

Steam Propulsion: Unique and Classic



The steam tug *Hercules*, powered by a triple expansion steam engine, and the steam ferry *Eureka*, equipped with a walking beam steam engine. Inset: The walking beam section of *Eureka's* five-story tall engine protrudes out of the top of the ship. It is also visible in the larger photo on the top deck of the ship to the right of the black smokestack. Photo, below: The author conducting a tour of the *Hercules* and standing with visitors in the engine room. Park Ranger Edwards will be leading engine room tours of *Hercules* on 3/3, 4/7, and 5/5, at 2pm.

BY CHRISTOPHER EDWARDS, SUPERVISORY PARK RANGER

San Francisco Maritime preserves a collection of historic ships that have national significance to the maritime story of the West Coast and beyond. Among these ships are the steam tug *Hercules* and the steam ferryboat *Eureka*. The steam propulsion plants in these ships are both unique and classic. The steam tug *Hercules* is equipped with a triple expansion engine. When new in 1907, this steam engine was state of the art in the maritime world. What made it so useful was that it expanded the steam supplied to it three times. In a very real way, what made this engine possible was not the engine itself, but the 180 pounds per square inch (psi) steam pressure that the boilers could produce.

For many years, the ability of engineers to produce steam above approximately 100 psi, was limited by metal quality and boiler design. By the late 19th century these problems had been overcome and engines—small, efficient and reliable—were available to commercial operators and made vessels like *Hercules* possible and more powerful than ever before.

Despite this, there were some steam engine survivors of a previous epoch. The steam ferry *Eureka* is such a vessel. Unlike *Hercules*, *Eureka's* engine used steam at only 60 psi and achieved its power through brute size and force. *Eureka* is equipped with a walking beam engine. This engine is five stories tall and has a single piston with a 12-foot stroke. Everything about this engine is big.

The oiler, the man responsible for lubricating the engine, got a thorough workout climbing up and down the engine. This took him from the floor of the engine room to the outside area of the ship, where the walking beam itself protruded out of the top of the ship.

The controls of the engine were massive. Starting the engine was not automatic and the engineer was required to get his workout by ma-

nipulating the starting bar up and down with just the right amount of force and finesse to build up momentum. After this the engine could run itself, but at the beginning of each trip across the Bay, another workout was to be expected.

The engine was simple and reliable. From 1920-1922, *Eureka* was almost completely rebuilt so she could carry automobiles, but this did not include her engine. When *Eureka* was taken out of service in 1957, her engine was one of the few items left of the original ship. Sixty-seven years had passed since the engine had first begun plying the Bay.

Although once common, these engines are now unique and are among the most important resources preserved at the park. These and many more examples of our steam heritage are among the treasures to be found by park visitors.



Welcome

The Park is getting up steam to celebrate our 25th birthday!

Join us for live steam demonstrations of an historic Donkey Engine on Hyde Street Pier, and stop by the Park's Maritime Library (in Fort Mason Center) to view a triple expansion steam engine model from the Park's artifact collections.

Throughout the year, please help us celebrate San Francisco Maritime National Historical Park's June 27, 1988 authorization with: a major exhibition of America's Cup artifacts in the Maritime Museum opening July 3, a Sea Music Festival with traditional performers from around the world this summer, and many other special programs.

So stay tuned! Get ready for another season of ranger-led *Alma* sailing adventures. Consider loosening up your hawsepipes with a "Beginning Chantey Singing" workshop aboard *Balclutha*. And don't miss the debut of a new interpretive program: "Heroines at Sea: Adventures of Sailing Wives" a historical look at how Victorian ladies handled the challenges of a life at sea. Check our Visitor Center information desk (at the foot of Hyde Street) or our website for complete details.

Craig Kenkel
Superintendent



1 Unique and Classic: Steam Power

Running out of steam? Not a chance of that at San Francisco Maritime. The park is a wonderful place to get your fill of the history, mechanics, and romance of steam technology.

2 Steam Engine Model on Display

Perhaps especially designed for the "technology-challenged," this gem of a model will help you understand how steam engines moved ships.


4 Page For Kids

How do you feel about steam? What??? Don't tell us you haven't thought about it in awhile! Well don't have a hissy-fit, just turn to page four and find out!

Park Website:
www.nps.gov/safr



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National Park Service

U.S. Department of the Interior

San Francisco Maritime

National Historical Park

Established in 1988, San Francisco Maritime National Historical Park encompasses 34 acres, and has the most National Historic Landmarks of any unit in the National Park Service. In addition to the fleet of historic ships at Hyde Street Pier, the park includes the Aquatic Park Historic District (Maritime Museum, beach, lawn area, and bleachers), a Visitor Center and a research library (in Fort Mason Center).

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The Maritime News

March, April, May
2013 Volume No. 40.

Collections Corner

Triple-Expansion Steam Engine Model

BY STEPHEN CANRIGHT, PARK CURATOR,
MARITIME HISTORY



Scale model of a triple-expansion steam engine made of brass and steel, about 14” high and 20” across. SAFR 8775

In keeping with the steam-powered theme of this issue, we have pulled a little gem of an engine model out of storage and are exhibiting it in the park library. The model was shown in the old Steamship Room in the Maritime Museum between 1989 and 2007, and we are glad to see it back on public view.

The model is of a three-cylinder triple expansion reciprocating engine. This was an engine that was fully developed by the early 1880s, and quickly became the dominant power plant for ocean steamships. They used relatively high pressure steam very efficiently, cycling the steam through progressively larger diameter cylinders, at progressively lower pressures. Virtually all of the expansive potential of the steam was converted into motive force. This engine was efficient enough to allow ocean steamers to profitably carry virtually any cargo over any ocean passage. This engine made the ocean freighter possible, and would finally doom sail-powered cargo vessels. Steamers had previously been confined to either short-

distance runs or to the high-value passenger trades for longer ocean runs.

The triple-expansion engine was largely superseded in commercial use by the more sophisticated steam turbine engine shortly after the turn of the 20th century. The type had a final resurgence in the Liberty Ship freighters of World War II. Some 2,200 Libertys were equipped with triple expansion engines, chosen for their relative ease of manufacture. San Francisco Maritime holds two full-sized engines, one in the tug *Hercules*, and the other in the steam schooner *Wapama*. The *Wapama* engine will eventually be displayed near the entrance to Hyde Street Pier.

This finely crafted model was reputedly made by apprentices in the pattern and machine shops at the Mare Island Navy Yard, probably in the 1920s. Stop by the library, on the third floor of Building E, Fort Mason, and check it out.



Sail San Francisco Bay aboard 19th century scow schooner *Alma*. The first sail of the 2013 season will be in early June. *Alma* will sail most Saturdays and Thursdays into early November. Tickets prices are \$40 for adults, \$30 for seniors, and \$20 for children ages 6–15. Children age five and under ride for free. All children must be accompanied by an adult. The vessel departs promptly from Hyde Street Pier at 12:30 pm and returns at 4 pm. Call 415-447-5000 for more information.

USS *Olympia*. P83-142a.1372g

Starboard engine of the USS *Oregon*. P83-142a.2806g

Steam Engine under construction P83-142a. 3701g

Stevodore’s upright steam engine built by Moore and Scott A10.8512n

Plans:
Hercules. Steam engine plans. Details.HDC 128.
President Hoover. Steam boilers, marine. Machine arrangement, details. HDC 460.

Eppleton Hall. Steam boilers, marine. Machine arrangement, details. HDC 555.

To make an appointment to see these and more, contact Gina Bardi at gina_bardi@nps.gov or 415/561-7033.

Ali Maheu is Not At Work Today But I Still See Her



Photo: Chris Jannini

BY CHRIS JANNINI, SHIPS’ DIVISION MANAGER

It is her first day as a 14-year-old volunteer, we are up in the rig of *Balclutha* and this tiny girl is telling me that she is a dressage queen and will ride in the Olympics someday. She seems so sure of herself that I don’t doubt her. She quickly learned some basic sail seaming techniques and a few months later I watch her take a canvas ditty bag project out of the hands of volunteer Luc Maheu proclaiming, “Let me show you how to sew that.” A year later, she and Luc bring me their latest assignment. It is a perfect, handmade canvas sail that brings tears to my eyes.

Today, when I pop in to the Visitor Center, I can’t help but see her carefully weaving the intricate sea chest beackets displayed there.

I gaze up to the very top of the mainmast on *Balclutha* and there is Ali, on holiday from Mills College, age 20, securing the Christmas tree that she insisted that we had to have. I look at the Bear Boat and see the miniature wire splices that she made last summer and when I look up at *Balclutha* again, there is the giant splice in 1 3/8” wire she finished just a few weeks ago.

In *Balclutha*’s shelterdeck I see her, now 25 years old, in her wedding dress, dancing with her new husband Luc, very handsome in his Merchant Marine Officers’ uniform. Happy as she is, she can’t wait to change into more comfortable clothes and escape for a honeymoon sail on their beautiful schooner *Tiger* that they are re-rigging in a traditional style with the skills that they learned here as teenagers.

Ali Maheu is not at work today because she and Luc were in a pedestrian accident which took her from us last Christmas.

I see her meticulous craftsmanship in wood, canvas, wire and even paint on every vessel in our fleet. You may not see Ali here at the park every day as I do, but you will see her handiwork for many years to come.

Running Out of Steam?

BY GINA BARDI, REFERENCE LIBRARIAN

Running out of steam? Come to the Maritime Library to get more. We have resources for everyone from the novice to the expert. Here are just a few (very few...) to wet your (steam) whistle.

Books:
Gardiner, Robert. *The Advent of Steam*. New York: Conway Press, 1993. Print.

Babcock & Wilcox Company. *Steam, its Generation and Use*. Babcock & Wilcox Company, 1963.

Hawkins, Nehemiah. *Maxims and Instructions for the Boiler Room*. New York: T. Audel & co. 1902. Print.

Articles:
Mactier, Sir Stewart and W.H. Falconer. “The Development of Marine Machinery.”

Liverpool Nautical Research Society. Vol. 9. 1955-1961

Sawyer, William D. “The ‘Grasshopper’ Engines of Eppleton Hall.” *Sea Letter*. March 1971:2-3. Print.

Historical Documents:
Copy of the Log of the Stmr. San Francisco from New York to San Francisco Dec. 1853. HDC105

Roy Burton Goodwin papers. HDC 1086 Collection consists of personal correspondence, certificates, licenses and other documents related to Goodwin’s career as chief engineer on steam schooners.

John Felix Shearman engineering drawings. HDC1143 Design drawings of a variety of steam engines.

Images:
Engine with Dynamo. Turning engine for

Maritime Library, located on the third floor of Building E in Fort Mason Center (auto entrance at Buchanan Street and Marina Blvd). The library is open Tuesday–Thursday, 1PM to 5PM. For other open hours call 415-561-7030 and visit www.nps.gov/safr/historyculture/museum-collections.htm.

Contact Information
General Park Information: 415-447-5000
Pacific West Info Center: 415-447-0463
USS *Pampanito*: 415-775-1943
Park Website: www.nps.gov/safr
Association Website: www.maritime.org
Library Friends: www.maritimelibraryfriends.org

Visitor Information

Dates and Hours of Operation:

Hyde Street Pier, located at Hyde and Jefferson Streets, is open 9:30AM to 5PM. Last pier entry at 4:30PM.

Visitor Center, located at the corner of Hyde and Jefferson Streets, is open 9:30AM to 5PM.

Maritime Museum (in the Aquatic Park Bathroom Building), located on Beach Street at the foot of Polk Street. The building is open from 10AM to 4PM daily.

Entrance Fee for Historic Vessels: \$5
Free for supervised children under 16.
Free with Federal Interagency Annual, Senior, Military, Access Passes, and San Francisco Maritime NHP Annual Pass.

No-Fee Areas
Visitor Center, Hyde Street Pier, Museum Building, Aquatic Park Historic Landmark District, and the Maritime Library (Fort Mason Center).

Reservations
Reservations for school groups and other educational groups must be made at least two weeks prior to your visit. Please call 415-292-6664.

Accessibility Information



Programs in the Visitor Center, on Hyde Street Pier, and in the library are accessible. Accessibility to programs on the ships varies. For detailed information, please call the Visitor Center, 415-447-5000, or <http://www.nps.gov/safr/planyourvisit/accessibility.htm>.

Permits
Special Use Permits require at least a one month notice and application. Filming permits are arranged on an individual basis. Please call 415-561-7049.

Music, Tours, Events, Lectures and Living History

Please turn to the back page for today’s schedule.

NEW PROGRAM



Photo: SARF J09 08059n

HEROINES AT SEA: ADVENTURES OF SAILING WIVES
Saturdays, March 16 and 30, 3-3:30PM. Aboard Balclutha at Hyde Street Pier. Vessel admission (under 16 free).

When a captain’s wife went with her husband to sea during the Age of Sail, the voyage could be routine or she might experience unique and sometimes horrific adventures. How did various Victorian women handle the challenges of life at sea? Hear selected true stories as we tour the *Balclutha* sailing ship. ☺

PROGRAMS

BIRDS OF THE BAY
Saturdays, March 9, April 20 and May 4, 10-11:30AM. Meet at the entrance to Hyde Street Pier. Free.
Meet at the entrance to Hyde Street Pier for this 90 minute walk. All levels are welcome with a brief orientation for new bird watchers. We will view water, shore, citified, and migratory birds on this easy stroll. An orientation to spotting birds, and to using guidebooks and binoculars is included. Dress in layers with sun hat and sunscreen. Bring your own guidebooks and binoculars if you have them. ☺

ANIMALS OF HYDE STREET PIER
March 7, 8, 22, 23, 3PM; March 17, 11AM; April 3, 18, 11AM; April 5, 3PM; May 1, 2, 29, 30, 31, 11AM; May 3, 3PM. Meet at the end of Hyde Street Pier. Free. Times vary due to tides.
Come experience a whole different world you might not realize exists at Hyde Street Pier. Be prepared for squishy, slimy, and squirty creatures. ☺

CRAFTS FOR KIDS
Saturdays, March 30, April 27, and May 25, 3PM. Meet at the entrance to Hyde Street Pier. Free.
Want to learn a little about life at sea and try your hand at making a maritime craft? Come on down to the pier and join us! ☺

MARITIME STORY TIME: THE TALE OF HENRY AND HARRY
Saturday, March 2, 11-11:30AM. Meet in the Visitor Center. Free. Ages 6-12.
Join in this fun-filled, interactive program about two stowaway kittens aboard the *Balclutha*. Find out what it was like to be a feline sailor in 1887. ☺

CRITTERS AT SEA
Saturday, March 2, 1-1:30PM and 3-3:30PM. Aboard Balclutha at Hyde Street Pier. Vessel admission (under 16 free).
Learn about the important roles that domestic, farm, and exotic animals played in the lives of sea captains, sailors, and families at sea aboard seafaring vessels from the Age of Sail to the present. ☺

☺ **FUN FOR FAMILIES PROGRAM**

STEAM-POWERED DONKEY ENGINE DEMONSTRATION
Wednesdays, March 20, April 17 and May 15, 9:30AM–3PM engine running, 11AM ranger talk. At the entrance to Hyde Street Pier. Free.
Join us for a demo and ranger talk about the donkey engine, used ashore and aboard ship for loading cargo, raising anchor and setting sails. Learn what is involved in steaming-up the boiler and operating this historic piece of machinery. ☺

ADVENTURES AT SEA: LIFE ABOARD A 19TH CENTURY SAILING SHIP
Daily, 2:15PM. Aboard Balclutha at Hyde Street Pier. Vessel admission (under 16 free).
Join a guided tour of the historic ship *Balclutha*. Discover the hardships and rewards of the sailors who fought for survival during the treacherous Cape Horn passage. ☺

HERCULES ENGINEERING TOUR
Sundays, March 3, April 7 and May 5, 2PM. Meet at the gangway on the Pier. Vessel admission (under 16 free). Tour includes climbing moderately steep ladders and entering cramped spaces.
Explore the major engineering spaces and learn about steam engine technology and its effects on the working environment of the marine steam engineer. ☺

TOUR OF THE WW II SUBMARINE USS PAMPANITO
March 5 and 21, April 2 and 18, and May 7 and 23, 2PM. Meet at the submarine located at Pier 45, Fisherman's Wharf. Call 415-775-1943 for ticket prices.
Join a park ranger for an on-board historic talk about this Balao-class submarine (SS-38). Now a museum and memorial, the vessel made six patrols in the Pacific during WWII. The talk will emphasize stories about dramatic events during those patrols.

HISTORIC WATERFRONT WALKING TOUR: FROM GOLD RUSH TO NATIONAL PARK
Saturdays and Sundays, 10:30-11:30AM. Meet in the Argonaut Hotel lobby (495 Jefferson St.), next to the Visitor Center. Free.
Stroll with a Park Ranger to discover the history of this vibrant area on this mile-long tour through the Aquatic Park Historic District, the Cannery, Hyde Street Pier, and “Fish Alley” at Fisherman’s Wharf. ☺

MARITIME MUSEUM
Open 10:00AM to 4:00PM daily. Located at 900 Beach Street, at the foot of Polk Street. Free.
The newly restored 1939 Works Progress Administration-era building’s lobby and veranda are open to the public. View the the unique architecture, stunning murals, sculpture, and exhibits. Opening this summer will be a major exhibition of America’s Cup artifacts. ☺



Friends of the San Francisco Maritime Museum Library
Join the Friends and help support the Maritime Library. Membership includes reduced admission to Friends’ events, free admission to the historic ships, and discounts on Friends’ booksale purchases. For more information, call 415-561-7040.

MARCH IS WOMEN’S HISTORY MONTH

EXHIBIT: WOMEN WHO CHANGED MARITIME HISTORY
Daily, throughout March. In the Visitor Center, 9:30AM TO 5PM. Free.
View a photo exhibition illustrating the often overlooked impact women have had on maritime history.

SUFFRAGETTE MARCH AND LADIES SALON
Saturday, March 9, 10AM–4PM. In the Ark houseboat and on Hyde Street Pier. Free.
Turn back the clock to 1901 and experience a costumed living history reenactment of a suffragette march. At 2PM, join a salon of Victorian women as they discuss the issues of the day. Come voice your opinion! ☺

HEROINES AT SEA: ADVENTURES OF SAILING WIVES
Saturdays, March 16 and 30, 3-3:30PM. Aboard Balclutha at Hyde Street Pier. Vessel admission (under 16 free). ☺
See description under NEW PROGRAM.

MAY IS ASIAN PACIFIC AMERICAN HERITAGE MONTH

CHINESE CANNERY WORKERS
Saturdays, May 11 and 18, 3:00PM. Meet on Balclutha’s main deck at Hyde Street Pier. Vessel admission (under 16 free).
On this walking tour of *Balclutha* you will learn about the lives and cultural contributions of Chinese laborers who sailed from San Francisco to Alaska for the great salmon runs. ☺

MUSIC

CHANTEY SING
Saturdays, March 2, April 6, & May 4, 8PM-MIDNIGHT. Free. Aboard a historic vessel at Hyde Street Pier. Reservations are required: call 415-561-7171 or peter_kasin@nps.gov.
Sing traditional working songs aboard a historic floating vessel. Bring a mug for hot cider served from the ship’s galley.

BEGINNING CHANTEY SINGING: A WORKSHOP
Saturday, March 30, 2-3:30PM. Aboard Balclutha at Hyde Street Pier. Fee Free Day. Reservations required: call 415-561-7171 or peter_kasin@nps.gov.
If you want to learn about sea chanteys and start singing them, then this workshop is for you! Learning songs by ear emphasized but lyric sheets will be provided. ☺

LIVING HISTORY DOGWATCH: MUSIC OF THE SEA FOR KIDS
Saturdays, March 9, April 13 and May 11, 2-3PM. Aboard Balclutha at Hyde Street Pier. Vessel admission (under 16 free).
Join the park’s living history players where history comes alive for kids in this re-creation of a sailors’ *dogwatch*, when sailors sang together during their rare leisure time aboard ship. For kids of all ages. ☺

COMING THIS SEPTEMBER: SEA MUSIC FESTIVAL ON THE PIER
Saturday, September 14. On Hyde Street Pier and aboard the historic ships. For information call, 415-561-7171.
Music, workshops, shipboard demos. Come sing your favorite sea chantey.

SF MARITIME CELEBRATES 25 YEARS: 1988-2013

On June 27th this year, San Francisco Maritime National Historical Park turns twenty-five, and it’s going to be busy birthday year!

Look for a major new exhibit to open in the Maritime Museum on July 3, an especially festive Sea Music Festival this summer, live theater on Hyde Street Pier, and special programs and tours. Keep a weather eye on our website for news about ways you can help us celebrate the big 25!

COSTUMED LIVING HISTORY

A DAY IN THE LIFE: 1901
Saturdays, March 9, April 13, 10AM-4PM, and May 11, 11AM-5PM. Aboard the historic vessels at Hyde Street Pier. Vessel admission (under 16 free). Reservations are required, please call 415-447-5000.
Step into 1901 as you board the historic ships and meet the sailors and citizens of SF’s waterfront. Join Mrs. Galan on the *Ark* houseboat for a 2:00pm *afternoon tea* to discuss the issues of the day. Enjoy singing along with sailors on *Balclutha* during the 2:00pm *dogwatch*. In March, take part in a suffragette march for women’s rights. In April, learn about maritime arts and crafts during *Make and Mend*. May’s special event is a reenactment of President McKinley’s visit to San Francisco in 1901. ☺

IN THE LIBRARY
These programs are held in the Maritime Library, Building E, Fort Mason Center. For reservations call 415-561-7040 or melani_van_petten@partner.nps.gov.

THE SS STEPHEN HOPKINS
Tuesday, March 12, 6PM. Donation: \$5 (general public); \$4 (Library Friends and SFMNPA members).
In 1942 the Richmond-built Liberty ship S.S. *Stephen Hopkins* sank a German Navy warship, becoming the only U.S. surface ship to do so during WW II. Join historian Steve Gilford for the tale of this remarkable battle. Becky Ellison will also accept the Kortum Award for Maritime History for the manuscript, *Forty Years Master*, by Captain Daniel O. Killman, edited by Dr. John Lyman with contributions by Capt. Harold D. Huycke, Jr. and Rebecca Huycke Ellison.

THE SHIPS AND VOYAGES OF CAPTAIN W. H. MARSTON
Tuesday, April 9, 6PM. Donation: \$5 (general public); \$4 (Library Friends and SFMNPA members).
The career of Captain William H. Marston spanned more than 30 years of the Age of Sail, during which time he commanded many ships sailing in and out of his home port of San Francisco. His great-grandson, Phil Gale, will talk about the life and adventures of this mariner from the days of the tall ships.

AN INTRODUCTION TO SHIP MODELING
Tuesday, May 14, 6PM. Donation: \$5 (general public); \$4 (Library Friends and SFMNPA members).
You’ve seen them gracing museums and maritime displays—now join Clare Hess of the Hyde Street Pier Model Shipwrights to learn what goes into the building of ship models and about the hobby today.

Today In The Park

For more information about these programs, please turn to page three.

MARCH

- 1 Guided Tour of *Balclutha* (daily)
- 2 Historic Waterfront Walking Tour (every Saturday)
- Maritime Story Time
- Critters at Sea
- Chantey Sing
- 3 Historic Waterfront Walking Tour (every Sunday)
- Hercules* Engine Room Tour
- 5 USS *Pampanito* Tour
- 7 Animals of Hyde Street Pier
- 8 Animals of Hyde Street Pier
- 9 Birds of The Bay
- Costumed Living History On The Pier

- Music of the Sea for Kids
- 12 Lecture in the Library
- 16 Heroines at Sea
- 17 Animals of Hyde Street Pier
- 20 **Donkey Steam Engine Demo**
- 21 USS *Pampanito* Tour
- 22 Animals of Hyde Street Pier
- 23 Animals of Hyde Street Pier
- 30 Beginning Chantey Singing Workshop
- Crafts For Kids
- Heroines at Sea

APRIL

- 1 Guided Tour of *Balclutha* (daily)
- 2 USS *Pampanito* Tour
- 3 Animals of Hyde Street Pier
- 5 Animals of Hyde Street Pier
- 6 Historic Waterfront Walking Tour (every Saturday)

- Chantey Sing
- 7 Historic Waterfront Walking Tour (every Sunday)
- Hercules* Engine Room Tour
- 9 Lecture in the Library
- 13 Costumed Living History On The Pier
- Music of the Sea for Kids
- 17 **Donkey Steam Engine Demo**
- 18 Animals of Hyde Street Pier
- USS *Pampanito* Tour
- 20 Birds of the Bay
- 22-26 National Park Week: Fee Free All Week
- 27 Crafts For Kids

MAY

- 1 Guided Tour of *Balclutha* (daily)
- Animals of Hyde Street Pier
- 2 Animals of Hyde Street Pier

- 3 Animals of Hyde Street Pier
- 4 Historic Waterfront Walking Tour (every Saturday)
- Birds of The Bay
- Chantey Sing
- 5 Historic Waterfront Walking Tour (every Sunday)
- Hercules* Engine Room Tour
- 7 USS *Pampanito* Tour
- 11 Costumed Living History On The Pier
- Music of the Sea for Kids
- Chinese Cannery Workers
- 14 Lecture in the Library
- 15 **Donkey Steam Engine Demo**
- 18 Chinese Cannery Workers
- 23 USS *Pampanito* Tour
- 25 Crafts For Kids
- 29,30,31 Animals of Hyde Street Pier

Page For Kids By Kristal Ip, Park Guide

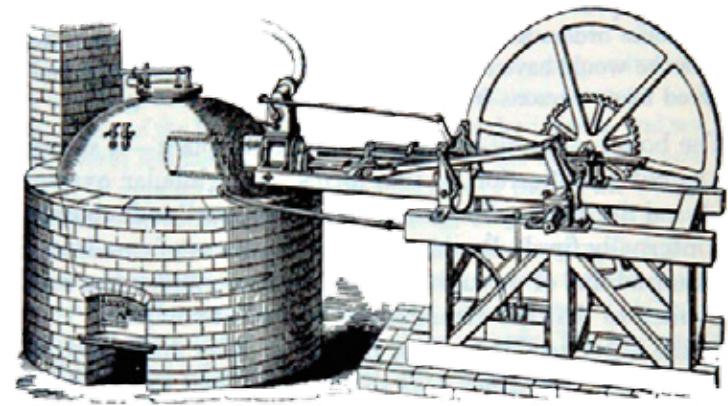
The wonderful world of STEAM

Fill a tea kettle with water, place it on a hot stove, and after a few minutes, what do you hear?

If you guessed whistle, or made the sound “eeeeee!” you would be right!

What’s going on here? Well, the water in the kettle boils and creates steam (AKA the gaseous state of water), which then pushes up the little cover over the spout and causes that whistling sound. The ability of steam to power machines was one of the most important seeds that started the Industrial Revolution over 300 years ago and changed civilization.

Imagine that the spout cover on your tea kettle is instead a rod. Imagine that when your water boils, the steam that rises pushes on that rod and makes it move up. This is how you can begin to understand how steam can make a machine move.

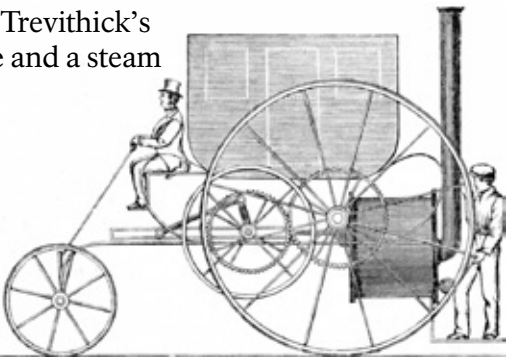
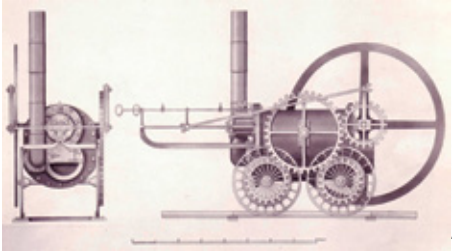


Trevithick’s high-pressure engine and boiler, 1803.

Here is an illustration showing a steam engine designed by Richard Trevithick, who was a successful British inventor and engineer.

The round brick structure on the left is where water was heated and boiled, probably by a coal or wood fire. The dome on the top is where steam collected. As the steam built up, it got pushed to the right, where it drove the parts of the machine.

Here are two more pictures of Trevithick’s inventions, a steam locomotive and a steam carriage.



Steam power was really important for maritime uses! Look around Hyde Street Pier and find the three ships that used steam power. What were they used for? Which ship is the biggest and how did it move?

Steam is also very useful in our daily lives. Unscramble these words to find out how!

OKOC _____ your vegetables!
ANLEC _____ your carpets!
ROIN _____ your clothes!
Relax with a steam ATBH _____ !
Come by the shipwright shop, you might see someone GENNDBI _____ wood!



Try the STEAMY word search

- BOAT
- ENGINE
- FIRE
- MACHINE
- PRESSURE
- WATER
- COAL
- EUREKA
- INDUSTRIAL
- PISTON
- TECHNOLOGY
- WOOD
- BOILER
- EPPLETONHALL
- HERCULES
- MARITIME
- STEAM
- WHISTLE

