

Carry On, Mr. Bowditch by
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Introducing *Carry On, Mr. Bowditch*

Have you ever been tempted to give up because a task was difficult or seemed just impossible to do? Instead of getting frustrated, think about the life of Nathaniel Bowditch, a famous nineteenth century mathematician and navigator. When he met an obstacle in his life, he learned to “sail by an ash breeze,” a shipping term that referred to using the oars for power when there was no wind to move the ship. For Nathaniel Bowditch this meant not allowing obstacles to keep him from pursuing his dreams.

Summary

Nathaniel Bowditch grew up in the shipping town of Salem, Massachusetts, in the late 1700’s. Even at a young age he had an extraordinary understanding of mathematics and dreamed of one day attending Harvard College. Good fortune, however, seemed to elude the Bowditch family. After the deaths of his mother and grandmother, his father had trouble providing for the family and rather than being able to continue his education, Nathaniel was indentured at the age of twelve as bookkeeper at a ship chandlery for nine years.

Instead of giving up on his dream of getting an education, Nathaniel turned every situation into a learning opportunity, writing down everything he learned in notebooks. He first inquired and learned all he could about shipping, the items sold in the chandlery, how sails were made, and how chaulking on a ship was done. Soon his curiosity extended to surveying, navigation, algebra, astronomy, Latin, and French.

Eventually his time of indenture was finished, and he was free to pursue his dreams. After a brief time working as a surveyor, Nathaniel decided to go to sea, working as a ship’s clerk and second mate. The ship was traveling to the Isle of Bourbon, also known as Reunion, off the east coast of Africa. Aboard ship he put his navigational knowledge to practical use and was soon teaching these skills to the other seamen. Often when he found an explanation that helped a man understand a skill, he would write it down in one of his notebooks so he would remember it. His mathematical calculations were so accurate that he found mistakes in the tables of Moore’s *Practical Navigator*, considered to be the

most accurate book of navigation available at that time.

Nathaniel's second voyage took him to Lisbon, Portugal, and on to Manila Harbor. Again, he taught navigation skills to the seamen, and to one man in particular, Lem Harvey, who became a lifelong friend. Nathaniel found that when the men realized they could learn, they had more pride in themselves and were a more cooperative crew.

Upon his return, Nathaniel married Elizabeth Boardman, a longtime friend. He was not married long before he took a voyage to Cadiz, Spain, and into the Mediterranean, to Alicante. However, before he returned, word came that his wife had died of consumption. Nathaniel found that keeping busy helped him deal with his grief, and he signed on for the position of supercargo with a ship headed for Batavia (now known as Djakarta, Indonesia) to buy coffee. When the ship arrived at Batavia, they found no coffee available to buy and traveled to Manila Harbor in the middle of monsoon season, an amazing feat of navigation. However, upon Nathaniel's return to Salem, he found that Lem Harvey's ship had sunk due to an error in Moore's navigation tables. Lem was believed drowned, however, he was later found to be alive. Then word came to him that his brothers, William and Hab, had died when their ships sunk, also due to errors in the navigation tables.

Nathaniel decided an accurate book on navigation and sailing needed to be written, and he was determined to write it. The book would contain three things: (1) correct navigation tables, (2) every sea term and maneuver would be explained in words that able seaman could understand, (3) mathematical tables that would allow any seaman to solve problems in navigation. He worked on his book day and night. The only interruptions he would tolerate were visits from Polly, Elizabeth's cousin, who he eventually married. Finally, his book, *New American Practical Navigator*, was finished. The book was immediately accepted in the United States and even in England.

Finally, Nathaniel Bowditch felt that in order for his book to be accepted by common seamen everywhere he must command his own ship on a voyage. He sailed to Sumatra, Indonesia, loaded a cargo of pepper, and returned home safely.

Nathaniel's philosophy of "sailing by an ash breeze" helped him to accomplish writing an accurate book of navigation to make sailing safer for all seamen. To honor his achievements, Harvard College awarded him the degree of Master of Arts, and he was elected a Fellow of the American Academy of Arts and Sciences.

1.



sextant - an instrument used by navigators for measuring the distance of the sun or a star from the horizon in order to fix the position of the ship

2.



ship log or chip log - an instrument used for measuring the speed of a vessel. It consists of a triangular piece of wood to which a line is attached that has knots that divide the line into lengths

3.



compass - an instrument with a rotating magnetized needle used for determining direction

4.



chronometer - a timepiece used in determining longitude at sea

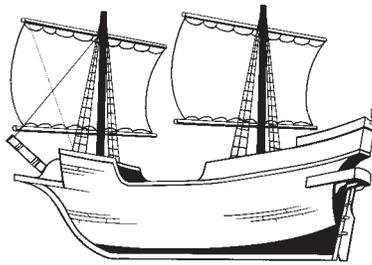
5.



spyglass - a small telescope used to observe objects far away



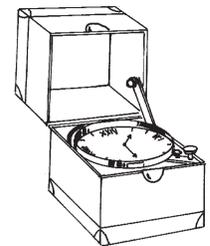
Vocabulary

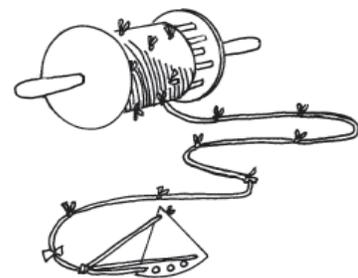
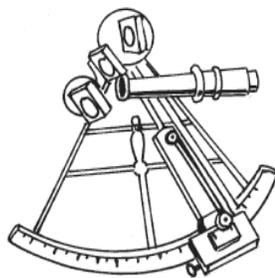


The following words deal with some aspect of navigation. Find each of the words on the page indicated and use context clues to decide the meaning of each word. Then, look up each word in the dictionary and write a definition. Make sure your definition deals with navigation.

1. sextant - (pg. 47)
2. ship log or chip log - (pg. 49-50)
3. compass - (pg. 102)
4. chronometer - (pg. 108)
5. spyglass - (pg. 140-141)

Use the definitions of your vocabulary words to help you match each word with the correct picture.





Discussion Questions

Chapters 1 - 2

1. Why did Nat use the shilling he found to buy an expectation?

Chapters 3 - 4

2. Why was Nat unable to continue going to school?

Chapters 5 - 6

3. What did Nat mean when he said that he was sailing by “an ash breeze”?

Chapters 7 - 8

4. Why did Nat decide to teach himself Latin?

Chapters 9 - 10

5. Why did Nat feel he was collecting his expectation from the *Pilgrim* when he was invited to join The Salem Philosophical Library?

Chapters 11 - 12

6. How did Nat apply Elizabeth Boardman’s expression about “stumbling on people’s dumbness” to teaching the seamen navigation?

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1. Nat’s family was poor and in financial trouble. His father told him that if he had a lot of money he would buy an expectation, so that is what Nat did with his shilling.
 2. His father was unable to pay for him to go to school. Also, his older brother, Hab, had gone to sea, and he was needed in the cooperage to help his father.
 3. He decided that he would not get discouraged even though he was indentured for nine years. He was determined to continue to learn even though he could not continue going to school.
 4. Nat wanted to be able to read Isaac Newton’s *Principia* so he could learn more about astronomy. However, since the book was written in Latin, he had to learn Latin in order to read it. Also, he was offered a tutoring position that would allow him to go to Harvard if he was released from his indenture; and he wanted to know Latin so he would be prepared if the chance came.
 5. Many of the books in the library were cargo that was taken by the *Pilgrim*, the ship on which he had purchased an expectation when he was a young boy. He was now able to read those books.
 6. Every time he would get impatient when it took the men so long to understand something he was teaching them, he would remember what she said and be more patient.

Chapters 13 - 14

7. Why was Nat so upset when he found a mistake in Moore's *Navigator*?

Chapters 15 - 16

8. How did Nat handle the troublemaker, Lem Harvey, aboard the *Astrea*?

Chapters 17 - 18

9. Who did Nat marry and why was it only for a short time?

Chapters 19 - 20

10. What three things did Nat decide that his book of navigation would contain?

Chapters 21 - 22

11. What honor was awarded to Nat by Harvard College and why was it so important to him?

Chapters 23 - 24

12. Why was it so important to Nat to command a ship on a voyage?

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7. First of all he felt that mathematics must be accurate if it was to be worth anything. Second, men's lives depended upon those tables being accurate. Mistakes could cause ships to sail off course and into danger.
8. He convinced him that he could learn navigational skills along with the other men if he could learn to control his temper and not get frustrated when it was hard for him. Soon Lem was so busy learning that he was no longer causing any problems.
9. Nat married Elizabeth Boardman, a longtime friend. However, their marriage did not last long because Elizabeth died of consumption while Nat was away on a voyage.
10. 1) correct navigation tables
2) every sea term and maneuver a seaman needs to know in words any seaman can understand
3) mathematical tables that would allow any seaman to solve problem in navigation
11. A Master of Arts degree was awarded to Nat by Harvard College. He had always wanted to attend Harvard College, so it was the fulfillment of a lifelong dream.
12. He felt his navigation book would never be accepted by the common seaman if he had never commanded a vessel. He felt he must prove that "book sailing" worked.

Activities

To help you continue your enjoyment of *Carry On, Mr. Bowditch*, choose any two of the following activities.

1. Journal Writing - pg. 7
2. Parts of a Ship - pg. 8
3. Mapping Skills - pg. 10

Journal Writing

After mapping on pages 11-12, create a journal entry as if you were Nat writing in one of his notebooks. Tell about the sights you would have seen on that journey. Refer to your book for the information you need.

Teacher's Note:

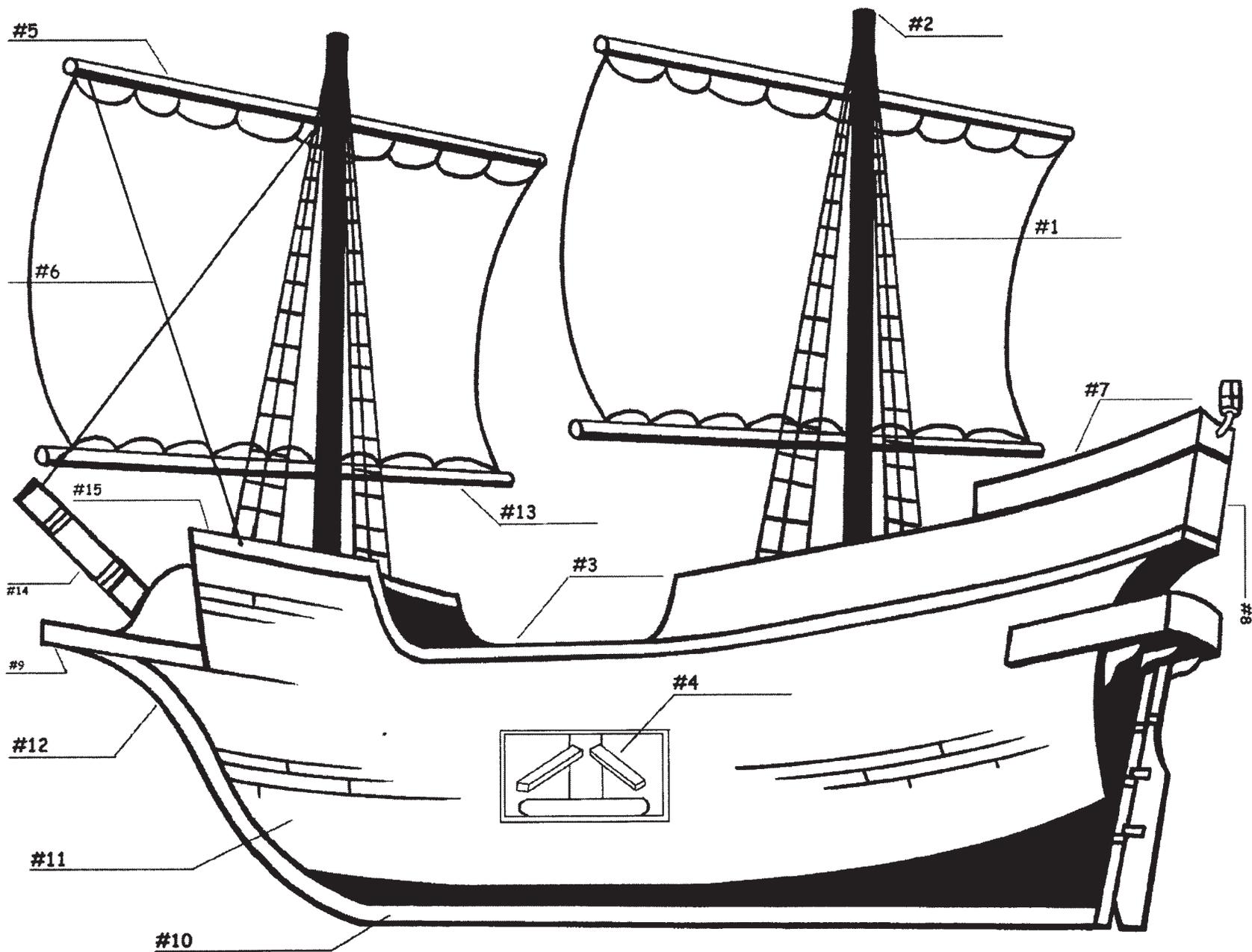
Answers to Parts of the Ship (p. 9) identified in parenthesis.

1. rigging - tackle, chains, and ropes used to support and control sails, masts and yards of a sailing vessel (13)
2. mast - the long upright pole of wood or metal supporting sails and the rigging (12)
3. quarterdeck - after part of the upper deck (usually reserved for officers) (10)
4. capstan - vertical cylinder rotated to wind in the anchor cable. In the past, sailors hoisted the anchor or raised the heavy sails by turning the capstan (11)
5. yard - long pole slung to mast to support head of sail (1)
6. halyard - rope used to raise or lower sail or flag (2)
7. poopdeck - deck at the stern (above ordinary deck); often forms the roof (14)
8. stern - rear part of ship (15)
9. bow - front section of ship (5)
10. keel - strong beam (wood or metal) running along center line of a vessel from end to end (8)
11. hull - framework or body (7)
12. prow - forward part of a ship's hull; the bow (6)
13. boom - long pole extending from the mast of a ship to secure or stretch out the bottom of a sail (9)
14. bowsprit - long pole extending from front of ship to which lines are attached for securing sails (4)
15. forecastle - section of the ship's upper deck; forward of the foremast (3)

Parts of a Ship

Look up the following words in a dictionary to find the part of the ship it identifies. Write the correct word in the space provided on the illustration of the ship (page 9).

- | | |
|----------------|---------------------------------------|
| 1. rigging | 9. bow |
| 2. mast | 10. keel |
| 3. quarterdeck | 11. hull |
| 4. capstan | 12. prow |
| 5. yard | 13. boom |
| 6. halyard | 14. bowsprit |
| 7. poopdeck | 15. forecastle (also called fo'c'sle) |
| 8. stern | |



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Mapping Skills

Nathaniel Bowditch took a series of five voyages listed below. On the following map, draw the paths that the ship took using different colored pencils. Use a world atlas to help you locate the various seaports.

1. **Voyage 1** - (red pencil) Left Salem and sailed across the Atlantic Ocean and around Africa to the Isle of Bourbon also known as Reunion, a French-owned island off the east coast of Africa.
2. **Voyage 2** - (blue pencil) Left Salem and across the Atlantic Ocean, sailed to Lisbon, Portugal, then stopped over in Funchal in the Madeira Islands (off the northwest coast of Africa), sailed around Africa and through the Indian Ocean to Manila Harbor in what is now the Philippines.
3. **Voyage 3** - (green pencil) Left Salem and sailed across the Atlantic Ocean to Cadiz, Spain (a seaport in southwest Spain) and into the Mediterranean Sea to Alicante, Spain (a seaport in southeast Spain).
4. **Voyage 4** - (purple pencil) Left Boston and sailed across the Atlantic Ocean around Africa, through the Indian Ocean to Batavia (now known as Djakarta, a seaport of Indonesia on the northwest coast of Java) then sailed to Manila Harbor located in what is now the Philippines.
5. **Voyage 5** - (yellow pencil) Left Salem and sailed across the Atlantic Ocean, around Africa, across the Indian Ocean to Sumatra, a western island of Indonesia.

Journey 1



Journey 2



Journey 3



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Journey 4

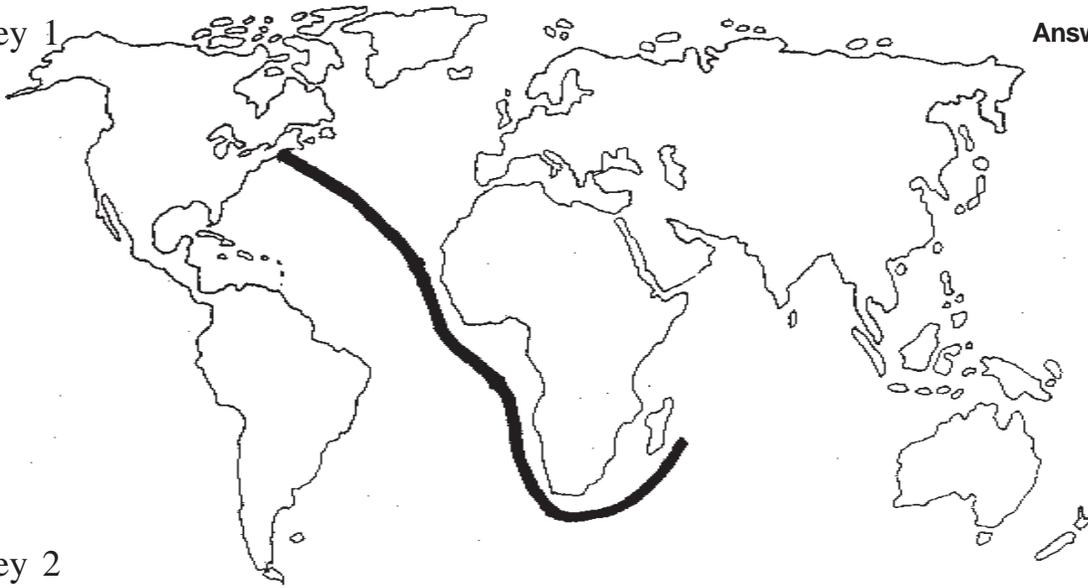


Journey 5



Journey 1

Answers



Journey 2



Journey 3



Answers

Journey 4



Journey 5

