complement of passengers it would have been extremely crowded, since the first-class berths and engine spaces, not including cargo spaces, probably occupied over half of the space below deck. As a result, accommodations would have been very cramped, and would have allowed passengers only a limited amount of living space. Traveling under such conditions would not have been pleasurable, or, based on the deaths during the ship’s last voyage in California, healthy!

Rigging

The *Monumental City*, in addition to her steam engines, was barque rigged for sailing.¹²⁶ The barque rig was commonly used on three masted ships, like the *Monumental*

¹²⁵*Sydney Morning Herald*, 29 April 1853.

¹²⁶“...Steamship *Monumental City*” *Journal of the Franklin Institute*. Vol. 50, 400.

City. If a ship was barque rigged, its fore and main masts carried square sails, and the mizzen mast carried a fore and aft rigged sail. The type of barque rig carried on the *Monumental City* was known as a Forbes Pattern and was identical to the U.S. Steamship *Massachusetts*.¹²⁷

Developed by Robert B. Forbes, the rig reduced the number of sailors needed to handle a square-rigged ship.¹²⁸ In most square rigged ships the largest and most often used sails are the topsails. In a Forbes rig, the topsails were cut in half, forming two smaller sails. This innovative design allowed for easier handling by less men than it required to handle one large sail. The Forbes pattern also, as Ridgely-Nevitt points out, led to relatively standardized spar and yards that were interchangeable to some degree.¹²⁹

Steam and Propulsion Machinery

The *Monumental City* was designed to use steam as her primary means of propulsion. The heart of the vessel's steam system were two direct-acting oscillating steam engines. Built by James Murray at the Vulcan Works, the engines were designed to be compact, so as to take up as little cargo space as possible, but powerful enough to operate the *Monumental City* efficiently.¹³⁰ No schematics of the engines have been

¹²⁷Ibid.

¹²⁸Cedric Ridgely-Nevitt. *American Steamships on the Atlantic*, 46.

¹²⁹Ridgely-Nevitt. *American Steamships*, 94.

¹³⁰Murray and Hazlehurst were no strangers at building oscillating engines, having built the first engine of this type in America several years earlier for the steamship *Republic*.

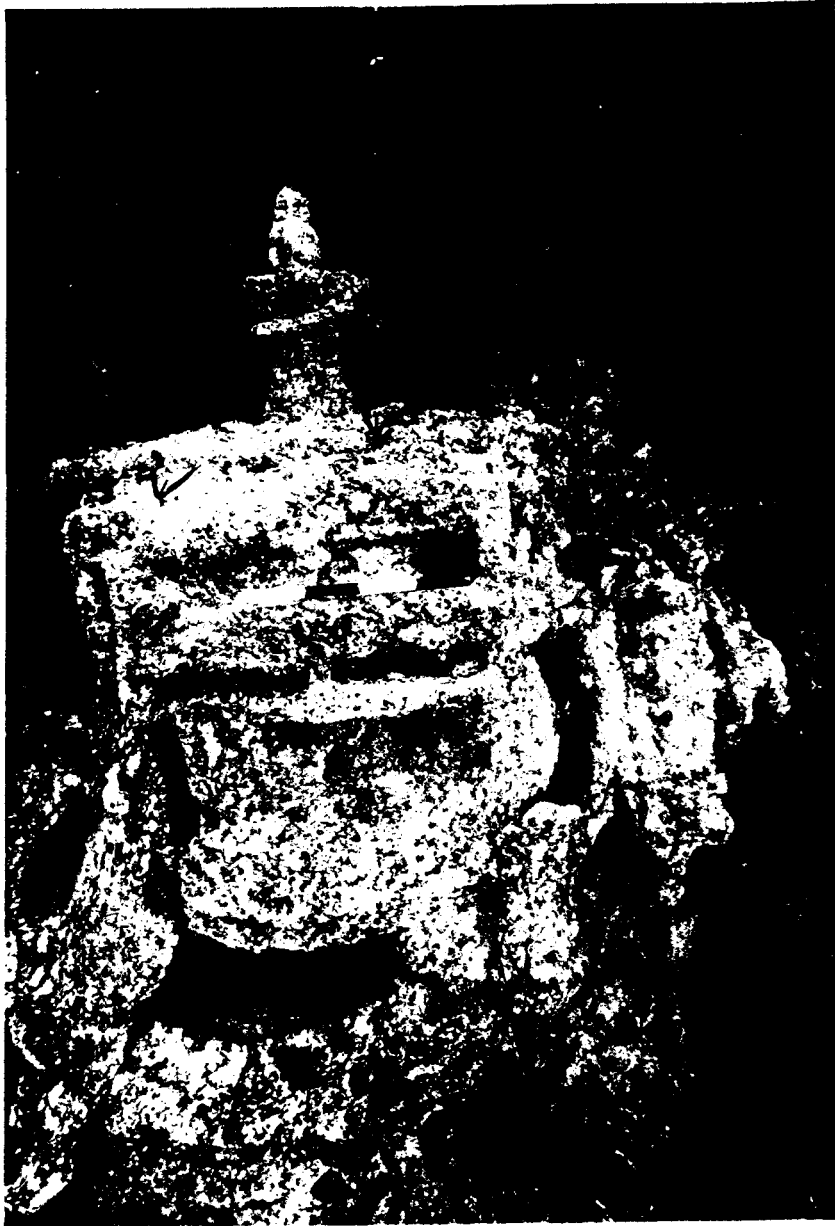


Figure 5 . The remains of one of the *Monumental City's* oscillating engines. (Photograph courtesy of Victoria Archaeological Survey).

located, however, descriptions from an article in the Journal of the Franklin Institute gives some insight into their construction. The article describes the engines as being comprised of:

“two oscillating cylinders, 44 inches in diameter and 3 feet stroke, connected upon the same crank pin, nearly at right angles. Each cylinder has a separate condenser, with a pipe of communication between them.”¹³¹

The article goes on to state that the piston rods acted as guides to the piston by passing through the and out the rear of the cylinder.¹³² The engines had one vertical, double acting air pump attached to the main shaft, and each cylinder had a separate equilibrium slide steam valve.¹³³ These engines provided 119 horsepower to turn the *Monumental City's* propeller at approximately 40 revolutions per minute.

Although no plans showing the placement of the *Monumental City's* engines have been found, their probable arrangement can be surmised through examination of the vessel's remains. Based on his examination of the engine remains at the shipwreck site, John Riley suggests the following arrangement for the steamer's engines,

“The cylinders would have to be at 90° to each other and both mounted above the shaft. The length of the tail rods makes mounting below the shaft impossible. The valve chests faced inwards into the frame and are operated by linkages from two eccentrics mounted on the shaft against the main bearing which was also the thrust block. The forward engine frame would have been made up of the condensers and air pumps-probably two as there are two connecting rods near the air pump crank

¹³¹“...Steamship *Monumental City*” *Journal of the Franklin Institute*. Vol. 50, 401.

¹³²*Ibid.*

¹³³*Ibid.*

which is forward of the front bearing.”¹³⁴

Riley goes on to state that the inverted V design was a “neat solution for oscillating engines to drive a propeller.”¹³⁵

The concept of oscillating engines was not new at the time of the *Monumental City's* construction. This type of engine was first operated as early as 1785, and had been in use for many years on paddle wheel steamships.¹³⁶ Originally developed in England for land use, as many steam engines originally were, it was first used on water in the steamship *Aaron Manby* in 1822. A chief attribute of this type of engine was that it did away with many of the connecting rods found on other steam engines and connected the piston-rod directly to the crank shaft, making the engine rather compact and light.¹³⁷

The initial design of the oscillating engine had the trunnions set relatively low on the cylinder with the valve chest on the back of the cylinder perpendicular to the trunnions. This set up allowed the cylinder very little sway, and made it top heavy, which meant that if the piston was on the bottom, the cylinder would flip over when it was disconnected from the crank shaft. This early design was limited to use with very low

¹³⁴John Riley, “Recognition of Early Marine Engines from their Underwater Remains” in *Iron Ships & Steam Shipwrecks*, (Fremantle: Western Australian Maritime Museum, 1985), 207.

¹³⁵Riley, “Recognition of Early Marine Engines...”, 207.

¹³⁶John Guthrie, *A History of Marine Engineering*, (London: Hutchinson Educational, 1971), 88.

¹³⁷William Rankine, *A Manual of the Steam Engine and other Prime Movers*, (16th edition, London: Charles Griffin & Co., 1906), 503.

pressure engines, since the valve design did not allow steam expansion.¹³⁸ A later design, developed by John Penn, moved the trunnions more to the center of gravity of the cylinder which allowed more movement of the cylinder, and kept the cylinder balanced if it was detached from the crankshaft, thus preventing it from flipping.¹³⁹ The *Monumental City's* engines were similar in design to Penn's, having the trunnions near the middle of the cylinder. The cylinders of the oscillating engine had to be supported on some type of iron frame that would allow them to swing with the motion of the crank shaft. The type of mount used in supporting the engine varied considerably. In 1828, the *Endeavor* used an oscillating engine with the cylinders mounted on two triangular iron frames. John Penn's engine design placed the trunnions within large bearings resting on pillow blocks.¹⁴⁰

The basic operation of an oscillating engine was relatively straightforward and uncomplicated. William Rankine in his 1906 text *A Manual of the Steam Engine and other Prime Movers*, provides the following explanation of the engine's workings:

“An Oscillating Cylinder is mounted on gudgeons or trunnions, generally near the middle of its length, on which it is capable of swaying to and fro through a small arc, so as to enable the piston rod to follow the movements of the crank, to which it is directly attached without the intervention of a connecting rod.”¹⁴¹

Rankine goes on to describe that steam is provided to the engines through the trunnions which are hollow. Steam is pumped into one trunnion, the intake, from a pipe connected

¹³⁸Guthrie, ...*Marine Engineering*, 89.

¹³⁹Ibid.

¹⁴⁰Ibid.

¹⁴¹William Rankine, *A Manual of the Steam Engine...*, 503.

to the boiler, into the cylinder. It is then pumped out of the cylinder into the opposite trunnion, the exhaust, which leads to the condenser.¹⁴²

By the 1840s, the oscillating engine had, through the advancements and persistence of designer's such as Joseph Maudslay and John Penn, become established as an efficient means for driving paddle steamships.¹⁴³ The oscillating engine, however, did have its faults. One of the problems with the engine was that the movements could wear down the cylinder and the piston-rod stuffing box to an oval shape, causing the loss of steam and making the engines less efficient. According to Guthrie, this was countered by building the engines with a relatively deep piston, and a cone-shaped cylinder cover enclosing a deep stuffing box.¹⁴⁴ Other problems occurred when high steam pressures were used. The most efficient of the oscillating engines operated at pressures around 30 lbs. per square inch. When operated at higher pressures, the cylinder's trunnions could leak if an efficient early steam cut off device was not used.¹⁴⁵ Despite these problems, the oscillating engines were adapted to operate on both paddle wheel and propeller ships, and saw use well into the 20th century.¹⁴⁶

The steam that powered the *Monumental City's* engines came from its two tubular

¹⁴²Ibid.

¹⁴³Guthrie, ...*Marine Engineering*, 88.

¹⁴⁴Ibid., 90.

¹⁴⁵A.E. Seabon, *A Manual of Marine Engineering*, (London: Charles Griffith and Co., 1896), 5.

¹⁴⁶Guthrie, ...*Marine Engineering*, 91.

boilers. Based on an English design, the boilers were constructed of iron and placed side by side in the hold. The boilers had a total fire surface of 3,230 square feet, a 21 square foot tube area, and a chimney that was 49 feet 7 inches above the fire grate. They burned 1680 lbs. of coal per hour.¹⁴⁷ According to the *Journal of the Franklins Institute*, the boilers provided “about 12 lbs. of steam above the atmosphere, from salt water, cutting off at 3/4ths the stroke.”¹⁴⁸

The *Monumental City's* engines and boilers drove the vessel's massive cast iron propeller.¹⁴⁹ Based on Francis Petit Smith's English Patent design, discussed earlier, the *Monumental City's* screw had four blades, a diameter of 12 feet, and weighed nearly four tons. Each of the blades was 4 feet in length with chamfered edges on the side away from the propelling face. The propeller had a pitch of 25 feet, meaning that for every revolution of the screw, the *Monumental City*, in theory, would move forward 25 feet.¹⁵⁰ Available illustrations of the steamship suggest that the propeller was placed directly behind the rudder, the correct placement for the Smith's type propeller, although design plans would have to be located to verify this. Archaeological examinations of the propeller and shaft revealed a wheel between the central joint of the propeller and the main bearing. John Riley has speculated that this may have been used as a clutch to disengage the screw when

¹⁴⁷Barnabas H. Bartol, *A Treatise on The Marine Boilers of the United States*, (Philadelphia: R. W. Barnard & Sons, 1851), 68-69.

¹⁴⁸“...Steamship *Monumental City*” *Journal of the Franklin Institute*. Vol. 50, 401.

¹⁴⁹*Ibid.*; *Baltimore Sun*, 28 September 1850.

¹⁵⁰“...Steamship *Monumental City*” *Journal of the Franklin Institute*. Vol. 50, 401.

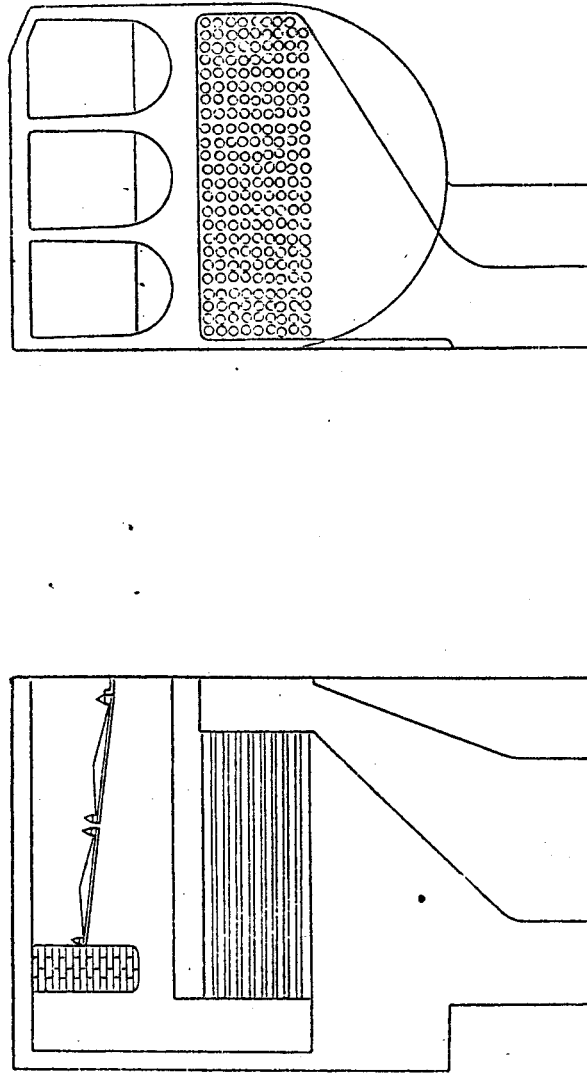


Figure 6. The *Monumental City's* boilers. (Adapted from B.H. Bartols, *A Treatise on The Marine Boilers of the United States*)

the vessel was using sail alone in order to prevent the propeller from turning the engines and straining the machinery. During his examination of the site in 1984, Riley also noted that there was no evidence of feathering the propeller blades because it would be impractical to lift the four bladed propeller.¹⁵¹

The *Monumental City's* propeller was cast using a new process developed by Murray and Hazelhurst.¹⁵² The system had only been in use since January 1850, and the *Monumental City's* propeller was only the sixth one manufactured using this process. The new process did away with the traditional wooden molds used in casting, and cast the object in one piece in sand using a series of guides and strikes.¹⁵³ Once the *Monumental City's* propeller was cast, it was installed "in the condition it came from the sand."¹⁵⁴

Additional Equipment

The *Monumental City* was outfitted with several types of new and innovative equipment throughout her brief career. This equipment was used to help make the voyages on the vessel economical, comfortable, and safe. Information about this equipment is sparse, consisting mainly of cursory mentions in newspaper articles describing the steamer.

¹⁵¹John Riley "Recognition of Early Marine Engines from their Underwater Remains" in *Iron Ships & Steam Shipwrecks: Papers from the First Australian Seminar on the Management of Iron Vessels and Steam Shipwrecks*. (Western Australia Maritime Museum: Fremantle 1985), 206.

¹⁵²The article in the *Baltimore Sun* describing this process indicates that a patent was applied for, but no record of the patent was found during the research for this report.

¹⁵³*Baltimore Sun*, 28 September 1850.

¹⁵⁴"...Steamship *Monumental City*" *Journal of the Franklin Institute*. Vol. 50, 401.

Two pieces of equipment mentioned as being carried on the *Monumental City* were related to freshwater use. The *Baltimore Sun* of 20 December 1850, briefly notes that the *Monumental City* was,

“supplied with a new apparatus to distil fresh from salt water, a recent invention of great value, which renders useless the carrying of a large amount of freshwater on board”¹⁵⁵

Using this device, instead of carrying water in barrels, freed up space below deck for more profitable cargoes. No further mention of this device, or how well it worked has been located. By 1853, however, the *Monumental City* had been installed with two large freshwater tanks, suggesting that the desalinization unit had been a failure. In addition to providing fresh drinking water, these tanks were also connected to a steam water pump for fighting fires on board the ship.¹⁵⁶

Lifesaving equipment on the *Monumental City* included two Francis type lifeboats.¹⁵⁷ The Francis boat was made entirely of galvanized sheet iron with a number of internal buoyancy chambers to keep it afloat even after capsizing.¹⁵⁸ According to Ridgely-Nevitt, “they were the first widely used iron craft in the United States.” Their metal construction made them lighter, easier to maneuver, and more watertight than their

¹⁵⁵*Baltimore Sun*, 20 December 1850.

¹⁵⁶*Empire* (Sydney), 29 April 1850.

¹⁵⁷*Baltimore Sun* 19 December 1850.

¹⁵⁸Ridgely-Nevitt. *American Steamships*, 129.

wooden counterparts that had a tendency to dry out and leak.¹⁵⁹ Built to withstand the force of heavy seas, the Francis boats were a very successful design, and saw use on many steamships of the period.

The Francis boat apparently lived up to its design in the case of the *Monumental City*. Accounts indicate that during the wreck, the only one of the ship's boats not to be broken up by the surf and waves was the "lifeboat" that Charles Plumber used to get to shore.¹⁶⁰ It was fortunate that the owners in Baltimore supplied the *Monumental City* with this type of boat, otherwise the loss of life from the disaster might have been much higher.

¹⁵⁹Ibid., 102-103.; Many of the Francis lifeboats were manufactured by the Novelty Iron Works in the United States. It is not known if those on the *Monumental City* came from the Novelty Iron Works or were manufactured in Baltimore by the Vulcan Iron Works, the company that built the *Monumental City's* steam machinery.

¹⁶⁰*Sydney Morning Herald*, 30 May 1853.

CHAPTER 3

SITE HISTORY AND ENVIRONMENT

Exploration and Settlement

The wreck of the *Monumental City* is on the north east coast of the State of Victoria, Australia only a few kilometers south of the Victoria/New South Wales border at Cape Howe and approximately 500 kilometers east of Melbourne. This part of Australia was first seen during Captain James Cook's first voyage of exploration in the Pacific between 1768 and 1771. In April of 1770, Lieutenant Zachary Hicks onboard the *Endeavor* spotted part of Australia's coast now known as Point Hicks. From this first sighting, Cook sailed northward exploring the coast as far north as Cape York, discovering along the way an anchorage he named Botany Bay, and the Great Barrier Reef.¹⁶¹

Following Captain Cook's departure from the Australian coast, no Europeans visited the region until 1788 when the First Fleet sailed into Botany Bay to establish an English Penal Colony on the continent. In 1798 the colonial governor, John Hunter, began explorations of the coastline south of the settlement. He appointed surgeon George Bass and a Lieutenant in the Royal Navy, Matthew Flinders, to conduct these

¹⁶¹Eric C.F. Bird, *The Coast of Victoria: The Shaping of Scenery*, (Melbourne: Melbourne University Press, 1993), 280.

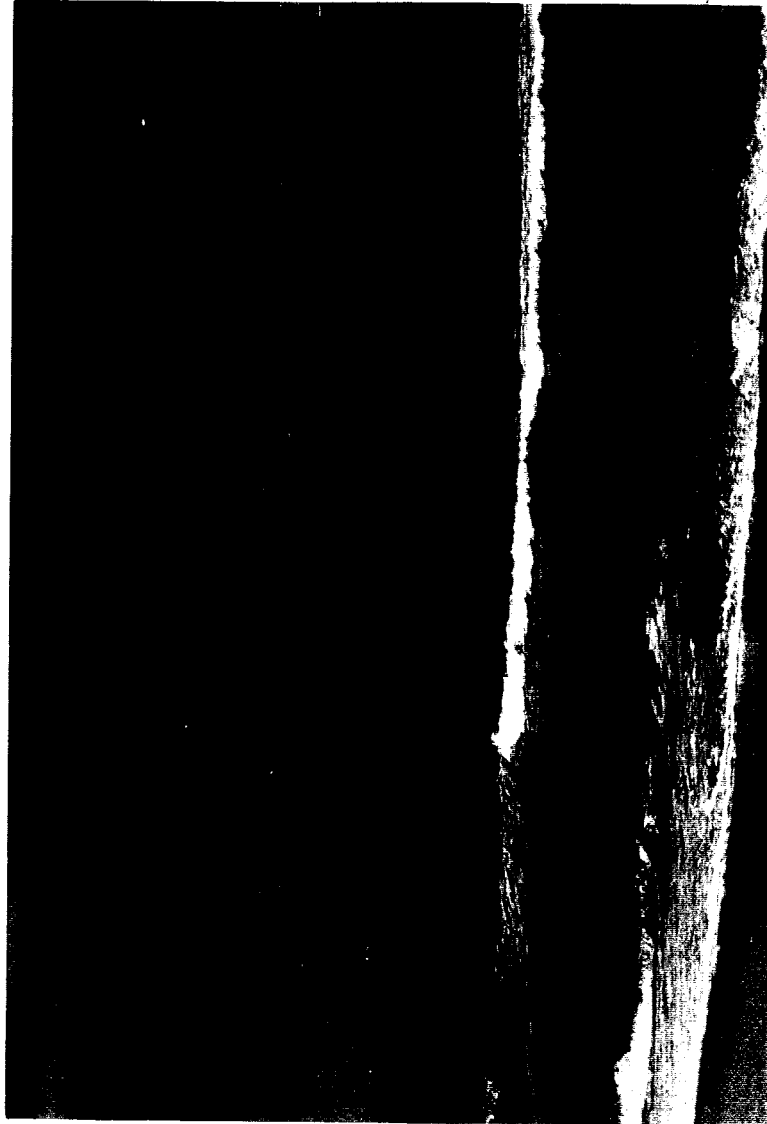


Figure 7 . View of Gabo (center), and Tullaburnga Islands (left center) taken from Mallacoota Inlet (Photograph by Author).

explorations.¹⁶² Between 1798 and 1799, Bass and Flinders explored the areas to the south of Sydney discovering Bass Strait, and making the first circumnavigation of Tasmania.¹⁶³ None of the maps produced during these voyages show Tullaburnga or Gabo Island although they do show Mallacoota Inlet.¹⁶⁴

During the nineteenth century, explorations along the coast continued, with most being carried out by the Royal Navy. The first of these was conducted by Matthew Flinders between 1801 and 1803. Flinders conducted extensive surveys of parts of Australia's coast including the charting of the coast of Victoria, as well as completing the first circumnavigation of the Australian continent. None of Flinders' maps from the 1801 to 1803 explorations show Gabo or Tullaburnga island.¹⁶⁵ Following Flinders circumnavigation of Australia, the Royal Navy conducted several more surveys in order to map the coast line. In 1843 Captain Stokes of the H.M.S. *Beagle* charted the area along the coast near Mallacoota. Captain Adams was using the charts developed by Stokes at the time of the *Monumental City* was wrecked.

The settlement of the eastern portion of Australia coast south of Sydney was sporadic in the nineteenth century. In 1838 the Bemm River Run was established taking

¹⁶²Manning Clark, *A Short History of Australia* (3rd edition, New York: NAL Penguin), 1987.

¹⁶³Ibid.

¹⁶⁴Matthew Flinders, *A Voyage to Terra Australias*, (London: W. Bulmer and Co: 1814), atlas.

¹⁶⁵Flinders, *A Voyage to Terra Australias*, atlas

cattle from Mallacoota to the Mouth of the Snowy River.¹⁶⁶ During the late 1840s, a whaling station was temporarily established on Gabo Island, but was no longer extant at the time of the *Monumental City* disaster.¹⁶⁷ The nearest settlement to the wrecksite in 1853 was Twofold Bay, the present location of Eden, New South Wales.

Today this area of the Victorian coast is still only sparsely populated. The closest population center to the *Monumental City* shipwreck site is the small fishing and resort town of Mallacoota. Located on the shores of Mallacoota Inlet, it has a permanent population of about 300 people, many of whom are involved in commercial abalone fishing.¹⁶⁸

Geomorphology

The area of northeast Victoria where the *Monumental City* shipwreck site is located falls within the coastal border of the East Gippsland physiographic region.¹⁶⁹ According to Collins and Harris, this is a roughly triangular region, delineated on the east by Cape Howe, the New South Wales border and High Plains to the north, Bass Strait to

¹⁶⁶Bird, *The Coast of Victoria*, 266.

¹⁶⁷Victoria Archaeological Survey, "Gabo Island: Background Historical Information", Shipwreck Files "Gabo Island" (Melbourne: Maritime Safety Division, Department of Transport, 1986), 3.

¹⁶⁸G. E. Reinson, *Hydrology and Sediments of a temperate estuary-Mallacoota Inlet, Victoria*, (Canberra: Australian National University, 1977), 6.

¹⁶⁹Bird, *The Coast of Victoria*, 257.

the South, and to the west by the Latrobe Valley.¹⁷⁰ It is part of the larger Gippsland Plains region that runs along much of the Victoria coast east of Melbourne. The coastal areas of this region, as with most of coastal Victoria, have been shaped by extensive tectonic movement, and sea level fluctuations. Resultant of the shifts in the land and sea elevations, much of the East Gippsland coast consists of barrier islands, lagoons, swamps, sand dunes, and rock outcrops.¹⁷¹

Geomorphological landforms near the immediate area of the *Monumental City* shipwreck site include Mallacoota Inlet, an active mobile dune complex east of the Inlet, and the islands of Gabo and Tullaburnga.¹⁷² The most prominent of these landforms is Mallacoota Inlet, a 35 sq. km restricted estuary of the Genoa River. During the Holocene period landward migrating sands formed a coastal barrier that cut off the Genoa River from the sea, as the river valley flooded Mallacoota Inlet formed. Mallacoota Inlet is comprised of three distinct basins, Northern Basin, Southern Basin, and Upper Lake, interconnected by narrow channels of relatively deep water.¹⁷³ Today the Inlet is connected to the open ocean by a shallow entrance at its east end, although this entrance

¹⁷⁰K.J. Collins and D. D. Harris, *A Regional Geography of Victoria*, (Melbourne: Whitcombe & Harris, 1964), 149; Bird, *The Coast of Victoria*, 102.

¹⁷¹K.J. Collins and D. D. Harris, *A Regional Geography of Victoria*, (Melbourne: Whitcombe & Harris, 1964), 149; Bird, *The Coast of Victoria*, 257-258.

¹⁷²Bird, *The Coast of Victoria*, 283.

¹⁷³G.E. Reinson, *Hydrology and Sediments*, vii;

is occasionally closed by shifting sands.¹⁷⁴ To the east of Mallacoota Inlet, a large dune system has formed on shore behind Tullaburnga and Gabo Islands.¹⁷⁵ According Bird, as the dunes move eastward between Gabo Island and Cape Howe, they become larger, eventually forming an eastward migrating sand sheet, similar to dunes found in the Cape Coast area of South Africa.¹⁷⁶

The only major offshore landforms near Mallacoota Inlet are Gabo and Tullaburnga Islands. Gabo Island, the larger of the two, is a partly dune covered island, approximately 1½ miles long (north to south) and about ½ mile wide at the widest point. The island is composed of red granite, and is relatively steep except to the north where it narrows into a boulder strewn point separated from the mainland by a narrow channel.¹⁷⁷ During several periods during the nineteenth century, this channel was blocked by drifting sands, forming an accessway between the north end of the island and the mainland.¹⁷⁸

Tullaburnga Island, is a small rock island barely 9 meters high located about 1 km south of the mainland. There is little soil on the island, and it is mostly covered by brush thorn bushes. It is composed of Ordovician rocks and red Devonian granite.¹⁷⁹

¹⁷⁴Land Conservation Council, *Marine and Coastal Special Investigation Descriptive Report*, (Melbourne: Land Conservation Council, 1993), 49.

¹⁷⁵Land Conservation Council, *Marine and Coastal*, 49 ; Bird, *The Coast of Victoria*, 283.

¹⁷⁶Bird, *The Coast of Victoria*, 283.

¹⁷⁷n.a., *Sailing Directions, Victoria*, (Melbourne: 1970),564.

¹⁷⁸Bird, *The Coast of Victoria*, 283.

¹⁷⁹*Ibid.*

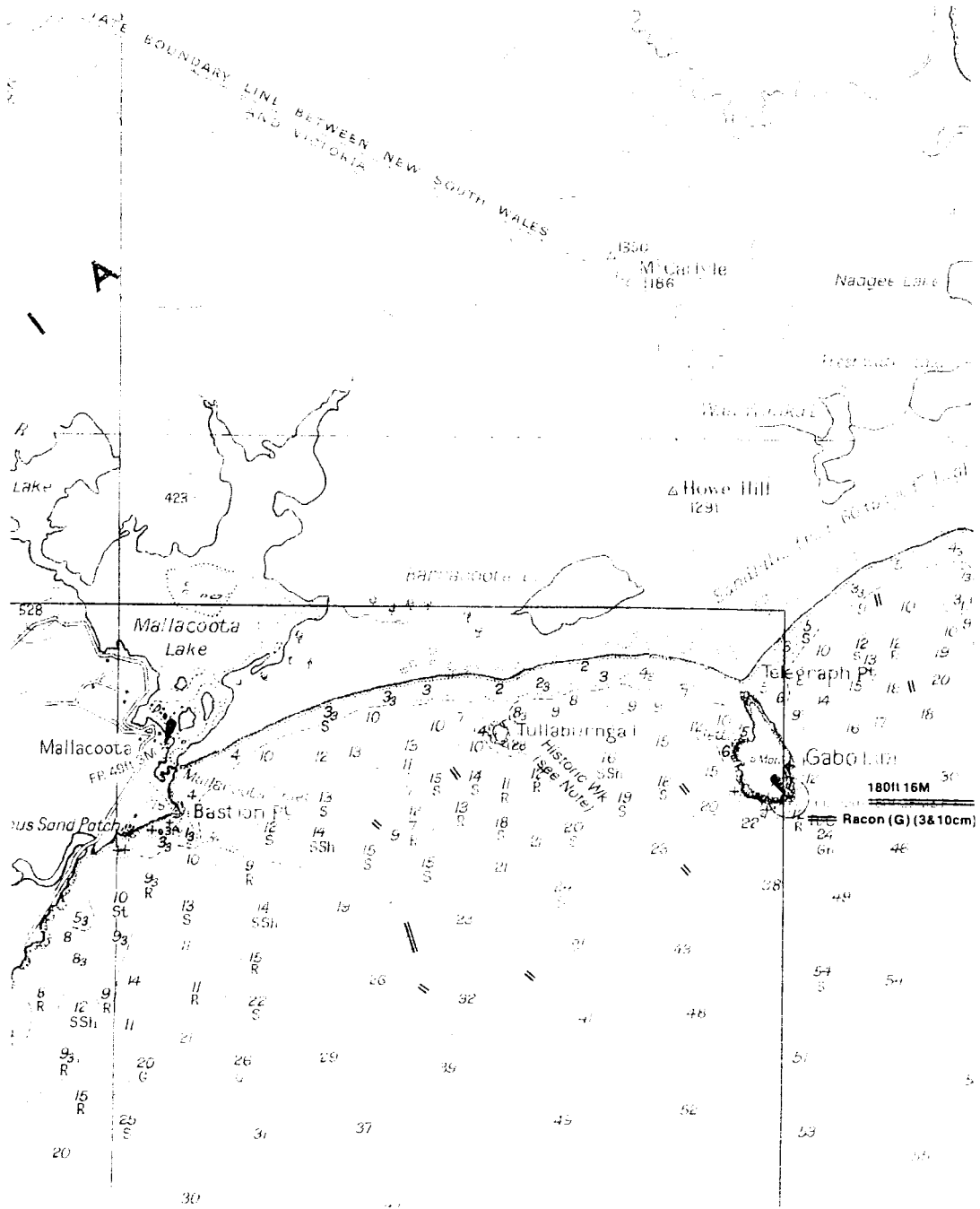


Figure 8. Map showing the area around Gabo and Tullaburnga Island.
(Adapted from Australian Navigation Chart 806 Gabo Island to Montague Island)

Site Location, Topography, and Sea Conditions

The *Monumental City* shipwreck site is located off the south coast of Tullaburnga Island, at Latitude 37° 35.5' S, Longitude 149° 50.7' E.¹⁸⁰ The only access to the site is by boat from Mallacoota, 7 kilometers to the west.¹⁸¹ The wreck remains lie in 1 to 5 meters of water among a series of flat limestone reefs and gullies that extend around the south and southeastern sides of Tullaburnga. These areas, except near the surf zone, are covered with kelp that can make it difficult to see the wreck remains. The sea floor in this area is barren of extensive sediments, consisting primarily of sand, granitic pebbles, nodules and small boulders. Along the southwest and west side of the island, the topography changes abruptly to an area of large granitic boulders that is relatively barren of marine growth except for abalones, and occasional patches of kelp.

Currents and waves around Tullaburnga are mainly wind and tidal driven. Prevailing winds at the island are from the southwest through the southeast, with average tides of around 1 meter. Sea conditions at the site are dynamic. Exposed to the open ocean, swells at the island average about 1 meter even in good weather.¹⁸² Pushed by offshore winds, these swells can build to several meters in height, making diving conditions extremely dangerous. As the swells break on Tullaburnga's shoreline,

¹⁸⁰Staniforth, S.S. *Monumental City*, 9

¹⁸¹Ibid.

¹⁸²Ibid.

dangerous diving conditions are also produced as the backwash from the swells forms an extremely strong undertow through the gullies at the wrecksite that can roll an unaware diver around as if in a washing machine.



Figure 9. A view of the treacherous entrance to Mallacoota Inlet (Photographs by Author).

CHAPTER 4

SALVAGE AND ARCHAEOLOGY

Nineteenth Century

Survivors of the *Monumental City* shipwreck carried out the only known contemporary salvage of the vessel. For five days following the sinking, the remaining passengers and crew scavenged Tullaburnga's beaches for usable debris. They retrieved clothes, provisions, and ship's timbers that washed ashore. They also recovered twenty-seven bodies of passengers killed in the disaster and buried them on the island.¹⁸³ Once the survivors left the island and returned to civilization no further salvage was undertaken.¹⁸⁴

Additional salvage may not have been conducted for several reasons. First by all accounts of the disaster, the *Monumental City* was totally destroyed leaving nothing of value to reclaim. Second, aside from passenger possessions, no other valuables, such as gold dust, were being transported on the steamer. In fact, the *Monumental City's* cargo consisted of "sundry trade goods."¹⁸⁵ Next, although the means for undertaking such salvage existed at the time, conducting operations on this isolated stretch of Victoria's

¹⁸³*Sydney Morning Herald*, 30 May 1853; Of the thirty-three people killed in the wreck six bodies were never recovered.

¹⁸⁴Eric Hyle in his text "Early American Steamships" states that rescue ships were dispatched, but no evidence of this was located during research of the incident in Australia or the United States.

¹⁸⁵*Argus* (Melbourne), 28 July 1934.

coast would have been difficult and unprofitable. There were easier ways to make money, after all, it was the Australian Gold Rush! Finally, considering the outcry and controversy over the incident, any attempts at salvage would probably not have been publicly condoned.¹⁸⁶

Although lack of any salvage efforts immediately after the sinking is apparent, there is a paucity of information regarding endeavors in later years. During the latter part of the nineteenth century people were exploring the eastern coast of Victoria, including Tullaburnga Island. In 1870 a group visiting the island came upon vestiges of the wreck, including skeletal remains of passengers who perished in the disaster.¹⁸⁷ It is not known, however, whether this expedition or others recovered any wreck remains. Not until an early twentieth century treasure hunt would there be another documented attempt to salvage the *Monumental City's* remains.

Twentieth Century

Treasure! Gold! Every shipwreck has tales of lost riches. The *Monumental City* is no exception. According to a legend, \$250,000 in gold was lost when the ship sank.¹⁸⁸ The first twentieth century exploration of the *Monumental City* wrecksite was a quest for

¹⁸⁶If salvage did take place it is likely to have been reported in the Sydney or Melbourne newspapers. Extensive examination of these papers up to September of 1853 revealed no evidence of salvage.

¹⁸⁷*Sydney Morning Herald*, 16 April 1870; A small notice in the paper mentioned remains being found on Tullaburnga's Island.

¹⁸⁸*Age* (Melbourne) 28 July 1934, Jack Millar, "Death by Blunder" *Port of Melbourne Quarterly* (1967): 45-48.

this fortune. In 1919, divers George Becky, Joe Gilbertson, and two crew members set out to find the gold. The party planned to travel to Gabo Island via coastal collier then use their dive boat, *Sydney Wolf*, to salvage the wreck. A seaman's strike in Melbourne, however, forced a change in their strategy. Instead of traveling by ship, the treasure hunters moved their vessel by train to Bairnsdale. From here, they intended to travel down the Mitchell River, presumably in the *Sydney Wolf*, to Lakes Entrance on the East Coast of Victoria, then to Tullaburnga Island where they would recover the *Monumental City's* treasure.¹⁸⁹ Following their departure from Melbourne, however, the adventurers seem to disappear from the pages of history.¹⁹⁰ No records of the expeditions results have been located, except in a brief reference in a 1967 *Port of Melbourne Quarterly* feature about the *Monumental City*. According to this article, "...not a single nugget was found. All that the syndicate salvaged was a bronze propeller..."¹⁹¹

The 1919 expedition is the last known effort before World War II to recover material from the wrecksite. The opening of hostilities in the Pacific in 1941 led to increased military, especially naval and air, operations around Australia. It does not appear, however, that any of these activities, particularly bombing practices, were carried out near the *Monumental City* shipwreck.

¹⁸⁹"Quest for Sunken Treasure: Williamston Party's Venture"; *Argus* (Melbourne) 12 August 1919.

¹⁹⁰An extensive search of Melbourne newspapers through 1923 turned up no further record of the expedition.

¹⁹¹Millar, "Death by Blunder", 48; If this statement refers to the same expedition and is correct the bronze propeller may have been salvaged from a nearby wreck, since the *Monumental City's* propeller is made of iron and is still intact at the wrecksite.

After World War II, no information regarding the site is known until the 1960s. By this time, the wreck had been discovered and gained the interest of local divers when gold coins were recovered.¹⁹² Over the next two decades, professional and amateur divers scoured the site looking for relics.

Salvors are known to have worked the wreck in the early 1960s. One, Barry May, visited the site during this period, according to local sources, while working on a nearby wreck. May and his crew dived the *Monumental City* and may have removed materials from the wreck.¹⁹³ No records, however, are listed with the Department of Transport's Receiver of Wrecks documenting the work or what may have been recovered.¹⁹⁴

Abalone divers in the area have known about the *Monumental City* for over 30 years. Many of them frequent the site hoping to pick up a gold nugget, coin, or other souvenir. Several divers have artifacts from the wreck. The most extensive assemblage is owned by John Black, an abalone diver from Mallacoota. When Black moved to Mallacoota to begin abalone diving, he inquired about local wrecks and was told about the *Monumental City*. Black made his initial dives on the wreck in 1968. Since then he has amassed a wide variety of artifacts related to the shipwreck, including gold coins, firearms,

¹⁹²Mark Staniforth, *SS Monumental City: First Steamship to cross the Pacific*, Victoria Archaeological Survey Occasional Reports Series, no. 24 (Melbourne: Ministry for Planning and Environment, 1986), 7

¹⁹³Interview with John Black; VAS staff, conversations 3 March 1994 to 11 March 1994; May was working on the wreck of the *Riverina* located off the western tip of Gabo Island. The *Riverina* sank in 1938.

¹⁹⁴Staniforth, *SS Monumental City*, 7.

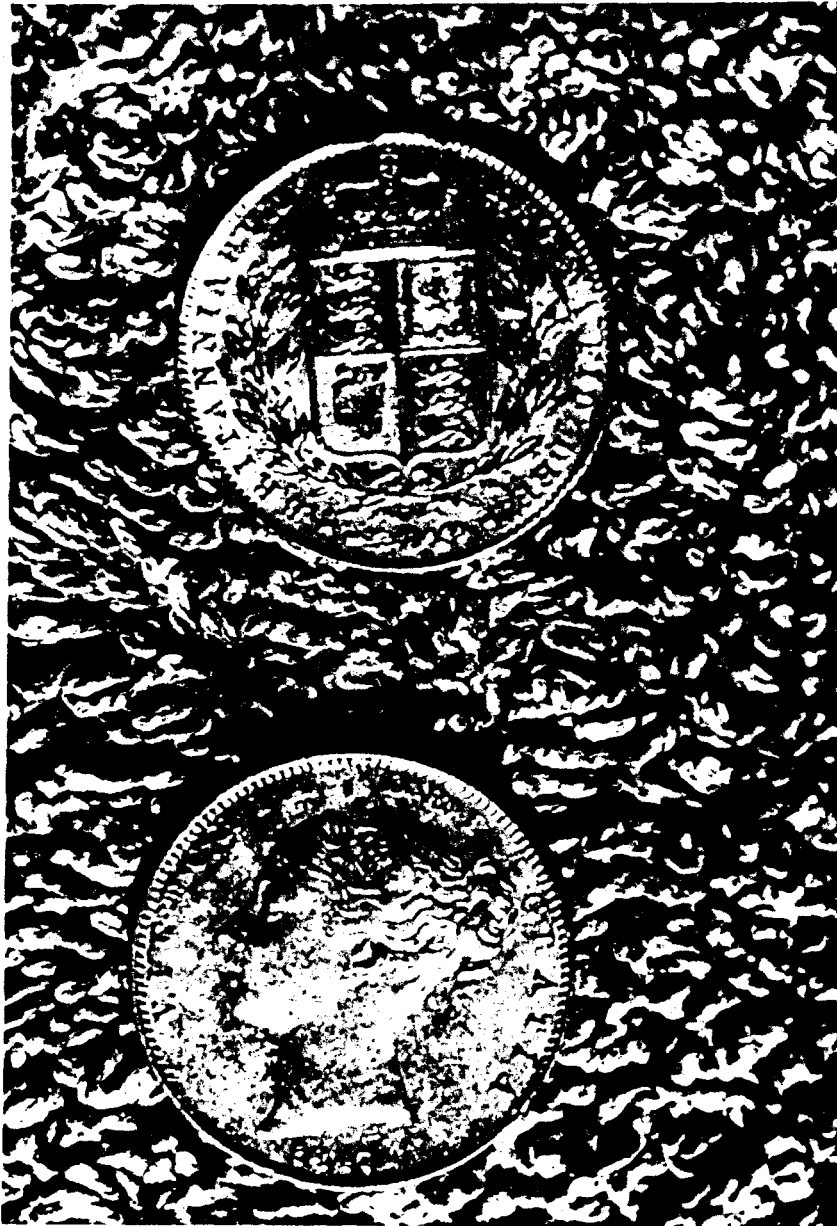


Figure 10. Gold coins found on *Monumental City* shipwreck site by John Black (Photograph Courtesy of Victoria Archaeological Survey).

ship parts, and Captain Adams' hailing horn.¹⁹⁵

Professional divers are not the only individuals who have collected artifacts from the *Monumental City* shipwreck. The wreck has been a favorite of recreational divers from New South Wales and Victoria. Dive clubs from Eden (New South Wales) and Mallacoota (Victoria) often conduct forays to the site. During these excursions, it is likely that divers have taken home souvenirs, slowly stripping the site of smaller items over time.

The freedom of divers to remove materials from the shipwreck site changed on 11 March 1982 when the *Monumental City* was designated an Historic Shipwreck under Australia's Historic Shipwreck Act of 1976. This Act prohibits the removal or disturbance of wreck remains, except by special permit. Classification as an historic shipwreck not only provided the site some protection, it also proved to be the catalyst for the first archaeological investigations of the ship remains.¹⁹⁶

Archaeological Investigations

1982 Field Work

The first archaeological work on the *Monumental City* was conducted in response to a request to remove material from the wreck site. In 1982, the Victoria Archaeological Survey (VAS), the agency overseeing the shipwreck, received a petition from the

¹⁹⁵Black, Interview; John Black allowed his collection to be documented by the Victoria Maritime Archaeological Unit (MAU) during the 1982 and 1984 wreck inspections. During the 1994 field work on the wreck, Mr Black was instrumental in helping relocate the wrecksite. He also provided information (stated above) about the salvage history of the site.

¹⁹⁶Staniforth, *SS Monumental City*, 1.

Mallacoota and District Historical Societies to take an anchor from the site and display it in Mallacoota. As a result of the application, members of the VAS Historic Shipwreck Unit were sent to Mallacoota to assess the wrecksite.¹⁹⁷

During two days in September 1982, underwater archaeologists conducted a preliminary assessment of the *Monumental City* shipwreck. The VAS team verified the wrecks identity, took location information, and sampled the corrosion product, the material formed over metal as it deteriorates in seawater, from the anchor. The corrosion product was later analyzed at the Royal Australian Naval Dockyard at Williamstown, Victoria in order to determine the anchor's state of preservation, and identify the type of metal used in its construction. As a result of the field investigations and the corrosion product report on the anchor, which showed it to be in a poorly preserved condition, the request from the Historical Societies was denied. It was recommended, instead of the anchor, that a static display regarding the ship be established at Mallacoota.¹⁹⁸

1984 Field Work

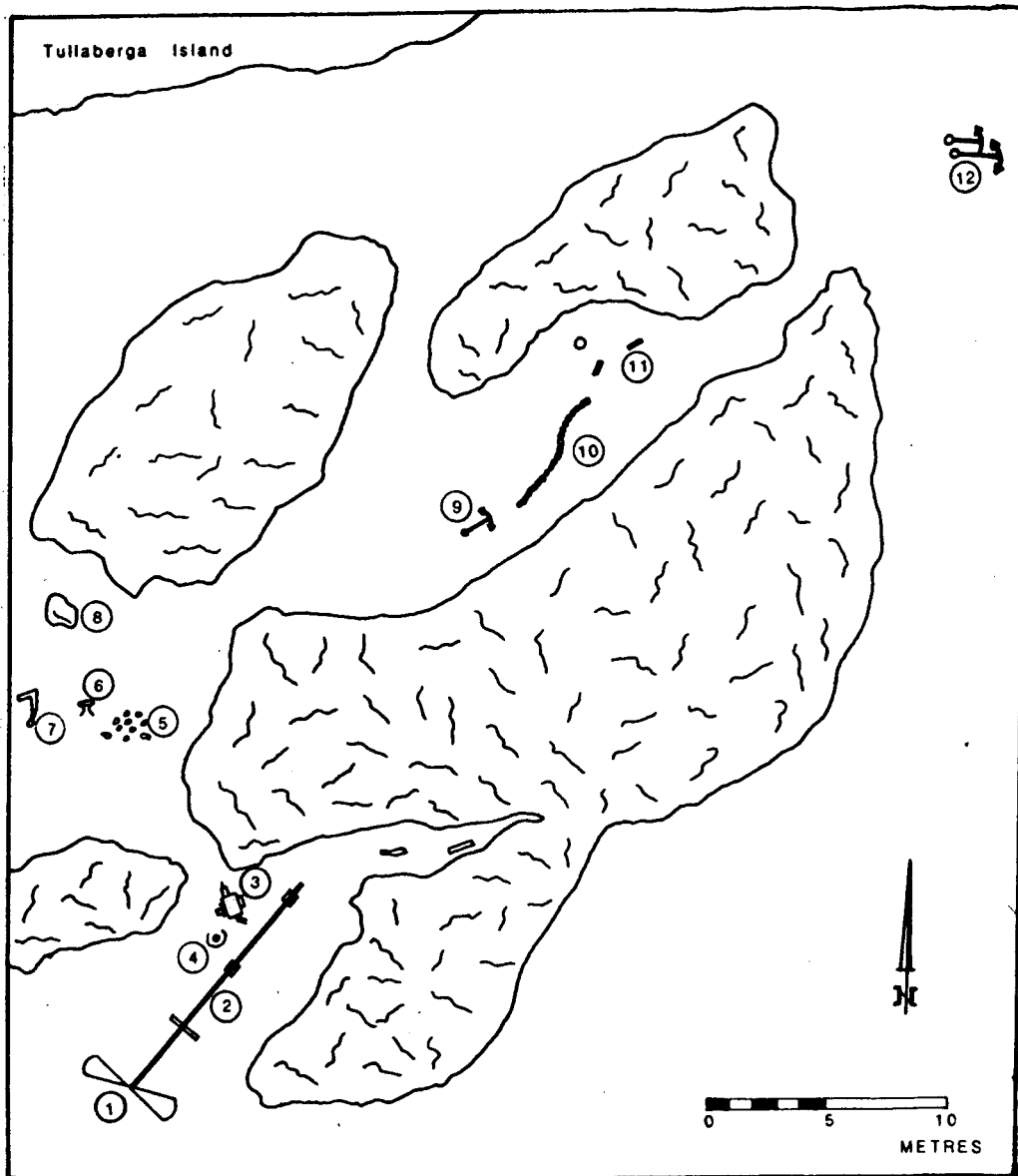
In October 1984, two years after the initial wreck assessment, the VAS Maritime Archaeological Unit conducted a second survey of the *Monumental City* shipwreck. During this trip a preliminary site map was developed. Also at this time photographs were taken of the engine remains, and the propeller, which despite reports of its salvage in

¹⁹⁷Ibid., 9

¹⁹⁸Ibid.



Figure 11. Victoria Archaeological Survey maritime archaeologists examining the *Monumental City's* propeller during the 1984 inspection (Photograph Courtesy of Victoria Archaeological Survey).

**KEY**



- | | | |
|--------------------|----------------------|--|
| 1. Propellor | 7. Iron hanging knee |  - dry land (Tullaberga Island) |
| 2. Propellor shaft | 8. Iron plate |  - reef (underwater) |
| 3. Cylinder | 9. Anchor | |
| 4. Piston | 10. Chain | |
| 5. Ballast | 11. Iron work | |
| 6. Hawse pipe | 12. Anchors | |

Figure 12. Site Plan from 1984 archaeological investigations. (Adapted from Mark Staniforth, *S.S. Monumental City: First Steamship to cross the Pacific*)

1919 remains intact at the site.

This inspection identified three main areas of debris related to the wreck scattered among the gullies off Tullaburnga's Island. The first area is located in approximately five meters of water approximately fifty meters south of the southeast corner of the island. It consists of the remains of the steamer's propeller, propeller shaft, oscillating engines, and related debris. Northwest of this area is a scatter of debris including an iron knee, iron ballast, and a hawse pipe. The third group of remains consists of a stream anchor, a segment of chain and some iron work in a gully northeast of the propeller shaft.

Associated with this area, but farther to the northeast are a bower, and a kedge anchor.¹⁹⁹

No hull remains were located by the MAU divers during the three day exploration of the site.

Based on the results of the 1984 inspection, the following recommendations were made for future site work:

“That further on-site investigations of the remains of the *Monumental City* be carried out with the view to producing a more complete site plan. This will allow the degree of interference to the site by divers to be assessed and will allow further interpretation of the potential of the site.

That further on-site investigations of the remains of the oscillating engines be carried out in conjunction with archival research on the history and use of oscillating engines in screw steamships.

¹⁹⁹Staniforth, *SS Monumental City*, 11; According to *The Oxford Companion to Ships and the Sea*, a stream anchor was a spare anchor that was sometimes used as a stern anchor. A bower anchor is the largest anchor carried on a ship, usually one was carried on each bow. A kedge anchor is a smaller anchor often used to haul off a ship after grounding.

That on-site investigations of the *Monumental City* should be included in the MAU's Wreck Inspection program and should be carried out during future visits to Mallacoota planned for 1986/87²⁰⁰

The plans for further work at the site during the 1986/87 field season were not implemented. The above recommendations formed the basis for the third archaeological investigation of the shipwreck.

1994 Site Investigations

In March 1994 the Maritime Archaeology Unit of the Victoria Archaeology Survey carried out field investigations on the Eastern Coast of Victoria near Mallacoota Inlet. These investigations included providing logistical support and assistance to Daniel Warren of East Carolina University in conducting a non-disturbance survey of the Historic Shipwreck *Monumental City*.

Specific work objectives for the *Monumental City* project were based on the recommendations made following the 1984 survey. These objectives included:

Developing an overall site plan of the wreck site with the maximum possible detail and conditions allow to supplement the sketch plan produced during initial inspections in 1982 and 1984.

Developing detailed drawings of the major site components with specific focus on the engine and propeller remains.

Determining preservation at the site through corrosion testing of major site components using pH meters and multimeters.

All investigations were carried out in conjunction with the Victoria State Maritime

²⁰⁰Ibid., 13

Archaeologist and other Maritime Archaeological Unit staff. Volunteer divers from throughout Victoria also participated in the project. Additional assistance was also provided by local fisheries personnel and local abalone diver John Black.²⁰¹

Description of Methods

The 1994 field investigations used standard underwater archaeological search and survey techniques. Visual search methods were employed to examine areas for wreck remains. Basic measurement techniques were used to document wreck remains. A hand held G.P.S. system was used to assist in finding the general wreck locale. A magnetometer was not employed due to shallow waters and submerged reefs in the wreck area.

The visual search methods used during the *Monumental City* project consisted of swimline and random surveys. The swimline survey consists of divers spaced at intervals along a rope or line within site of each other. They swim in the desired direction keeping the rope tight and perpendicular to the direction of travel. The divers swim with clear view of the sea floor looking for ship remains as they proceed.²⁰² Random surveys consist of a single or multiple divers randomly zigzagging along a general compass bearing within clear view of the bottom to cover a maximum amount of area within the shortest time.

During investigations on the *Monumental City* shipwreck, swimline searches were

²⁰¹Project field notes, March 1994.

²⁰²Green, Jeremy, *Maritime Archaeology: a technical handbook*, pp. 40-41.

used to examine the seabed on the southwest and west sides of Tullaburnga's Island from approximately 50 meters from the island to the surf zone. Four divers spaced 1 meter apart on a 4 meter length of rope swam approximately 1 meter above the sea floor looking for evidence of the wreck. Although the ocean surge made it difficult, relative directional control was maintained by the divers on each end of the rope following a compass bearing. Once the surf zone was reached, divers reversed their direction to begin a new search line parallel and partially overlapping the last lane.

Random line searches were used during the survey of the waters off the southeast corner of Tullaburnga and for areas 50 to 100 meters south and southwest of the island. The use of swimline surveys was unfeasible in these areas due to ocean swells. Divers using scuba or skin diving gear (visibility permitting) would follow a general compass bearing randomly zigzagging to cover an area until reaching approximately fifteen meter deep water then they would turn around and head towards shallower water using the same method.

The initial plan for mapping the *Monumental City* site was to use trilateration from datum points established on Tullaburnga's Island and the sea bottom at the site, but the rocky sea floor, heavy surge, and time considerations warranted use of an alternate recording method.²⁰³ Instead of trilateration, distance-angle measurements were used to document locations. Distance-angle measurements use a tape measure and an angle

²⁰³Trilateration is the determination of an unknown point by measuring its distance from two or more known points.

measuring device (i.e. compass) to plot the location of objects from a known reference point.²⁰⁴ One diver holds the end of the tape on the object to be plotted while a second diver holding the tape at the reference point records the distance and angle to the object. The *Monumental City* survey used the center of the propeller shaft as the reference point for all measurements. Using underwater compasses and a 50 meter measuring tape, the teams recorded locations of some wreck components.

Corrosion testing was planned for the engine and propeller shaft remains. The testing plan initially called for the drilling of a small hole in the component with a compressed air drill then taking a reading with an underwater pH meter and a multimeter. Weather and sea conditions, however, prevented the use of this method. As a result, corrosion analysis was limited to visual inspections. These proved adequate to describe the general preservation aspects on the site.

Description of Field Work

The *Monumental City* project was conducted between 3 and 14 March 1994. During this time poor weather conditions allowed only four days working in the site area with only one day for actually working on the wrecksite itself. Tidal conditions also restricted time on site due to the necessity of entering and leaving Mallacoota Inlet at high tide.²⁰⁵

²⁰⁴Green, *Maritime Archaeology*, 80

²⁰⁵Mallacoota Inlet is the closest access point to the site with the necessary harbor facilities.

Field investigations began on 4 March 1994 with attempts to relocate the main wreck area.²⁰⁶ Sea conditions off Tullaburnga's Island consisted of 1 to 2 meter swells. Underwater visibility ranged from 20 to 25 feet. Two separate dive teams surveyed areas of deeper water off the southeastern and southern tips of Tullaburnga's Island using random swimline searches. A combined total of nearly three hours of searching the island's underwater reefs, and kelp covered crevasses produced no signs of the wreck. The heavy swells and surf prevented divers from looking near shore or on the reefs directly south of the island. Deteriorating weather forced the team to take shelter in the harbor at nearby Gabo Island until conditions improved and tides allowed entry into Mallacoota Inlet.

During 5 March, an attempt was made to work in the site area, but unsafe diving conditions, due to 1.5 to 2 meter waves and swells at Tullaburnga Island, made diving impossible so the search for the wreck was postponed. By the following day, 6 March, the weather had abated enough to allow continuation of efforts to relocate the wreck of the *Monumental City*. Bottom visibility was approximately 6 meters. Divers conducted swimline searches of the waters off the southwest and west shores of Tullaburnga's Island in areas indicated by several local abalone divers. These examinations covered an area from the shoreline to 50 meters out from the island. None of the searches produced evidence of wreck remains. Heavy swells prevented further scrutiny of reefs to the south

²⁰⁶During 3 March 1994 myself and members of the VAS Maritime Archaeology Unit transported the two boats and all necessary equipment from Melbourne to Mallacoota.

and southeast of Tullaburnga.

On 7 March, after a difficult run through the entrance of Mallacoota Inlet, survey of the waters off the southwest and west shore of Tullaburnga's was resumed.²⁰⁷ Visibility ranged from 10 meters in shallow areas to 6-8 meters in deeper water. Divers continued swimline inspections of the shoreline areas and also conducted random line searches out to 60 to 100 meters from the island into waters between 10 and 15 meters deep. No wreckage was observed. Swells again prevented searching reefs directly south of the island, but an effort was made to look at the areas close to the southeast shoreline. Divers attempting to search these areas encountered heavy surge, and strong currents that tossed them around uncontrollably, as if in a washing machine, forcing them to abandon the search of this area.²⁰⁸

The following day, dangerous diving conditions due to high waves created by strong winds again made it unfeasible to work in the site area. Instead, team members went to the sheltered harbor at nearby Gabo Island to dive on the remains of the *Easby* that lie on the bottom of the harbor. Examination of these remains provided several of the volunteer divers the opportunity to view wreck remains under relatively calm conditions. It also provided MAU staff the chance to inspect part of the *Easby* that had been damaged

²⁰⁷ During the run out of the inlet, surfers in the preferred exit route parallel to the shore force the pilot of the MAU research vessel to head straight out of the inlet to avoid hitting them. This put the vessel directly into the path of the incoming swells that were between 3 and 4 meters high. The result was that several times the 28 foot vessel became airborne then crashed back into the water. Fortunately no one was injured during this incident.

²⁰⁸ The author was part of this two man dive team. Fortunately, despite the rough conditions, no one was injured in the search attempt, although some dive equipment was lost and damaged.

by a ship anchoring over the wreck.

On the 10th, after a near disastrous ride out of Mallacoota Inlet, the *Monumental City* was located with the assistance of local abalone diver John Black.²⁰⁹ A buoy was attached to a brace near the propeller shaft assemblage to assist in locating the site in the future. Once the wreck remains had been located, documentation and re-examination of the site was begun. Two divers began cutting away kelp from the propeller and engine remains to make them easily visible. Another team of two divers started mapping wreck components using distance angle measurements. Visual inspections were made of the preservation condition of the propeller shaft, engine cylinder, and one anchor. A swim over of the site was also done to note type, amounts, and location of remains. Deteriorating weather conditions forces a halt to work after only 50 to 60 minutes on the wrecksite. The weather became worse after 10 March preventing further work, and forcing the cancellation of the project on 14 March 1994.

Description of Findings

Despite limited time in the site area and on the shipwreck itself, several of the project objectives were carried out. Surveys around Tullaburnga's Island, and reexamination of the wrecksite provided information for updating the existing site map. Additionally, inspection of wreck components allowed documentation of the preservation

²⁰⁹During the run out of the inlet the VAS boat was hit by a 4 to 5 meter high wave. The wave smashed the front and side windscreens, soaked all the electronic equipment in the cabin, as well as the entire research crew. No one was seriously injured although several members received minor cuts from flying glass when the windscreen was smashed.

of materials at the site. Visual surveys of the areas off Tullaburnga's Island determined the extent of the *Monumental City* shipwreck site. Swimline surveys of the sea floor on the southwest and western sides of the island produced no evidence of a shipwreck. Likewise, random line surveys of the areas off the southeastern point of the island and the waters to the south of the reef line found no remains. Based on these surveys, it appears that the only extant remnants of the *Monumental City* are those located in 1984 by the Victoria Archaeological Survey's Maritime Archaeological Unit.

The *Monumental City* wrecksite was relocated on the last day of the project. During the single dive on the site, wreck components identified in 1982 and 1984 were relocated and examined, with the exception of the kedge, and bower anchors at the far northeastern part of the site area. These two anchors rest in shallow water (less than 1 meter deep) and could not be reached because of heavy surf conditions. The propeller and shaft, cylinder block, and other engine remains are scattered throughout an area near the outer reef perimeter in, as noted in the 1984 inspection, approximately 5 meters of water roughly 50 meters south of Tullaburnga's. The propeller and shaft are intact and are situated at nearly 40 degrees north, with the partially intact engine cylinder setting against the reef near the north end of the shaft. To the northwest of the propeller shaft is an iron knee along with pieces of iron ballast and iron fittings.²¹⁰ Northeast of the propeller shaft, in an adjacent gully is a small anchor with a broken fluke, tentatively identified in 1984 as a stream anchor. The anchor is lying next to the reef with the crown

²¹⁰The iron knee was determined to be a hanging knee during the 1984 survey.



Figure 13. Maritime archaeologist Peter Harvey cleaning the *Monumental City's* propeller (Photograph courtesy of Jim Anderson).



Figure 14 . The Author measuring a stream anchor at the *Monumental City* shipwreck site (Photograph courtesy of Jim Anderson).

pointing east. Less than a meter away, to the east, is a large piece of iron, a length of anchor chain, and an unidentified cylindrical object lying in the middle of the gully.

Two additional areas of wreckage not noted in 1982 or 1984 were also located during the 1994 site investigation. Three meters south of the propeller shaft is a large iron brace attached to a section of iron plating. This appears to be part of the bracing for the engine or propeller mounts. Immediately west of the propeller shaft is an area of iron ballast strewn about in a small gully. According to John Black, this is the area where artifacts associated with the passengers and Captain Adams were discovered.²¹¹ These areas were examined and the information added to the 1984 site plan. The updated site plan shows their location based on the 1994 findings.

Divers also noted the absence of certain materials at the wrecksite. The most noticeable items missing were the two large boilers used to provide steam for the *Monumental City's* engines. No signs of the boilers were found during inspections in the 1980s or in 1994, indicating that they were either destroyed or salvaged prior to the first archaeological investigations. The wave dynamics at the site are such that the boilers could have been broken up over time by the pounding surf, but the lack of debris associated with the boilers suggests they were salvaged at some point in the past. There is a scarcity of small items, such as porthole covers, valves, spikes, etc., over the shipwreck. Only a few fragments of ceramics, and occasional pieces of copper sheathing were observed intermixed with the bottom cobbles. These smaller pieces have likely been

²¹¹Interview with John Black.

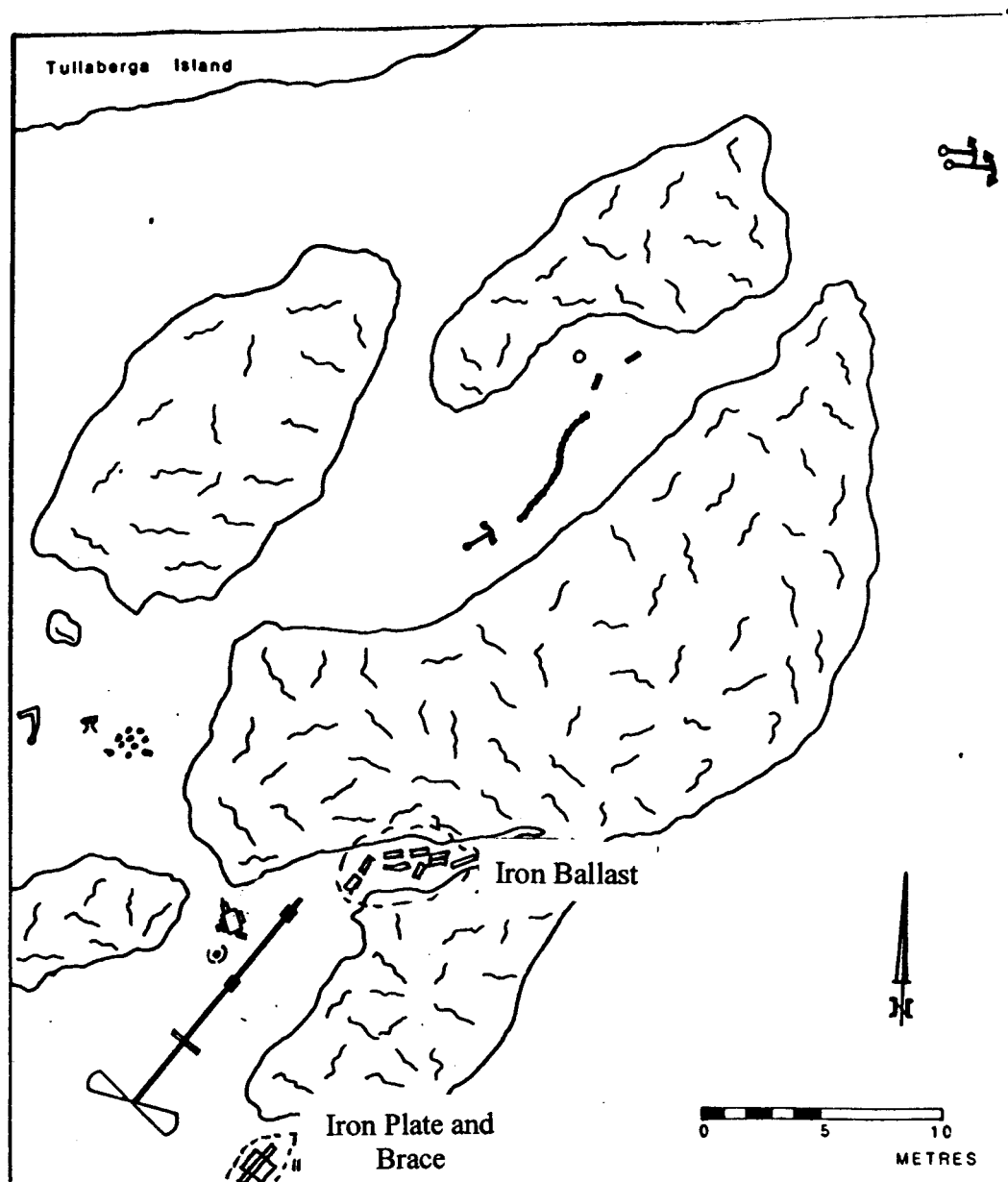


Figure 15. Updated site plan based on 1994 findings. (Adapted from Mark Staniforth, *S.S. Monumental City: First Steamship to cross the Pacific*)

removed by divers wanting souvenirs from the shipwreck. The lack of small artifacts on the site is testimony to the intensive collecting that has taken place on the *Monumental City* site through the years.

The level of corrosion on some the *Monumental City's* remains was also documented during the time on the wreck. The observations were, however, limited to visual inspections due to, as stated earlier, poor sea conditions preventing use of the surface supplied air drill. The components examined were the propeller and propeller shaft, the remaining engine cylinder, and the stream anchor with its associated length of chain. The propeller and shaft, along with the engine cylinder are in the deeper water on the site, approximately 5 meters. This area experiences less intensive wave action than the areas closer to shore. The stream anchor and other artifacts associated with it are in approximately 2 meters of water near shore. This area is near the surf zone and there is constant and heavy wave action through the gully.

All the artifacts inspected were encrusted with a calcareous layer of corrosion product common to iron that has been submerged in sea water for an extended time. The remains in deeper water are also densely covered in kelp, which makes them difficult to identify, but also provides them with some protection from wave action. Despite heavy encrustation and kelp cover, the propeller, shaft, and engine cylinder appear on the surface to have retained much of their integrity. It is likely that there is a substantial amount of iron remaining underneath the corrosion product.

The stream anchor, chain, and associated materials in the gully near to shore are in

far worse condition. These artifacts are not sheltered by deeper water and kelp growth. The scouring from the constant surge running through the gully has been detrimental to preservation. These remains are so heavily encrusted with coralline growth that they appear to have become integrated with the sea floor. The amount of encrustation and corrosion observed during the inspection dive suggests little, if any, of the original artifact is intact. It is likely that the iron has corroded away leaving only a mold of the object.

The preservation of materials on the *Monumental City* shipwreck appears to range from moderately good in the deep water areas to extremely poor in shallow waters near shore. Exactly how corroded the remains are could not be determined through visual inspection. The pH and Ecorr, or corrosion potential should be tested at a future time in order to confirm or disprove the conclusions presented above.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

The Wrecking Process

The wrecking of the *Monumental City* was violent and destructive. The heavy seas, from all accounts, ripped the little steamer into kindling. Parts of the ship that did not sink, either floated away, or were cast upon Tullaburnga Island as flotsam. Sections of the vessel that did sink, rested on a rock strewn bottom with very little sediments and no protection from the open sea. For the past 144 years, the seas around Tullaburnga continually wreak havoc on the remains of the *Monumental City*. Consequently, there are virtually no intact structural remains remains intact at the wrecksite.

Wooden hull structures, if any survived the initial destruction episode, would have begun to degrade immediately. Helped along by wood eating organisms and the constant force of the water, and with no protective sediments, any surviving hull fragments would have deteriorated over a relatively short period of time. The metal components of the *Monumental City* survived better than wood at least for a time. Although most of the steam engine components undoubtedly survived the initial wrecking process, only the most substantial parts, the propeller, engine cylinder, etc., have remained relatively intact.

Other metal components such as the boilers, condensers, and water tanks appear, from the archaeological record, to have succumbed to corrosion, or perhaps more likely the

depredations of salvors.

Sport and salvage divers have had a significant impact on the wrecksite. Over the years, they have taken numerous souvenirs and components from the wrecksite without recording what material they found or where it was located. Those remains represent important pieces of material culture, that provide information about the wreck and its passengers that may not be found in the historical record. Removing materials from the site hampers and even prevents an accurate historical perspective of the vessel from being developed.

Site Preservation

Comprehensive corrosion testing was not undertaken at the *Monumental City* shipwreck site due to poor weather conditions. The following discussion of preservation at the site is based on visual inspection and awaits confirmation through further testing. Based on visual inspections conducted on the site in 1994, there appear to be two levels of preservation at the *Monumental City* site. The better preserved wreck components are in the deeper waters farther away from the shore line. Poorer levels of preservation are found in the dynamic shallow water areas near shore.

The shallow areas of the *Monumental City* shipwreck are open to constant swells, waves, currents, and scouring from backwashes and undercurrents. The movement of water over these areas saturates them with oxygen. The high oxygen content in the water promotes extensive corrosion of metal objects. This factor combine with constant

scouring of sand and calcite over the remains prevent a protective concretion from being formed over the metal. These conditions have led to extensive deterioration of the wreck components in this area, some to the point that they appear to be integrated into the seabed, and entirely lacking any internal integrity.

Preservation in the deeper waters at the site is better than that near shore. In the deeper waters, there is less intensive wave action which means less oxidation and less intensive corrosion. Scouring is less of the factor here also, because of the milder water movement. Materials in these areas are usually covered with a thick layer of corrosion along with a very thick covering of kelp or sea grass. Since both the corrosion material and the sea grass provide protection to materials located in these areas of the *Monumental City* site, the components in these area are usually in much better condition and appear to have significant structural integrity remaining.

Site Management

The *Monumental City* was declared a Historic Shipwreck in March of 1982, as such it is protected by Commonwealth Law.²¹² The law that has a direct influence are the Commonwealth Historic Shipwrecks Act of 1976. Additionally, historic shipwrecks like the *Monumental City* are also protected by the Customs Act of 1912, and the Statutory Offences Act.

The Commonwealth and Victoria Shipwreck Acts were developed to protect

²¹²Staniforth, *SS Monumental City*, 1.

historic shipwrecks in Australian waters from human destruction. These Acts provide the Commonwealth and Victoria governments a legal means to protect and manage historic ship remains within their respective jurisdictions. They give the governing agencies authority to declare a shipwreck as Historic, and establish protective areas around shipwrecks in order to prevent them being damaged by commercial or fishing activities. They also give these agencies the power to prohibit the removal of materials from Historic Shipwrecks, without a proper permit, and to levy fines and jail sentences against persons who violate the provisions stated in Acts.

Enforcement of the Acts is carried out by State and Commonwealth law enforcement, and conservation officers. In Victoria, some of the maritime archaeologists with the Maritime Archaeological Unit are also empowered to enforce the regulations established by the Acts. In the case of the *Monumental City*, the site is monitored and protected by personnel of the Victoria Fisheries and Wildlife Service stationed at Mallacoota.

Recommendations

During the 1994 inspection of the site, extremely poor weather conditions prevented corrosion testing and the development of a detailed site map. Further work should be carried out to create detailed site plan of the wreck remains, including a comprehensive study of the engine remains. Since sea conditions at the site are often unacceptable for traditional underwater mapping techniques such as trilateration, or

stereophotography, it is recommended that alternate means be employed to develop a detailed map of the wrecksite. One option available to achieve this would be to use the compact echo ranging systems, such as SHARPS, which has been used on several shipwreck sites around the world. Since the site is relatively close to the shore of Tullaburnga Island, base units could be established either on the island, or on a boat anchored in a safe area near the wreck. This would allow divers to conduct detailed and accurate mapping of the remains despite the constant surge and wave action that has hampered past recording attempts. Constructing a detailed plan of the site would provide additional data related to on site distribution of materials that would be useful in further interpretation of the shipwreck, and it would assist in the development of future management strategies at the shipwreck site.

It is also recommended that corrosion testing be conducted on various pieces of remains from throughout the site. Testing of the various components of the wrecksite would allow an accurate picture of preservation conditions at the site to be developed. This information, in turn, could be used to determine if protective measures should be taken to inhibit further deterioration of the site remains. If protective measures are required, a further conservation study of the *Monumental City's* remains should be undertaken to determine the best course of action necessary to insure the protection of the wrecksite.

Conclusions

The *Monumental City* represents an unique piece of maritime archaeological history. It is one of only a few wooden hulled propellor steamships wrecked in Australia. As one of the rare examples of a screw steamship with oscillating engines, it is also representative of a period of radical change in steam propulsion concepts. The potential for further archaeological study of the shipwreck is, however, limited. The lack of intact hull remains, and site topography do not contribute to productive excavation of the wreck. Further archaeological study, however, should be carried out on the *Monumental City's* propeller and oscillating engine remains. Oscillating engines were used on steamships throughout the 19th century, but there was no set design plan for the engine, as a result, many variations were developed. Very little is known about these different designs. Analysis of the steam propulsion remains would help further understand how these components were installed on the *Monumental City*, and also provide finite construction details for this type of oscillating engine. This information could be compared with other designs of oscillating engines in order to develop a better picture of the evolution of this engine type and how its design changed over time.

Although the potential for archaeological research on the *Monumental City* appears limited, further historical study of this vessel has high potential. The history presented here is not to be considered comprehensive, but rather the beginning of a study of historical aspects related to this shipwreck. Further research into the vessel's history,

beyond what was accomplished in the scope of this report, is likely to bring to light further details of the vessel's construction and history. Additionally, the *Monumental City* was just the first of many American steamships that migrate to Australia during this period. Further examination of why these vessels came to Australia, and the history of their operations during and after the Australian Gold Rush can only further illuminate the deep maritime connection between the United States and Australia. Finally, the loss of the *Monumental City* led to significant changes in laws regarding foreign ships working in Australia. Further research should be carried out to determine the extent of these changes, focusing on whether these laws were limited to Australia or eventually applied throughout the British Commonwealth.

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