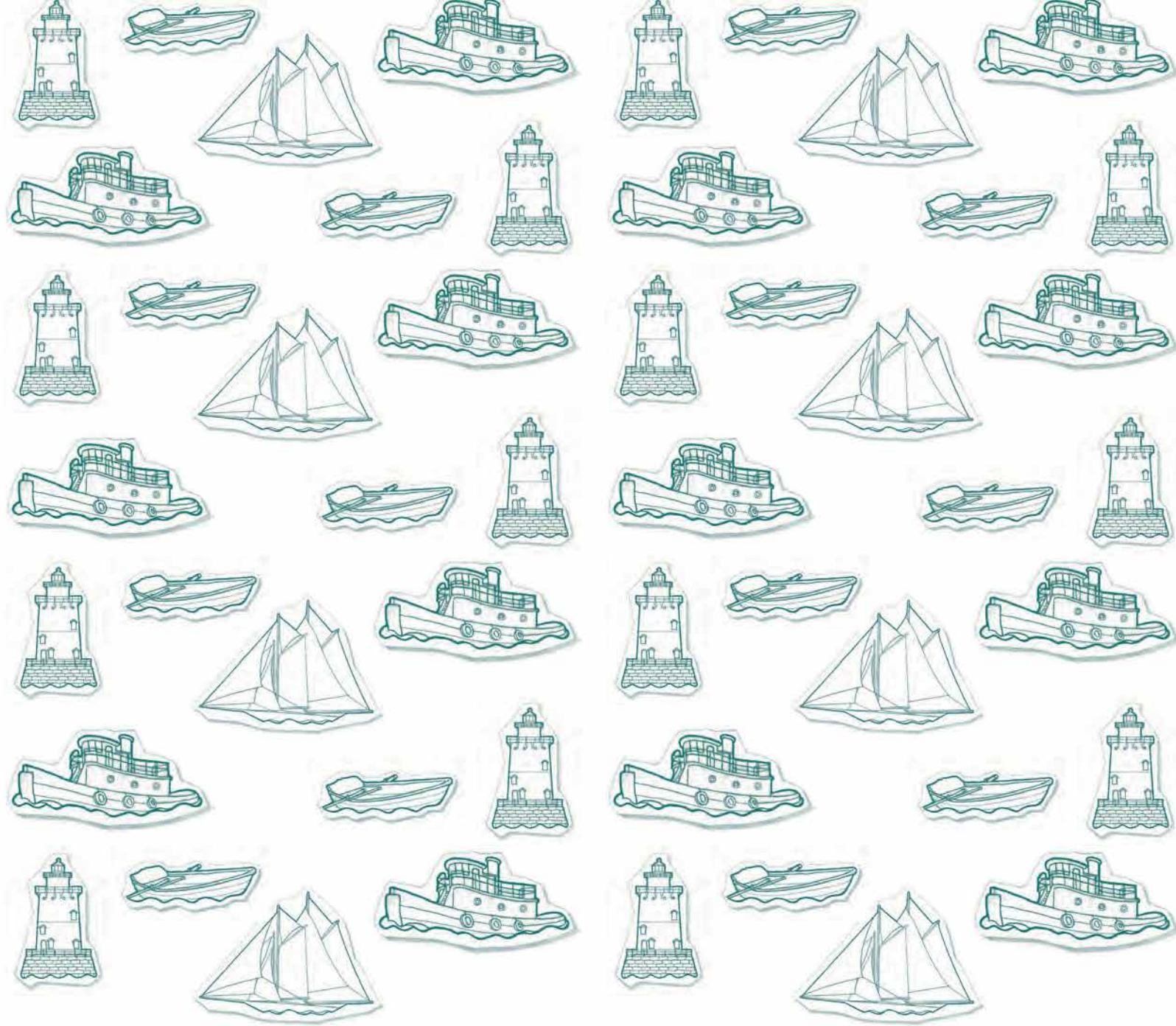


KATE'S HOME IN THE HARBOR

A Robbins Reef Lighthouse Workbook

by Dawn Daniels

with illustrations by Gabriela Handal



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The Noble Maritime Collection



Staten Island, NY, *Publisher*

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Front and inside covers: Drawings by Gabriela Handal

Back cover: The *Erin Miller* of Miller's Launch, Inc., Staten Island, New York, approaching Robbins Reef Lighthouse; photograph by Dawn Daniels

Note to the reader: If you see a word in **boldface** type, you can look up its definition in the Maritime Vocabulary Words section, which begins on page 34.

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Welcome to Robbins Reef in New York Harbor



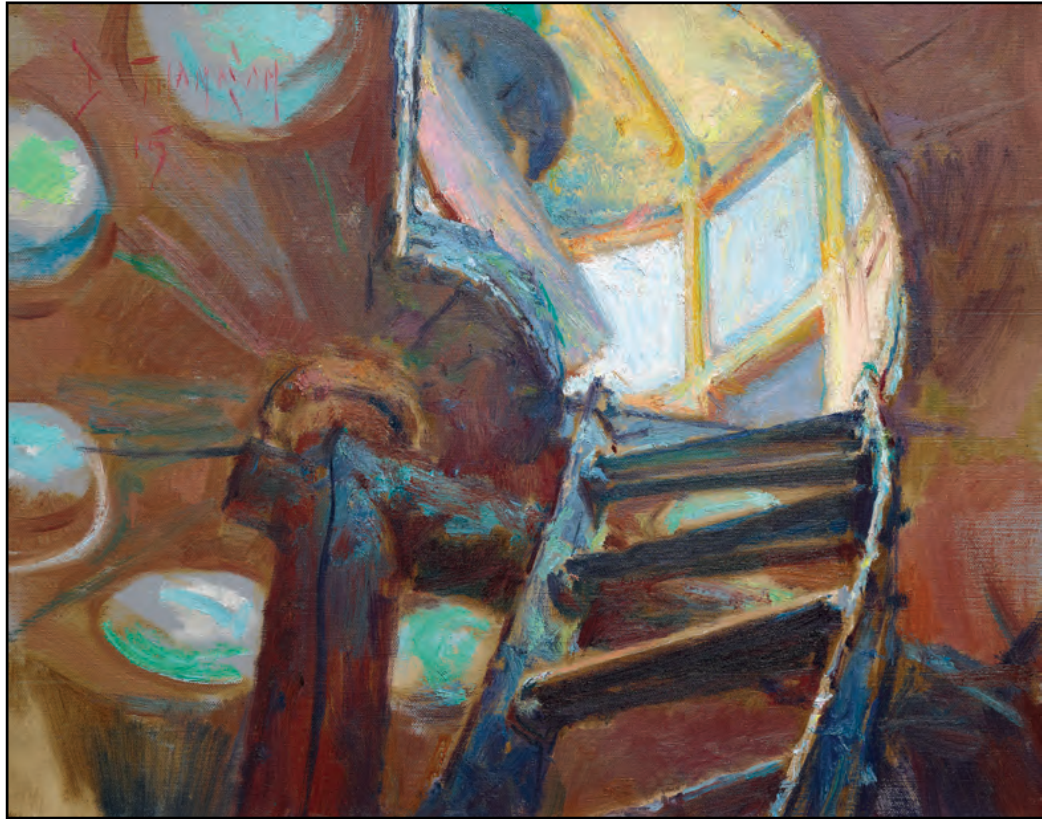
Can you find the Statue of Liberty in this picture?
How about the Staten Island Ferry?

What is a Lighthouse?

A lighthouse is a tower with a bright light on top called a **beacon**. The light is inside a **lens** that magnifies it and makes it visible from miles away. The lens (right) is a big lampshade with rings of glass, and is designed to make the lamp inside it glow brighter. Without the lens, rays of light would scatter in all directions. The specially cut rings are like little steps that bend and direct the light rays into one strong beam of light that shines out over the dark sea. Sailors rely on lighthouses to mark dangerous rocky areas, called **reefs**, and to help guide their ships safely into the **harbor**.



Robbins Reef is a lighthouse in Upper New York Bay, about one mile away from Staten Island's north shore. You can see it when you are at the waterfront on Richmond Terrace, and you pass it when you ride the Staten Island Ferry. When you are riding the ferry to Manhattan, Robbins Reef Lighthouse is on the **port** (left) side of the boat, the same side as the Statue of Liberty.



This painting by Dan Thompson is called *Robbins Eye*. It shows the ladder leading up to the lantern gallery, where the light is located. Why do you think Dan named his painting *Robbins Eye*?

Look Inside

As you ascend the stairs of a lighthouse you notice that the rooms are not square. Most lighthouses have a conical shape, like an upside down ice cream cone. They are wide at the bottom and narrow at the top. Other lighthouses are cylindrical, like a very wide pipe. You have to climb up a winding staircase to get to the light at the top of the tower. Some lighthouses are tall with many steps. These are built on flat land. Short lighthouses, like Robbins Reef, are called **sparkplug lighthouses** and are built on rocky surfaces.



Try This: The rooms inside a lighthouse are round like a big cup. Look inside a paper cup and imagine it is a room inside your lighthouse. You are the keeper, and you are planning to decorate. How would you arrange your furniture and pictures in a round room?



These photographs show the inside of Robbins Reef Lighthouse in 1909, when keeper Kate Walker lived there with her family. The top is her sitting room and the bottom is her bedroom.

Keeper of the Light: Kate Walker & Her Family



Above is a portrait of Kate Walker from the late 1800s. To the left is her son Jacob when he was in his late 20s, and to the right is her daughter Mae when she was in her late teens.

Robbins Reef Lighthouse has protected sailors from danger and helped guide their journeys for nearly two centuries. Aside from being a navigational landmark, the lighthouse was also a comfortable home. Kate Walker was the lighthouse keeper at Robbins Reef for 33 years.

Kate moved to America from Germany with her young son Jacob and got a job as a cook in Sandy Hook, New Jersey. The town overlooks the water and marks the spot where ships enter the southern end of New York Bay. At the water's edge is a tall lighthouse. Its **daymark** is white with a red roof and lantern gallery. Like a stop sign, it is shaped like an octagon. Its **night signature** is a strong white beam that shines continuously overnight. This is the point where sailors leave behind the dark Atlantic Ocean, and enter New York through the Jersey Shore. In 1883, a captain named John Walker was its keeper. He met Kate and gave her English lessons. Kate and Captain Walker got married the next year, and moved into the lighthouse. Since the Sandy Hook Lighthouse is surrounded by trees and grass, Kate felt at home. She loved gardening and making flowers grow.

Identify and Match: These photographs show Kate Walker working, writing, and reading at Robbins Reef in 1910. Use clues in each picture to figure out where she is in the lighthouse. Write the number of the picture next to the level on the opposite page. The answers below will tell you if you matched them correctly.



1



3



2



4



Answers: 1 Foundation 2 Promenade Deck 3 Sitting Room 4 Kitchen

Anatomy of Robbins Reef Lighthouse





L.F. Tantillo painted *Kate's Light* in 2009. It shows Robbins Reef Lighthouse around 1910. The large steamship is the *Gardenia*. It was called a **buoy** tender because it placed and maintained navigational markers called buoys around the harbor. In this picture the *Gardenia's* crew is placing the buoy in the water with a crane.

A Century of Ships

Many boats and ships have passed by Robbins Reef Lighthouse since it was built in 1883. In those days lighthouse keepers used small, flat-bottomed boats called dories to travel to and from the lighthouse. Like a rowboat and a canoe, a **dory** is driven by muscle power. With strong arms, the keeper pulled the boat along through the water using oars or a paddle.

Before the turn of the twentieth century, sailors used schooners to deliver food, building materials, and coal from one **port** to another. They were like large trucks that traveled on water instead of land. A schooner is a sailing **vessel** powered by the wind. Pushing fiercely on the large sails, the wind moves them across the sea. Then and now, the light at Robbins Reef warns sailors about the location of dangerous rocks hidden in darkness and fog.

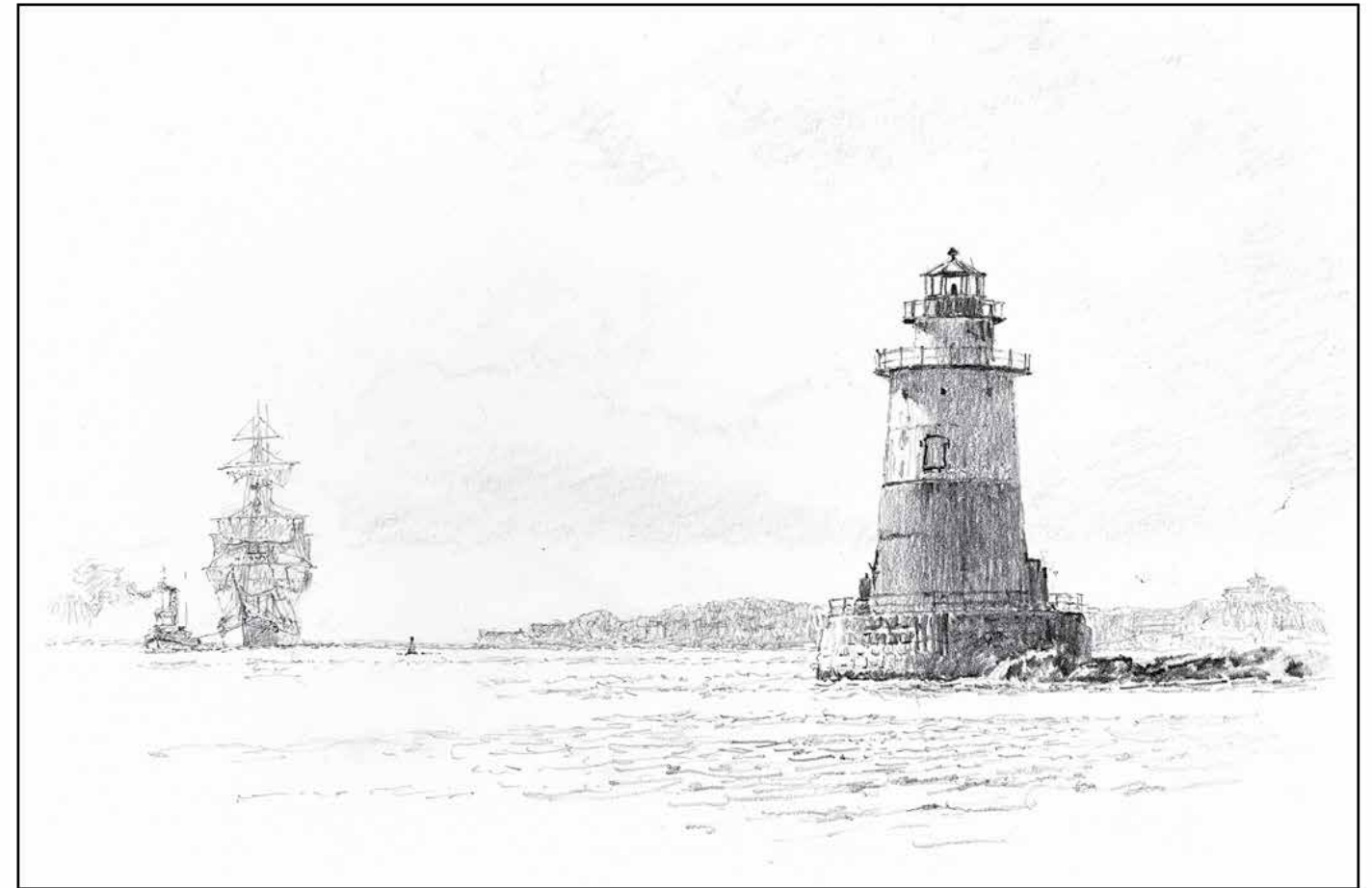
In 1807, an engineer named Robert Fulton invented a ship that used steam instead of wind to propel it through harbors and rivers. Sailors used an onboard boiler to transform water into steam and filter it through pipes that moved the propellers. Years later, the first ferries and tugboats that operated in New York

Harbor ran on steam power. Later, ships with engines powered by diesel fuel replaced most vessels powered by wind and steam.

Today, modern containerships and tankers enter and leave New York Harbor through the Kill Van Kull. The word "kill" in Dutch means **channel** or river. Small tugboats help large ships maneuver through the narrow channel and guide them safely out to sea. For more than a century, the light at Robbins Reef has served as a welcome and a farewell to sailors on every kind of ship.



Bill Behnken drew this with colored pencils on black paper from the Staten Island Ferry. He named it *Patient Vigil* as a reference to the lighthouse's job watching over the Harbor. Robbins Reef is to the left, and a modern containership is to the right, with the Statue of Liberty in the distance.



Artist John Stobart did not add any color to this pencil drawing called *Kate Meets the Morning*, but you can!

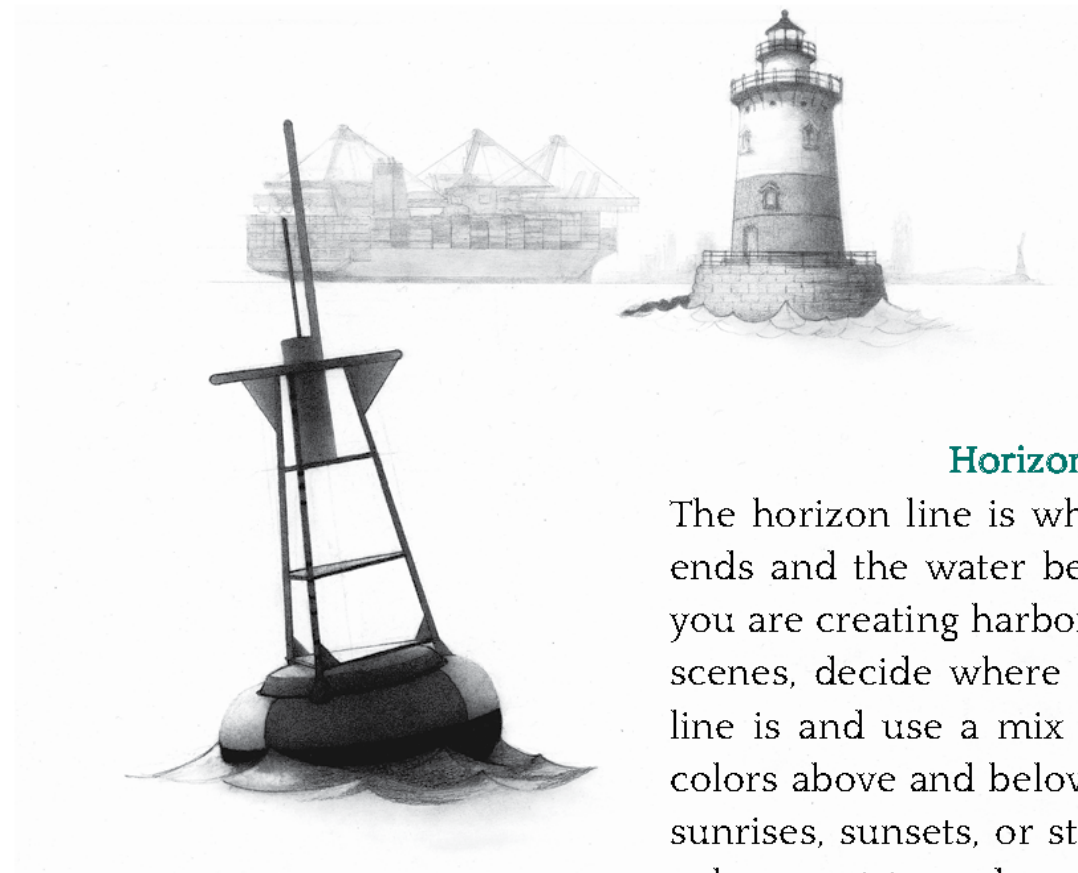


Notice and Compare 

Look carefully at these two pictures and compare Robbins Reef in the past and present. The picture above shows what the harbor looked like in 1885, and the one on the opposite page shows how it looks now. Notice at least 8 differences between them and make a list of what you find. Color the drawings too.

- | | |
|----------|----------|
| 1. _____ | 5. _____ |
| 2. _____ | 6. _____ |
| 3. _____ | 7. _____ |
| 4. _____ | 8. _____ |

Robbins Reef Lighthouse, Past & Present



Horizon Line 

The horizon line is where the sky ends and the water begins. When you are creating harbor and ocean scenes, decide where the horizon line is and use a mix of different colors above and below it to make sunrises, sunsets, or storms. Layer colors next to and on top of each other for realistic effects.



Edward Moran (1829-1901) painted this daytime picture of Sandy Hook Lighthouse in 1876. Kate Walker lived there with her husband John and son Jacob from 1884 to 1886, before the family moved to Robbins Reef.

Lighthouses Day & Night

When a new friend invites you to a play date, the first thing you do is ask for directions to their home. It's important to know where you are going and arrive on time. Your friend tells you to walk down the street until you see a coffee shop on the right, and then make a left and find their blue house on the right. Sailors also need directions to find where they are going. Just like your friend told you to look for the coffee shop to know you are near your destination, sailors look for landmarks such as lighthouses and **buoys** to help them know where to go. The locations of landmarks are listed on sailors' maps and charts. But if all lighthouses looked alike, sailors would be confused about where they are. That's why each one is unique, and the differences are described on navigation **charts**.

Daymark - A daymark is the description of a lighthouse in the daytime and lets the sailor know what shape the lighthouse is and how it's painted. Some have stripes, some have patterns, and others are one or two solid colors. Robbins Reef Lighthouse is shaped like a cone, and is painted solid white on top, brown on the bottom, and has a black roof. The Little Red Lighthouse by the George Washington Bridge is also shaped like a cone, but it's painted red. These descriptions are listed on sailors' charts to help them know where they are and where they are going.



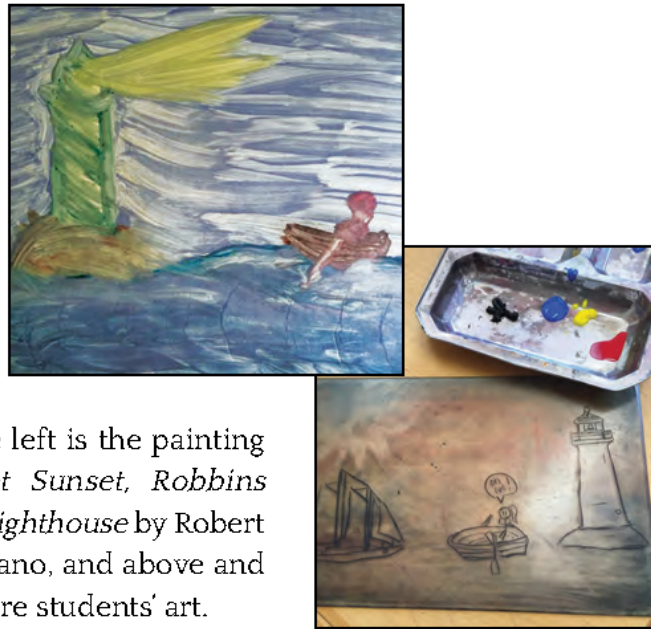
The first lighthouse built at Robbins Reef was made of granite blocks. In 1875 Edward Moran painted this picture of it at night, under a full moon, with fishermen in boats nearby. It is called *Robbins Reef Lighthouse, New York Bay*, and this hand-colored engraving made from the painting is in the collection of the Staten Island Museum.

Night Signature - At nighttime the sea is dark, and sailors cannot see the paint colors on lighthouses. That is when they depend on the beacon to guide them. Each lighthouse has a different light pattern at night called a night signal, light signature, or light **characteristic**. Some lights are steady and shine continuously, like a big flashlight. Others have a flash pattern. The color and pattern of the light help sailors to identify which lighthouse it is in the dark. Robbins Reef Lighthouse has a green light that flashes every six seconds, and can be seen for seven miles. If you are looking at it at night, try this: as soon as the light goes out, start counting 1, 2, 3, 4, 5, 6 FLASH! Imagine you are traveling in your boat on the dark sea. You left port many days before, and as nighttime approaches you feel lost. Suddenly, you see the flashing beam of a lighthouse. How would it make you feel?

Let's Navigate: Put small rocks inside a foil pan. Stack them up in an irregular pattern. Now cover the rocks with water, and add a few drops of dark blue food coloring. Navigate a toy boat around the rocks, being careful not to hit them. This is difficult because the water is dark. This would be a good place to build a lighthouse, so that sailors know this is a dangerous area to avoid.

Let's Make a Maritime Scene

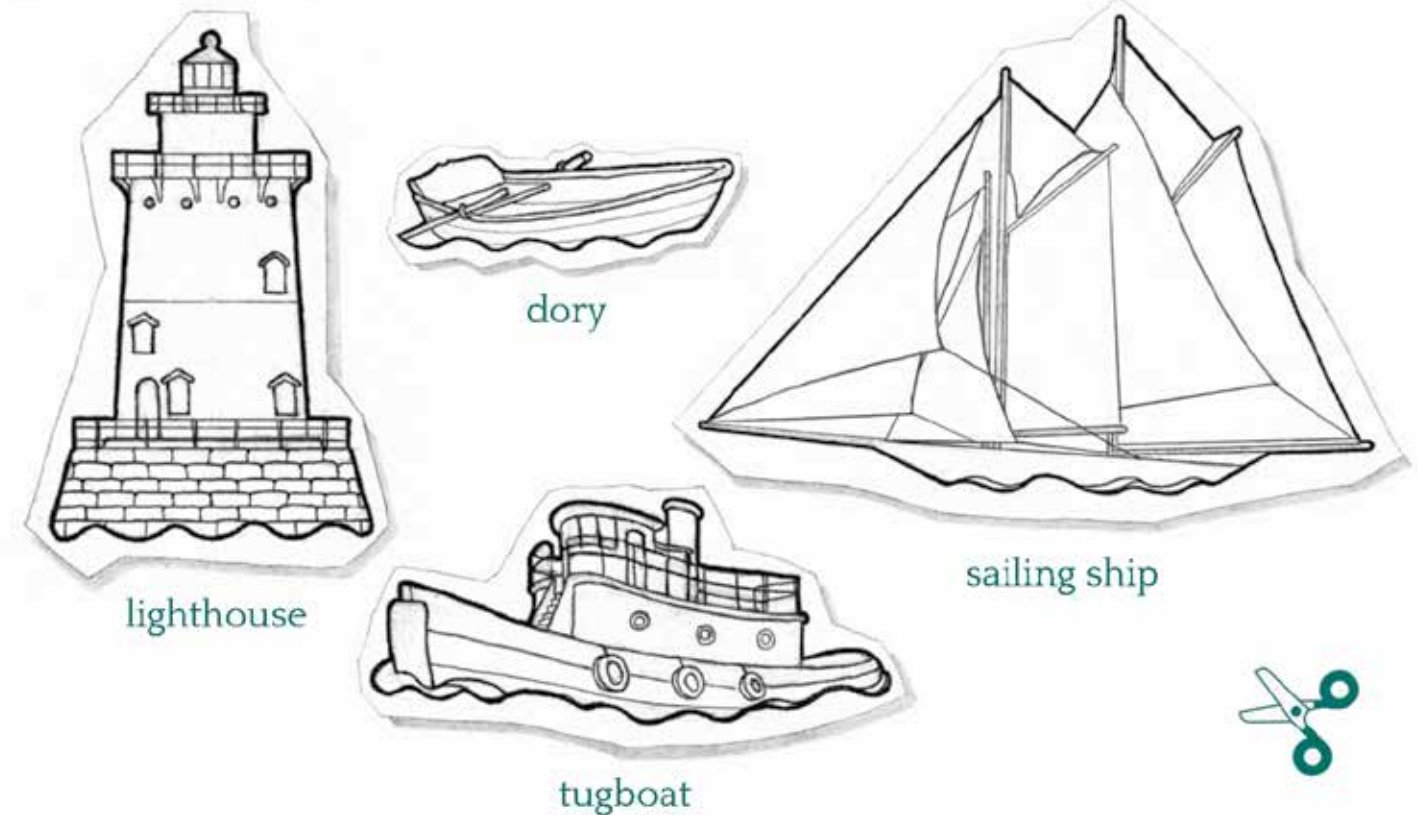
The word **maritime** means anything having to do with boats, lighthouses, navigation, the ocean, and sailors. Create a maritime scene of your own using crayons or paint. The subject of your art can be anything from a striped sailboat beneath an orange sunset to a pirate ship in the fog under a stormy sky. Use your imagination to make a picture of your own with your favorite colors and objects of the sea.



To the left is the painting *Scarlet Sunset, Robbins Reef Lighthouse* by Robert Padovano, and above and right are students' art.

Objects of the Sea

Use crayons or markers to color the objects that you like most on this page. Cut them out and use a glue stick to paste them into your maritime scene.





Perspective

Create your maritime scene on the opposite page.

Who are you in this picture?

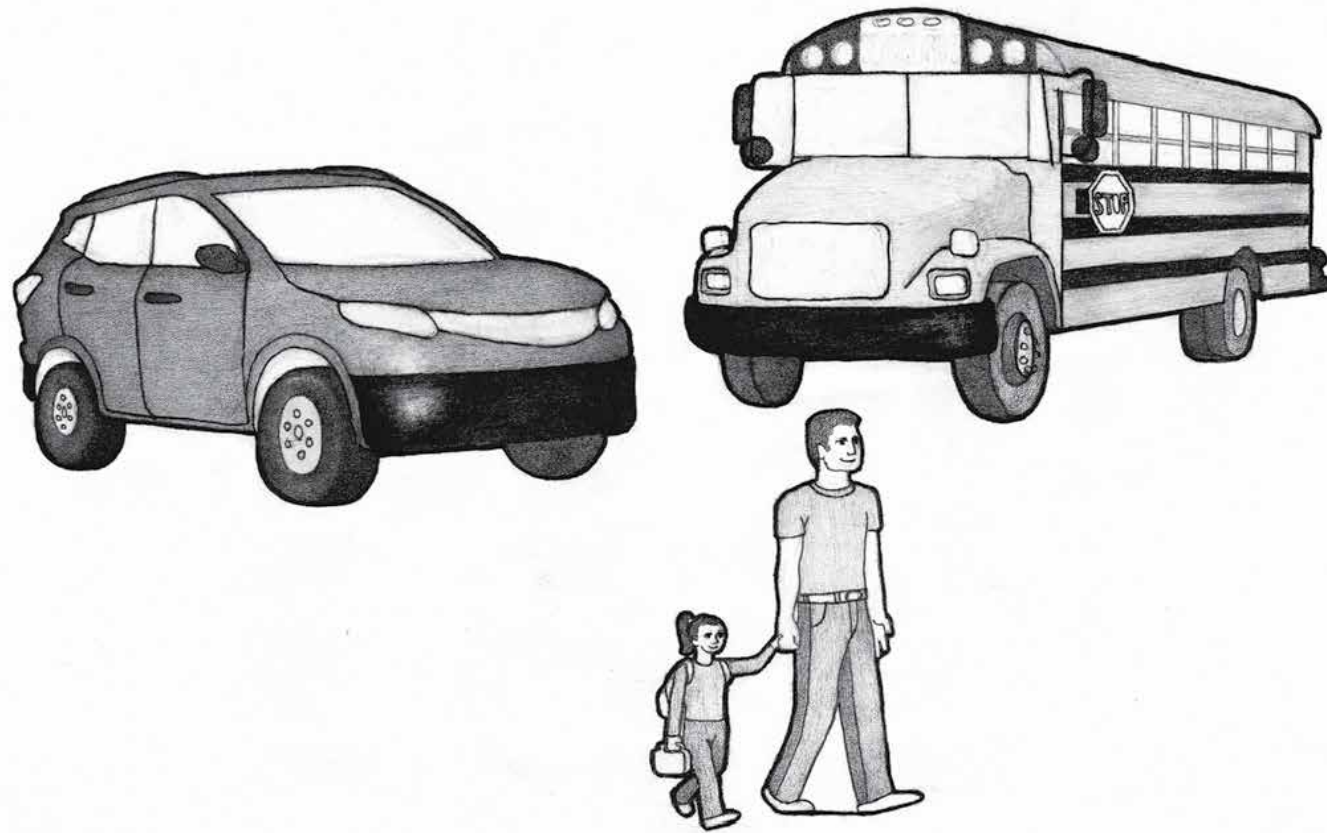
- Sailor
- Ship's Captain
- Lighthouse Keeper
- The Keeper's child or grandchild
- A seagull flying
- A fish under the water
- A seal on the rocks
- A stowaway
- A pirate
- A mermaid
- A dockworker

Someone else?



My Maritime Scene

How Do You Go to School?



Kate Walker's children Jacob and Mae lived at the lighthouse but went to school on Staten Island. Kate took them there in her dory and they would often stay with friends for a few days so that they wouldn't have to travel back and forth to the lighthouse in bad weather. Look at the pictures on the opposite page and pick which one looks most like your daily routine. How do you get to school and what about the trip do you like and dislike the most? What do you see and hear along the way? Imagine what it would be like to go to school in a small boat. What do you think Jacob and Mae saw and heard on their way to school? What do you think it felt like in the rain and wintertime?



Use crayons or colored pencils to color in the way you get to school, or, if you commute another way, draw it here.



This is a photograph of Kate's son Jacob as an adult in the dory that he used to take his children back and forth to school on Staten Island.

Maritime Vocabulary Words

Beacon: A tower or a buoy with a light to aid with navigation.

Buoy: An anchored, floating structure that marks a channel or other points in the water.

Caisson: Some lighthouses are built on a foundation that surrounds a void called a caisson. It is a hollow tube made of heavy iron plates.

Catwalk: A narrow outdoor walkway surrounding the lantern and watch galleries of a lighthouse.

Cargo: Goods such as food, electronics, building materials, oil, cars, clothing, and toys that ships deliver from one port to another.

Channel: A clear route in a harbor or river that is deep enough for a ship to travel through.

Characteristic: The lighthouse's identifying features such as its paint colors, flash pattern, and size.

Chart: A mariners' map of the water; it shows depth, buoys, current, danger areas, land, and lighthouses.

Coast Guard: A branch of the armed forces responsible for protection of life and property at sea.

Daymark: The paint colors and patterns, such as stripes, on the outside of a lighthouse that make it unique. Mariners use daymarks and night signals as landmarks to help identify where they are.

Diffuse: Scatter; blur.

Dory: A small boat with a flat bottom and high sides that is usually propelled by oars.

Draft: The depth a boat needs to float freely, a measure from the waterline to the vessel's bottom.

Foghorn: A type of fog signal.

Fog Signal: A device such as a horn, siren, whistle, bell, or canon which makes a loud noise as an aid to navigation in dense fog. When it's too foggy to see the light, sailors rely on fog signals to know where dangerous areas are.

Foundation: The concrete structure surrounding the caisson of a sparkplug lighthouse.

Fresnel, Augustine-Jean (Fray-nel): The French engineer who developed a lens in 1822 that is used to this day in lighthouses all over the world. Fresnel was fascinated with light and believed there had to be a way to stop it from diffusing. He experimented with different shapes and thicknesses of glass to refract light and make it glow brighter. The lens he developed is named after him.

Fresnel Lens: The large glass dome developed by Augustine-Jean Fresnel that encloses and magnifies the light. The lens is designed to refract scattered light rays into one bright beam, making it visible and more intense from longer distances. Fresnel lenses come in six different sizes, called orders. A first-order lens is the biggest and brightest; a sixth-order lens is the smallest. The first lighthouse at Robbins Reef was a granite structure built in 1839, and in 1855 a fourth-order Fresnel Lens was installed there.

GPS: Global Positioning System (GPS) is a navigation system made up of 24 satellites that orbit the earth. The satellites communicate with receiving devices on vessels that guide mariners in the direction they need to go.

Harbor: A body of water near a port where ships take on or unload cargo and passengers.

Kerosene: A light fuel oil made from petroleum. Kate Walker lived at Robbins Reef before the light was powered by solar energy, and she burned kerosene to keep the light flashing.

Lantern: Light.

Lantern Gallery: The glassed-in room containing the light and lens at the top of the tower.

Lens: See Fresnel Lens.

Lightship: An anchored ship with a beacon light to warn or guide ships at sea.

Logbook: The official diary that the lighthouse keeper uses to record events such as storms, shipwrecks, deliveries, and rescues.

Mariner: A sailor.

Navigation: Directing the course a vessel takes from one port to another.

Night Signature: The flash pattern and color of the light at the top of the lighthouse that helps mariners identify danger zones and determine their location at night.

Port: The left-hand side of a vessel; also, a town or city with a harbor where ships load and unload cargo.

Prism: A see-through piece of glass that refracts light.

Reef: A ridge of jagged rock, coral, or sand just above or below the surface of the water.

Refract: To bend or slant rays of light in one direction; the opposite of diffuse.

Shoal: An area of shallow water.

Skeletal Tower: A lighthouse that has an open metal frame instead of a brick or stone structure.

Solar energy: The process of using the sun's light and heat to generate electricity.

Sparkplug Lighthouse: A short, off-shore lighthouse shaped like a spark plug and built on a foundation. Also known as a bug light.

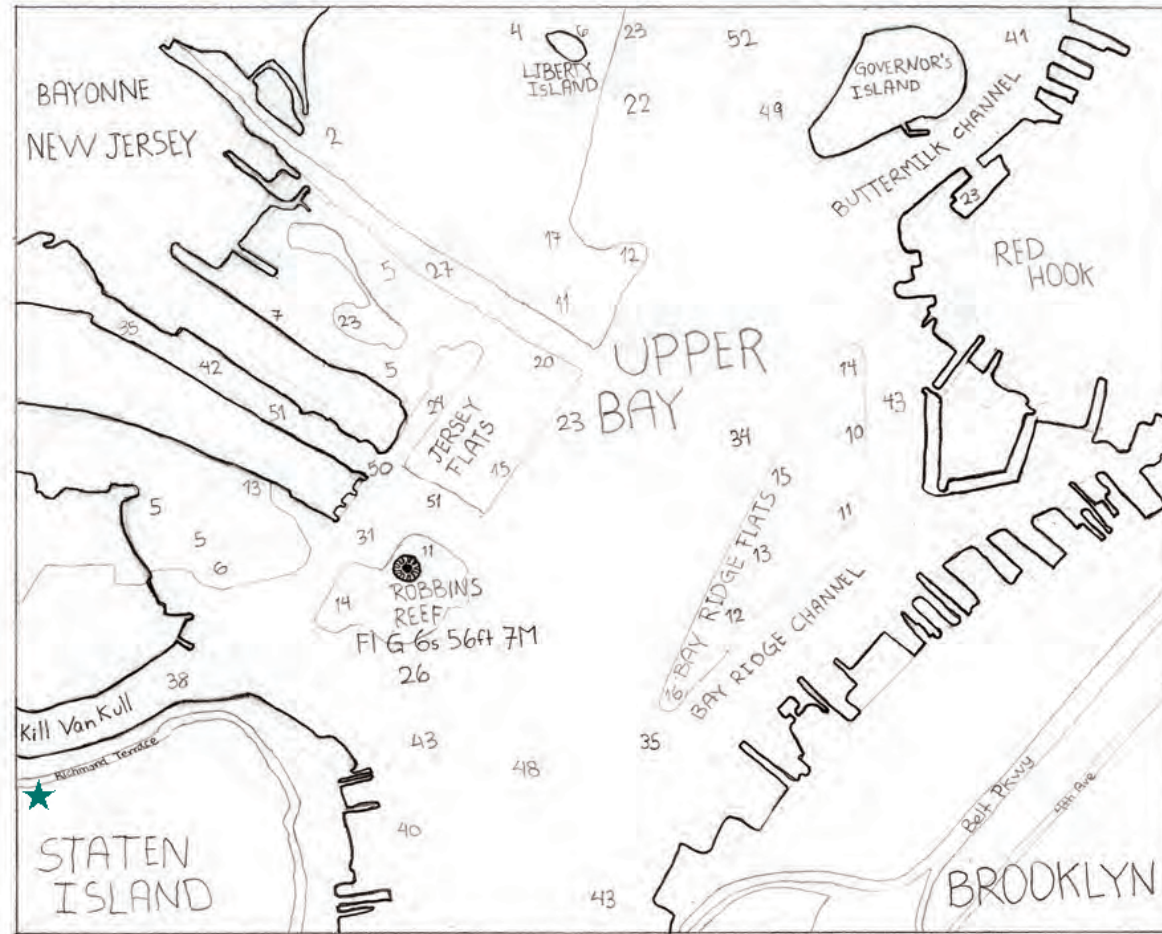
Starboard: The right-hand side of a vessel.

Vessel: A floating craft larger than a rowboat, such as a ship, boat, barge, ferry, or tugboat.

Void: An empty hole.

Watch Gallery: A room directly below the lantern gallery where the keeper prepares the lantern for the night and keeps watch. At Robbins Reef it is surrounded by a balcony with a panoramic view of the harbor.

Water Depth: When you look at the navigation chart you will see many numbers. These let the mariner know how deep the water is at that location.

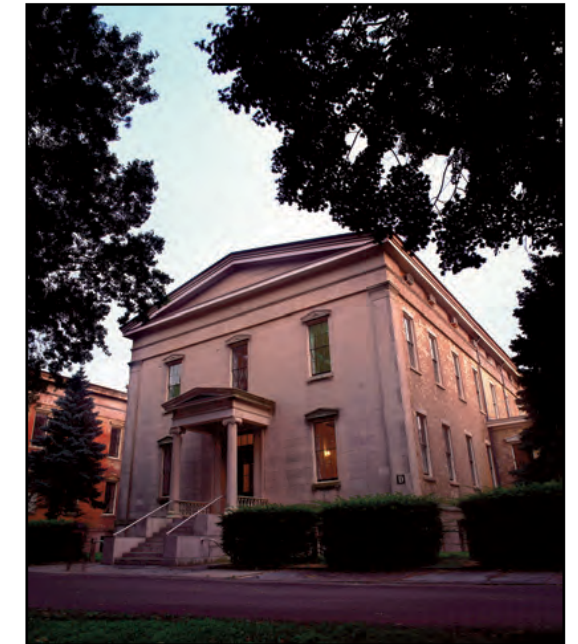


This is a mariner's chart. A green star on the lower left marks the Noble Maritime Collection's location. Robbins Reef, in the center of the Bay, is labeled. FL G 6s means the light is green and flashes every six seconds. The lighthouse is 56 feet tall and the light can be seen for seven miles.

The Noble Maritime Collection at Historic Sailors' Snug Harbor

The Noble Maritime Collection is a museum at Snug Harbor, the former home for retired sailors. In 2010 the museum became the steward of Robbins Reef Lighthouse. The staff and volunteers are lovingly restoring it to look like it did when Kate Walker lived there with her family. Someday, when the work is finished, you will be able to visit Robbins Reef. Meanwhile, visit the museum to see our exhibition, *Robbins Reef Lighthouse: A Home in the Harbor*.

The museum offers a variety of education programs for schoolchildren, including the program on which this workbook is based, *Kate's Home in Harbor*.



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Photographers

Page 6: Peter Yuschak

Page 7: Peter Yuschak

Pages 9, 10, 12, 14, and 33: Photographers unknown; Walker Family Collection

Page 26: Dawn Daniels

Page 39: Michael Falco

Artists

Pages 1, 5, 15, 20, 21, 27, 32, and 38: Gabriela Handal, drawings, pencil on paper, 2016/2017

Page 8: Dan Thompson, *Robbins Eye*, oil on canvas, 2015

Page 16: L.F. Tantillo, *Kate's Light*, color study, oil on panel, 2009

Page 18: William Behnken, N.A., *Patient Vigil*, colored pencil on black paper, 2015

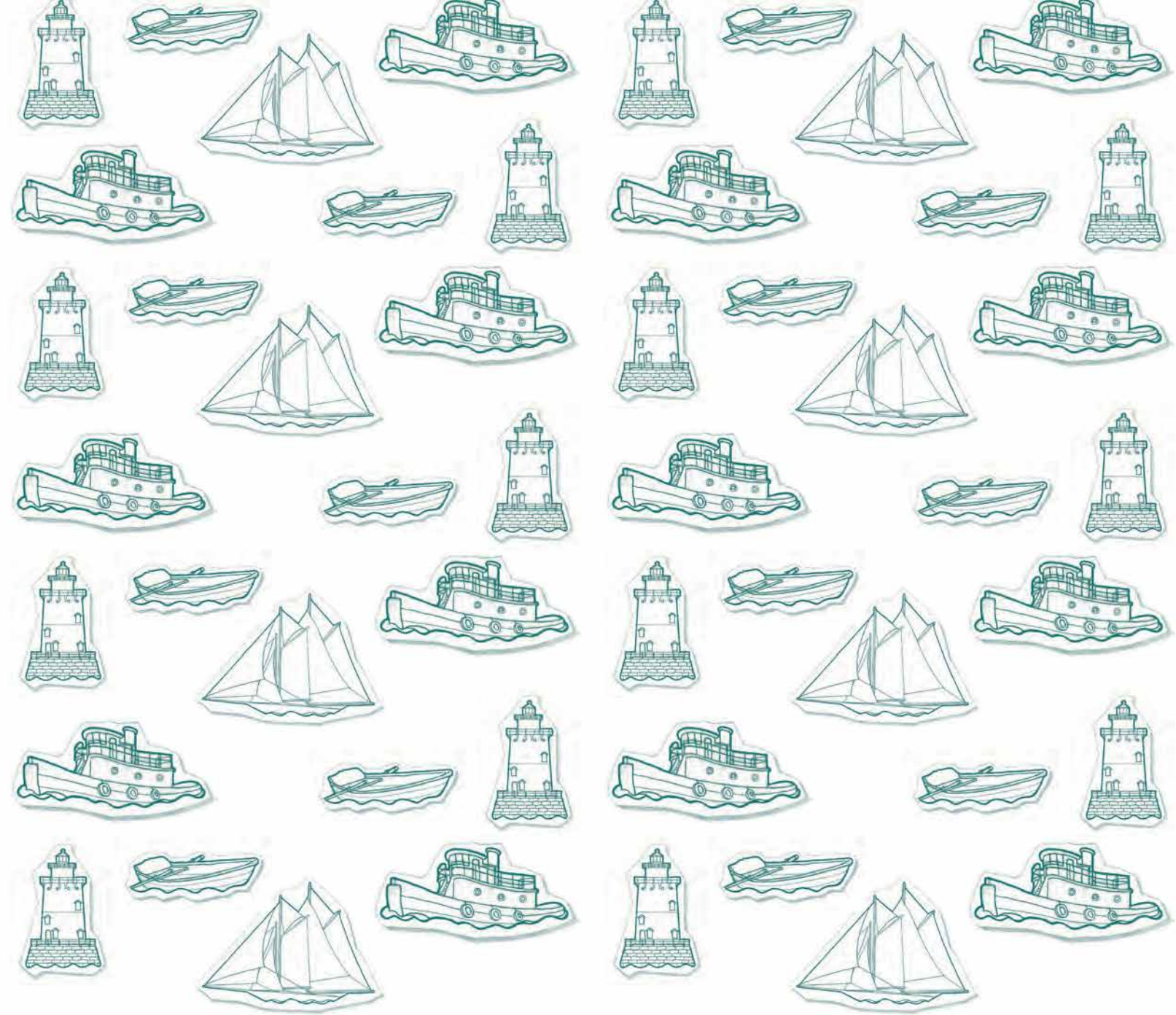
Page 19: John Stobart, R.A., *Kate Meets the Morning*, pencil on paper, 2015

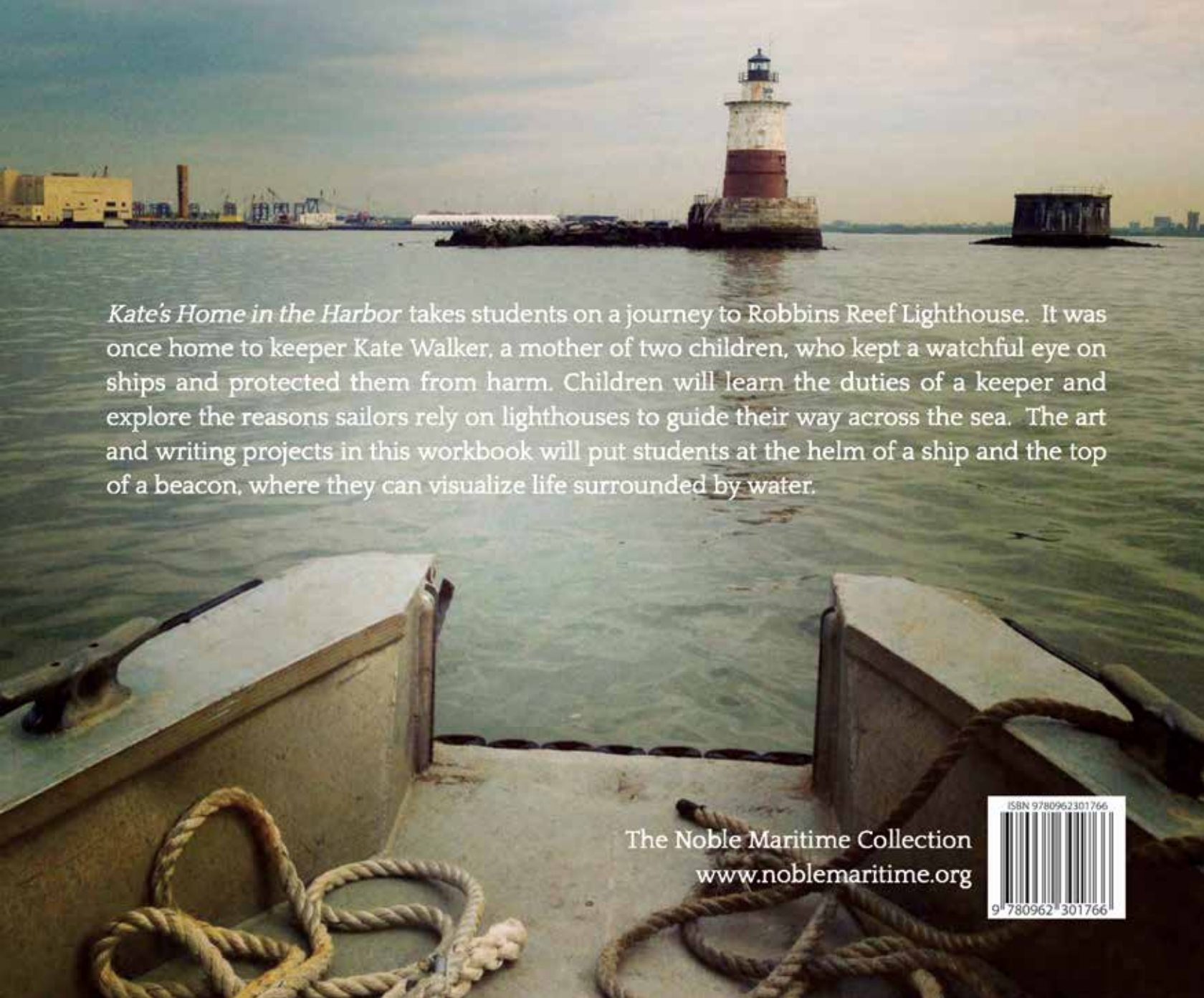
Page 22: Edward Moran (1829-1901), *Sandy Hook Lighthouse*, oil on canvas, 1876

Page 24: Hand-colored engraving by Robert Hinshelwood, c. 1875; based on the original oil painting by Edward Moran (1829-1901), *Robbins Reef Lighthouse, New York Bay*. Collection of the Staten Island Museum

Page 26: Robert Padovano, *Scarlet Sunset, Robbins Reef Lighthouse*, acrylic on canvas, 2015

All of the small green drawings are courtesy of openclipart.org.





Kate's Home in the Harbor takes students on a journey to Robbins Reef Lighthouse. It was once home to keeper Kate Walker, a mother of two children, who kept a watchful eye on ships and protected them from harm. Children will learn the duties of a keeper and explore the reasons sailors rely on lighthouses to guide their way across the sea. The art and writing projects in this workbook will put students at the helm of a ship and the top of a beacon, where they can visualize life surrounded by water.

The Noble Maritime Collection
www.noblemaritime.org

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