

LEVELED BOOK • Y

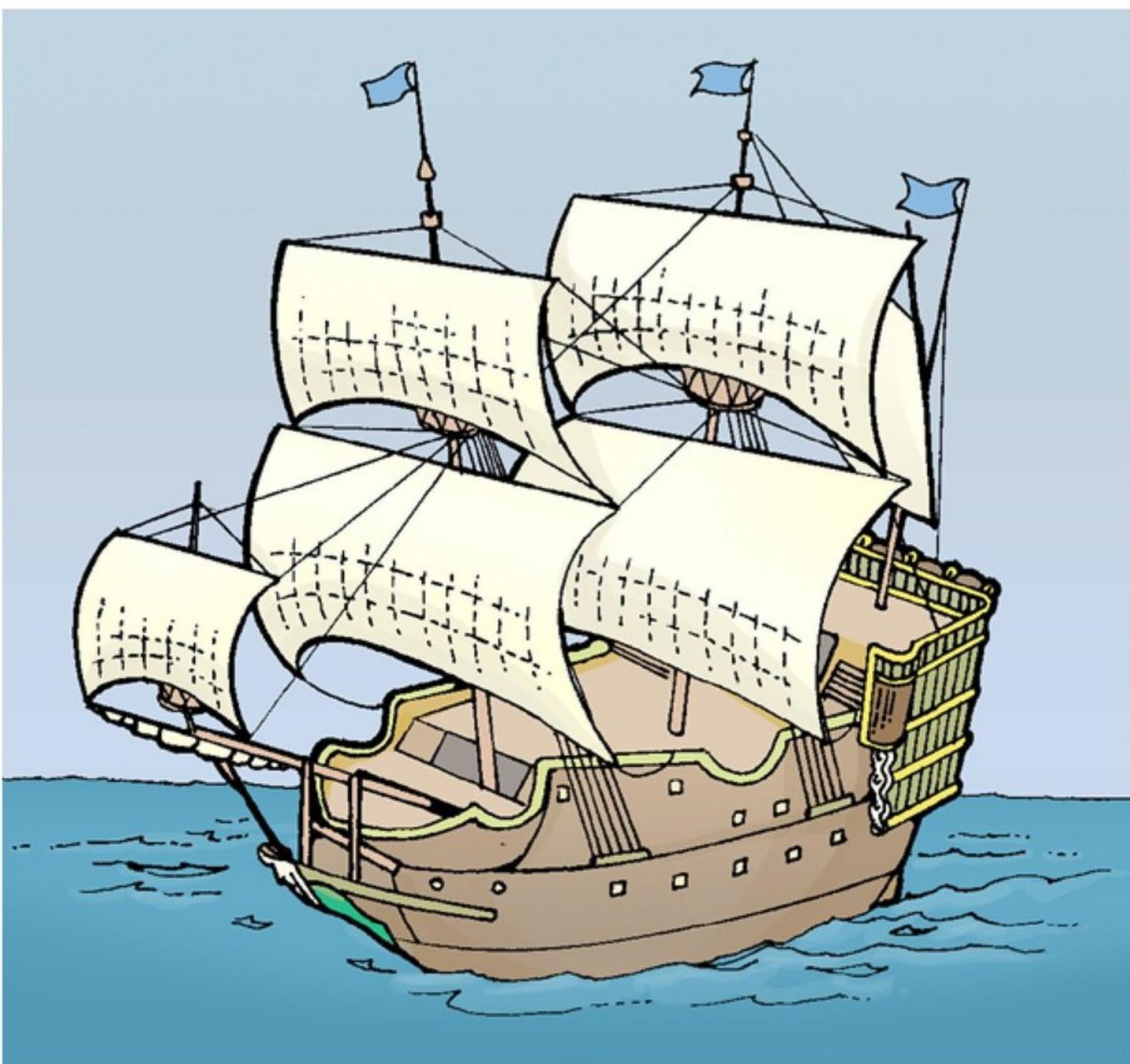
Ships of Discovery



MULTI
level
T•W•Y

Written by William Houseman
Illustrated by Cende Hill

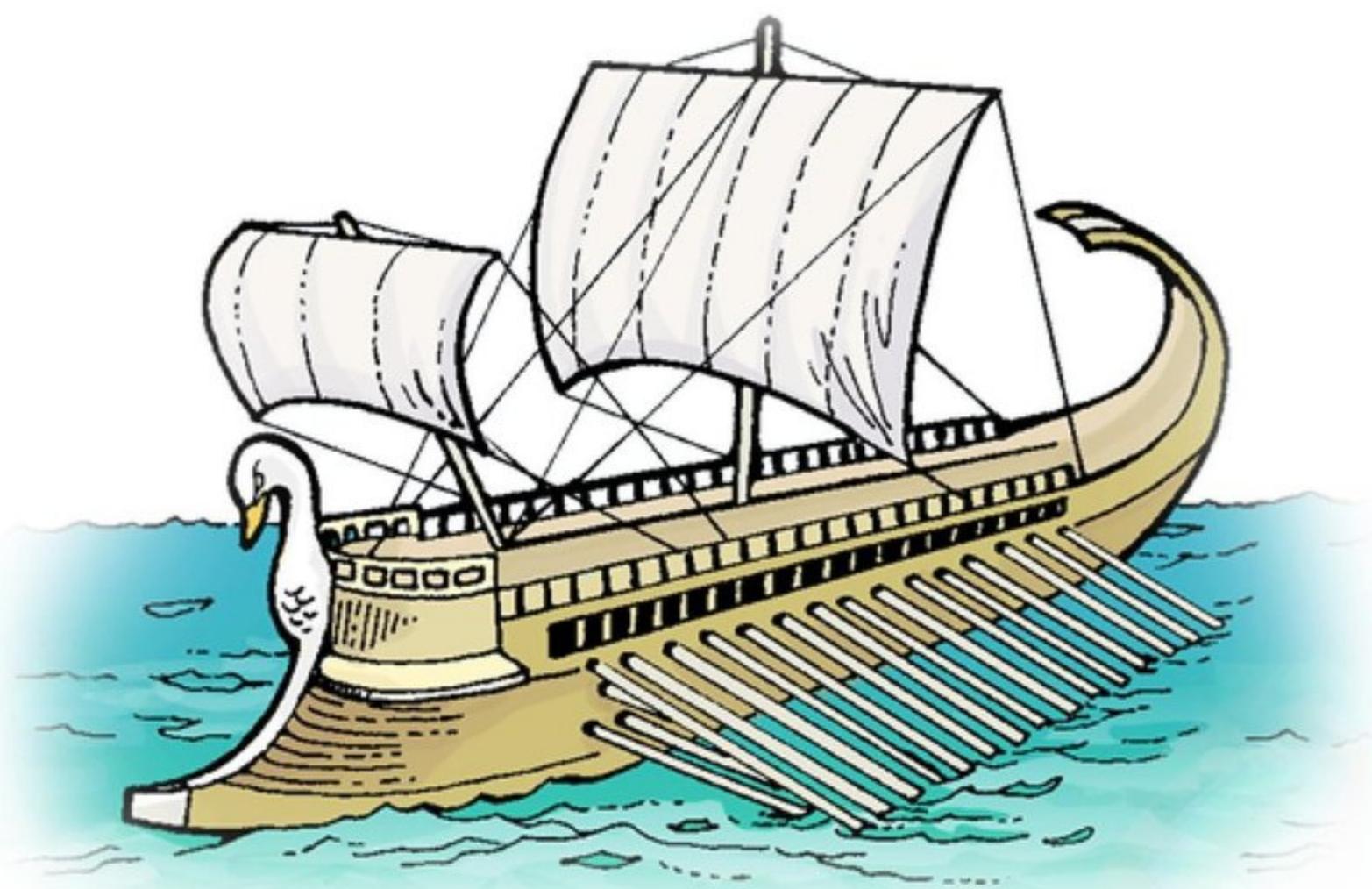
Ships of Discovery

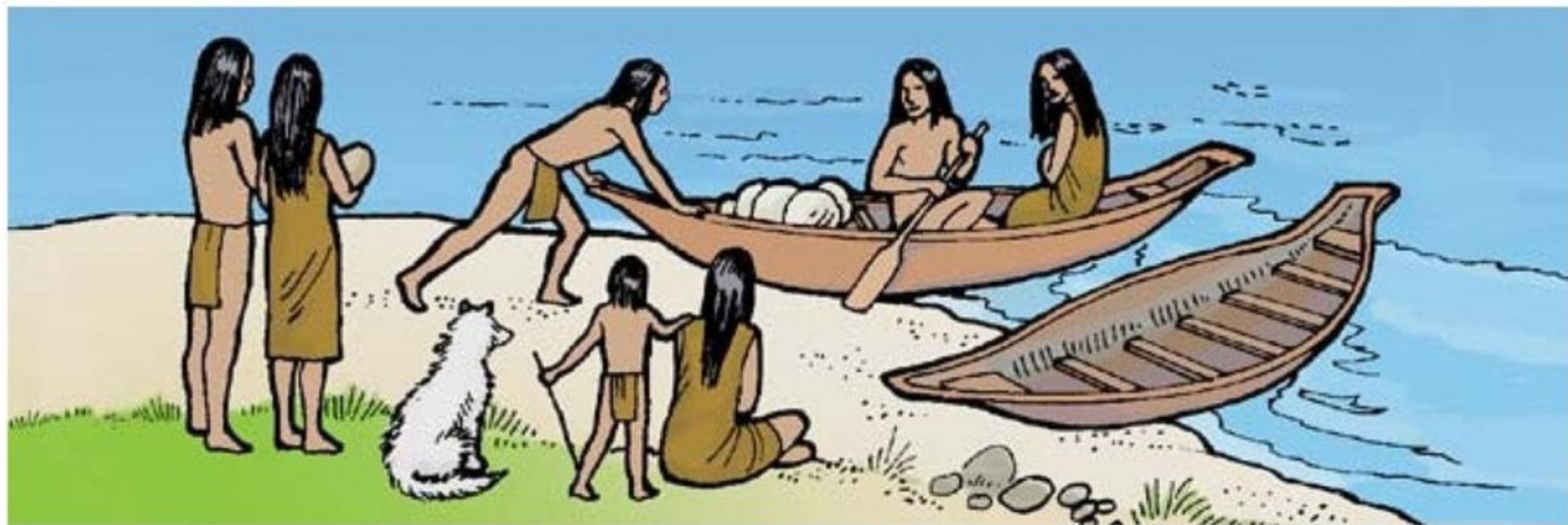


Written by William Houseman
Illustrated by Cende Hill

Table of Contents

Introduction	4
Early Years.....	5
The Polynesians.....	9
The Vikings	11
Age of Discovery.....	13
The Chinese.....	15
Later Years.....	17
Conclusion	19
Glossary	20





Introduction

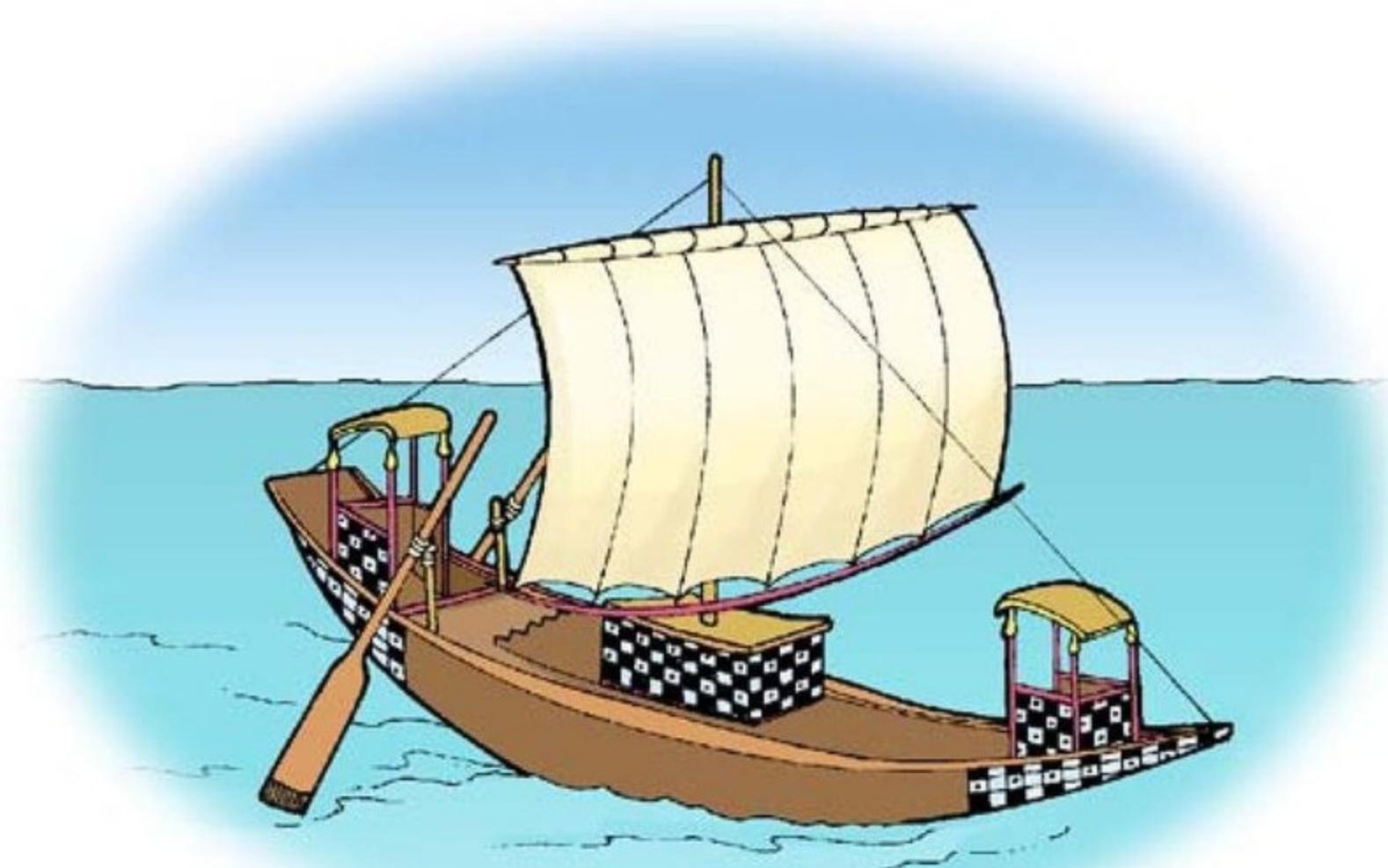
People often settle along rivers, lakes, and seas where they can find fresh water, nutrient-rich soil, and **bountiful** fishing. Long ago, people who lived near large bodies of water were curious about what might exist beyond the horizon. They also **speculated** that traveling over water might be easier than traveling over land. They noticed that particular materials, such as wood, reeds, or skins full of air, were **buoyant**. These thoughts led to the construction of the first simple boat.

As boats and ships became more practical, people were able to travel farther from home. Advancing technology created new types of boats that were often safer, faster, more comfortable, and able to carry more cargo. Boats became important tools for **commerce**, exploration, and defense. Let's examine how boats were used to explore the world and how they have changed over time.

Early Years

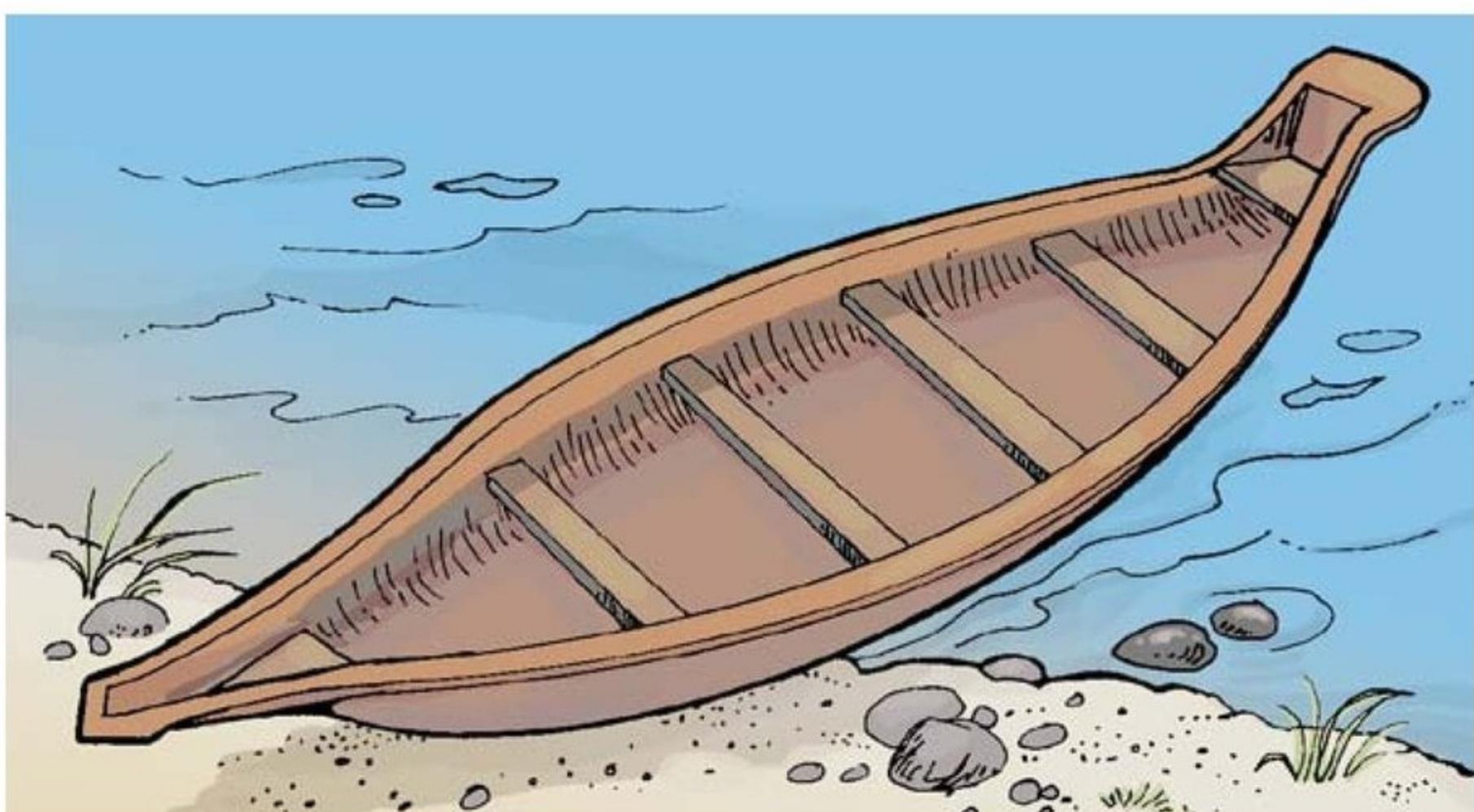
The oldest record of sea travel comes from Egypt. People might have been sailing the seas before them, but the Egyptians were the first to leave us records of their journeys. More than 6,000 years ago, the Egyptians took to the water and carved images of themselves doing so in stone. Since the mighty Nile River dictated much of ancient Egyptian life, it's not surprising that Egyptians mastered the art of traveling by water. Originally, they built simple boats by carving out the trunks of trees.

But the Egyptians were not the only people to make boats from trees. Far away in America, **indigenous** people were also building dugout canoes by hollowing out tree trunks. These were sturdy boats, but they couldn't carry much.



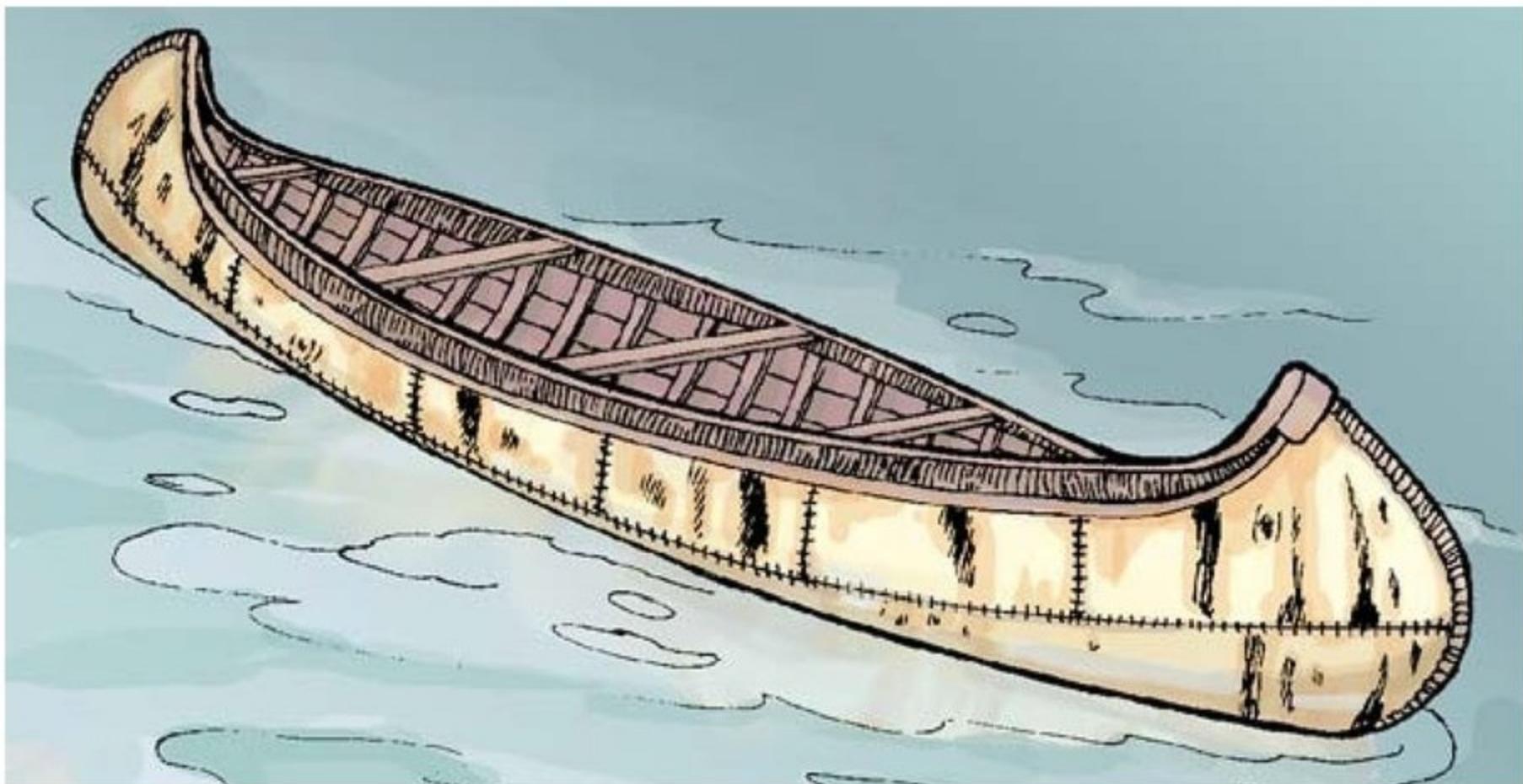
Egyptian boat

Over time, people wanted to transport larger cargoes over waterways. It became necessary to construct boats that could carry many people for long voyages, as well as food, animals, and other items to trade. Canoes carved from a single oak tree and steered with a pole were adequate boats for crossing a lake or going down a river. However, they didn't work well for carrying bulky objects. Imagine trying to row a narrow canoe across a wide lake with six sheep crammed around you. The space just wasn't sufficient.



Dugout canoe

Humans have always strived to perfect and upgrade their inventions. So it was natural that ancient people searched for methods to build bigger, faster, and safer boats. People realized that they needed better boats if they were going to explore places far from their homeland.



Birchbark canoe

The next evolution in boat building was the use of wooden beams to make a frame. The frame was covered with wooden planks or bark from trees. Some cultures even used animal skins stretched over the frame to create a hull (the outer shell of a boat). These boats were bigger than previous designs, but were also more **streamlined** and able to hold more cargo. People also developed paddles and oars to move in deep water, where poles could not reach the bottom.

The Egyptians were the first people to cover wooden frames with long, flat pieces of wood to create hulls. Some of their boats measured as much as 21.3 meters (70 ft) long. The Egyptians were also the first to use sails to harness the power of the wind. The use of sails **eliminated** or reduced the need for people to row the boats. Some boats used both rowers and sails.

Soon, the Greeks, Phoenicians, and other peoples around the Mediterranean Sea were building large boats powered by sails. About 3,000 years ago, sailing ships were built with two masts, each one holding a sail. The addition of a second mast made a ship much easier to steer and also made it much faster.

Five hundred years later, the Greeks developed a ship with four sails. This ship was safe enough to leave the Mediterranean Sea and travel down the west African coast.

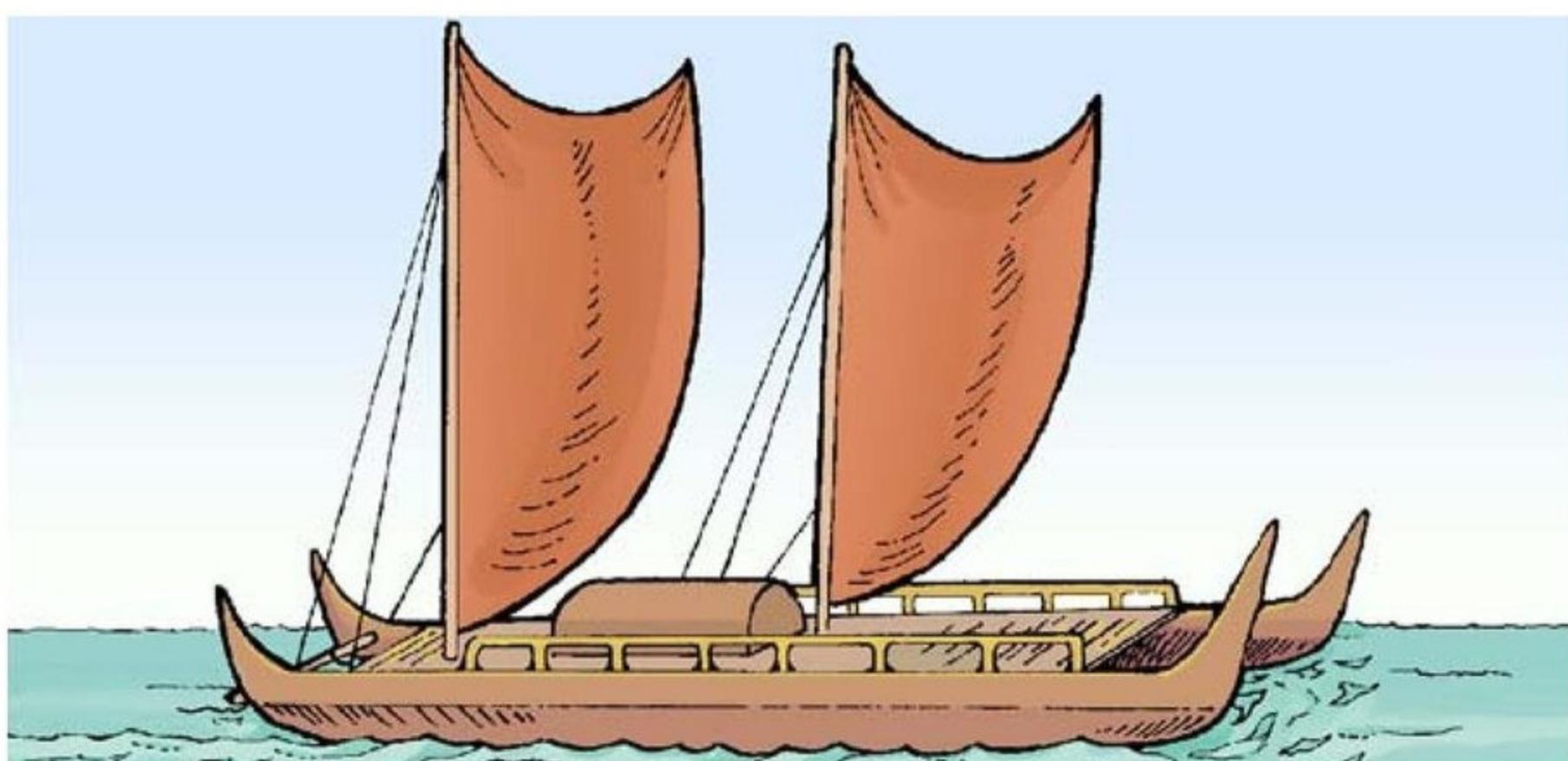
Some of the fastest ships at the time were built for battle. These warships often had as many as three levels of rowers on each side of the ship. Arranging the rowers above each other on separate **tiers** provided a great deal of power in a small amount of space. Greek ships with three tiers of rowers were called **triремes**.

These larger ships allowed people to travel to and explore distant places. During this period, exploration and trade moved beyond the Mediterranean Sea. Although ocean travel still had its dangers, it had become safe enough that some brave explorers and traders dared to risk it.

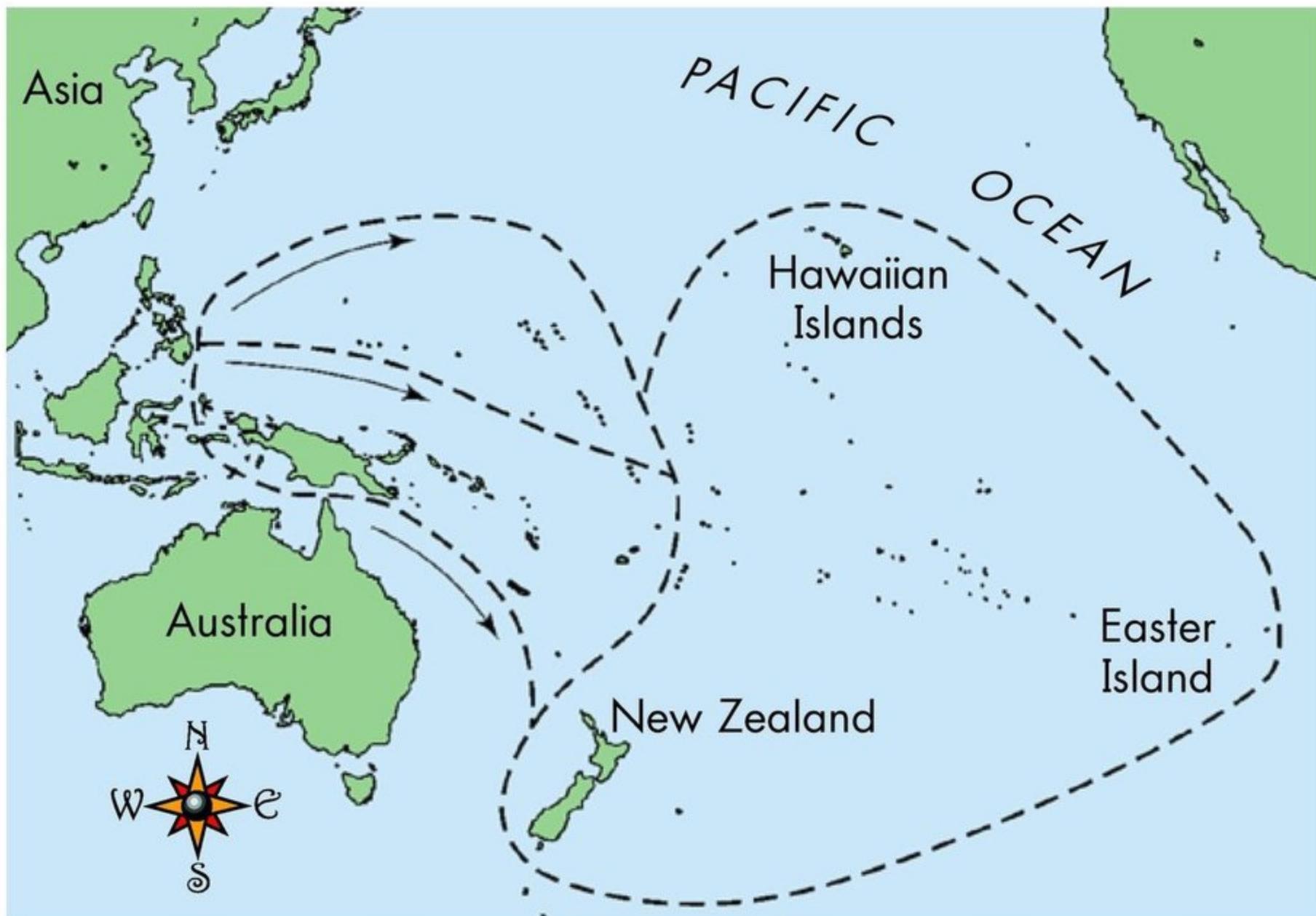
The Polynesians

In the South Pacific, groups of Pacific Island peoples were building boats that could sail in the open ocean. Over 3,500 years ago, these people were traveling east, well beyond the **archipelago** of islands where they lived. They also explored areas off the Asian mainland. More than a thousand years ago, these people made journeys of thousands of miles in open boats.

These Polynesian sailors built a type of boat that was an early version of the modern catamaran. They took two canoes and connected them using large wooden poles. A deck was then built to span the poles. These boats usually measured about 15 to 18 meters (50–60 ft) long. The central deck held masts for sails and had enough space for several people and their supplies for the duration of a lengthy voyage.



Polynesian catamaran



Routes of Polynesian expansion

These early boats provided safe travel from one island to another. The Polynesians settled many new islands they discovered. By AD 1000, they lived on nearly every **habitable** island they could find in the Pacific Ocean. Their new homes included Hawaii, New Zealand, and Easter Island.

The Polynesians were accomplished sailors. They became so familiar with the ocean that they could determine their location by the size and shape of the waves. They also knew how to navigate using the stars. They could easily travel great distances by going from island to island. The Polynesians grew to accept sea travel as a way of life.

The Vikings

More than 1,300 years ago, another group of people in another part of the world began to build larger boats. These people were the Vikings. They lived in the northern part of Europe. The Vikings were well known as warriors and conquerors. They were accustomed to traveling over water. By the year 700, they were sailing boats that were superior to any others on the ocean.

The boats they built, called *knarrs* (kuh-NARS), were used primarily for trading. These boats were up to 16.5 meters (54 ft) long and 4.5 meters (15 ft) wide.

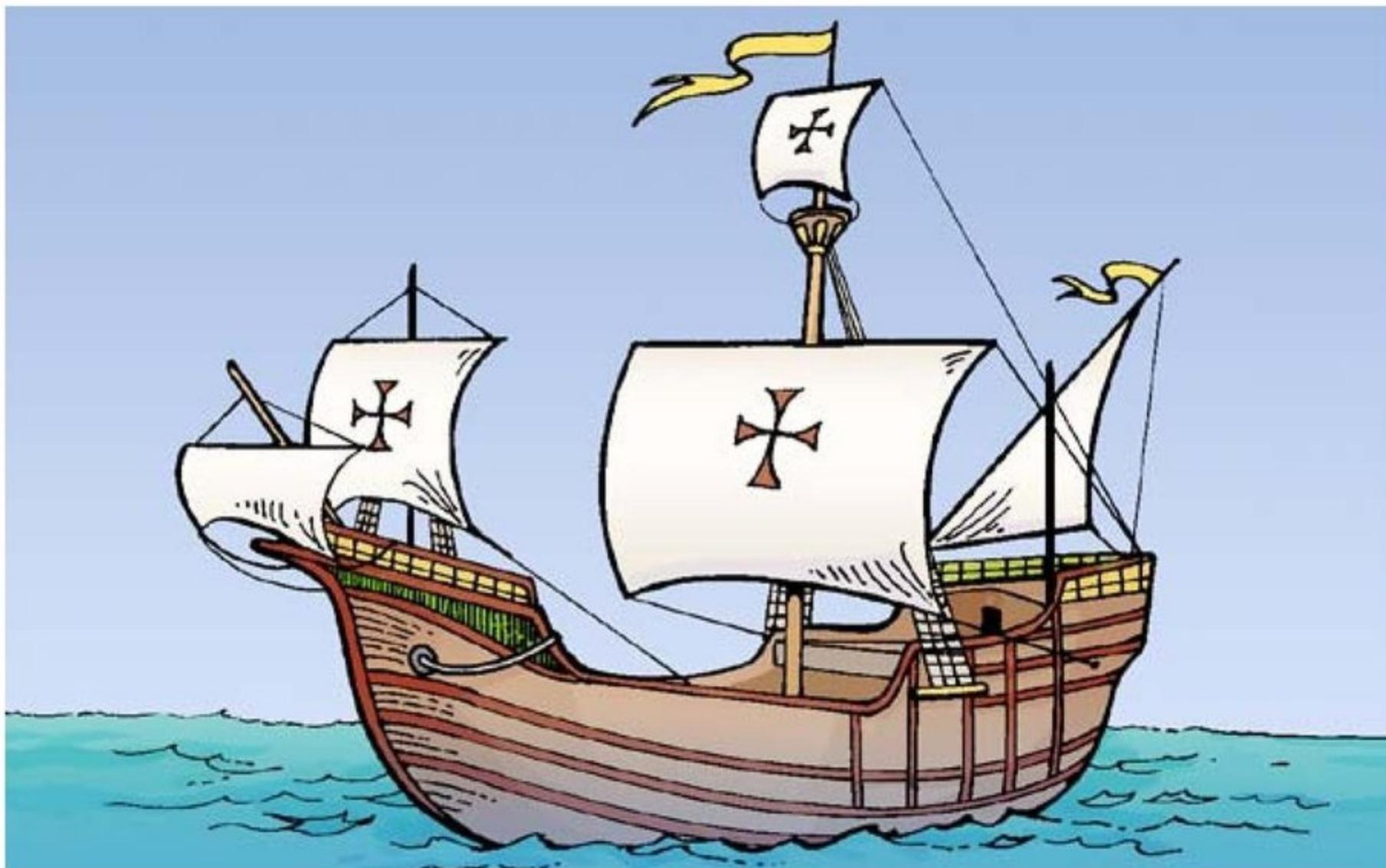
Because they were flat bottomed, the knarr boats could carry extremely heavy loads, and they were wide enough to carry a large amount of cargo. They were also very stable and could travel safely across the open ocean.



Viking knarr

At that time, most sailors did not like to lose sight of the coast, but the Vikings were fearless in their explorations. They used a wooden dial called a sun compass to help them navigate. Viking explorers were willing to travel into the unknown to claim new lands and seek adventure. They were also the first Europeans to visit North America.

The Vikings also built warships known as longships. It often was difficult to tell if a longship was coming or going because they looked the same in the front and in the back. Because of the design of their longships, Viking attackers could easily change direction. Longships were able to travel as fast as 15 knots. (A knot is a way to measure speed on water. One knot is a little faster than one mile per hour.) Some of the larger longships carried as many as 200 warriors. The combination of large, speedy, easy-to-handle ships and a fierce fighting spirit made the Vikings tough to defeat. The Vikings ruled the ocean for nearly three centuries. However, they did not improve on the design of the longship, and other nations eventually developed mightier ships.



Caravel

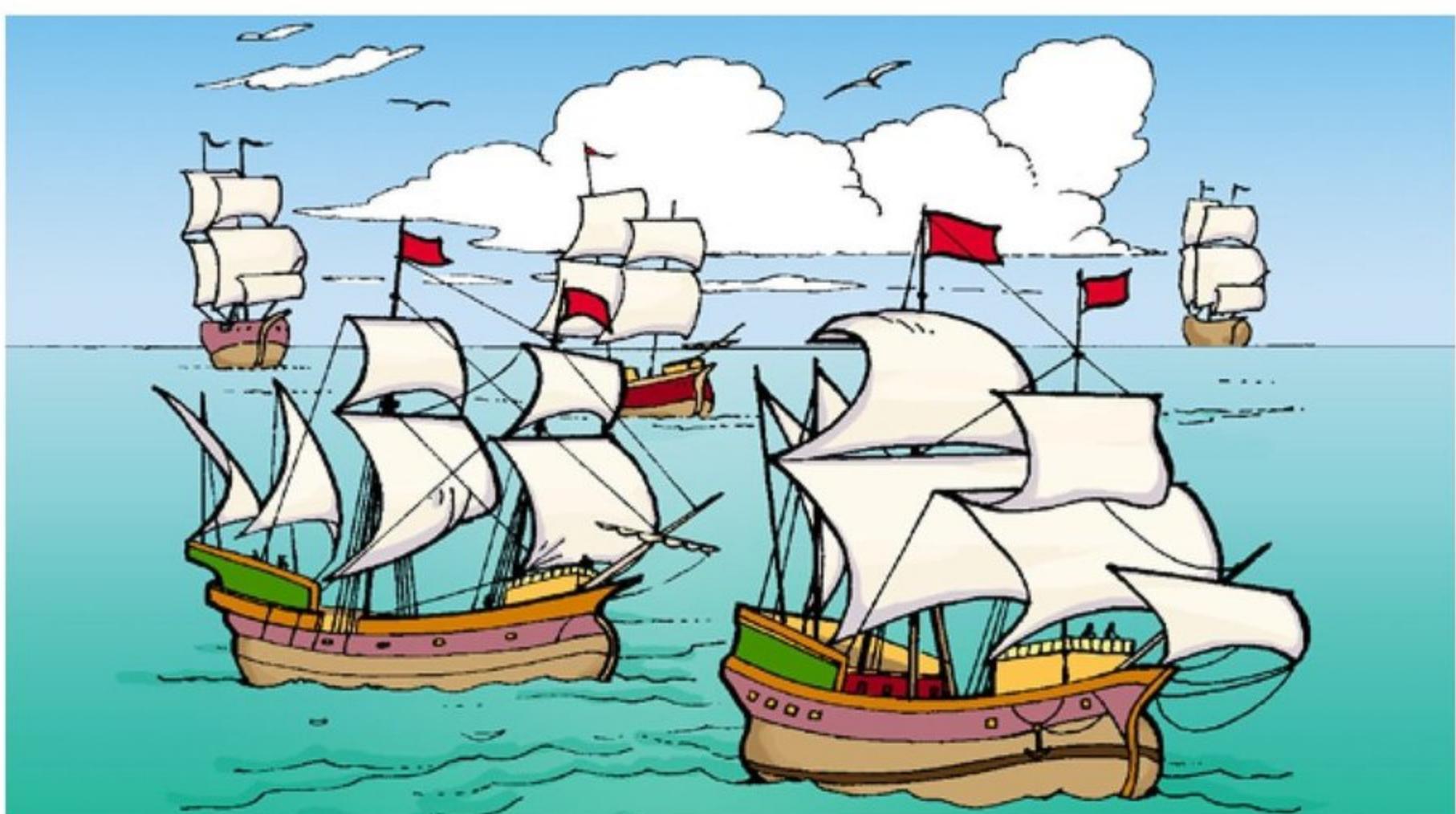
Age of Discovery

Until the 1400s, most sea explorers remained close to their home waters. But with the coming of the Age of Discovery, things changed dramatically. Every European sailing nation wanted to find new lands. The race was on, and the Americas were the prize.

Shipbuilders searched for ways to build faster and safer ships. In the 1400s and 1500s, Christopher Columbus and other explorers used small, swift, sturdy ships known as caravels. These ships had three masts to hold sails. This design made the ships faster and easier to steer. Caravels had square sails on the fore and main masts, and a triangular-shaped sail, called a lateen, on the mast at the rear of the ship.

The *Santa Maria* was the largest of Columbus's ships at 27.4 meters (90 ft) long and 9.1 meters (30 ft) wide. Compared to modern ocean liners and cargo ships, these ships were tiny. They didn't even have cabins where the crew could sleep at night. Sailors just had to lie down on the deck or in the hold.

But even though caravels were quite small, the famous explorer Ferdinand Magellan set out to sail five of these ships around the world with a crew of 260 sailors. Almost three years after they began the trip, Magellan's crew returned. Only one of the ships and eighteen of the sailors made it around the world. The other ships were lost at sea, and the other sailors died. Magellan was not one of the survivors. He was killed somewhere in the Philippine Islands.



Magellan's ships

The Chinese

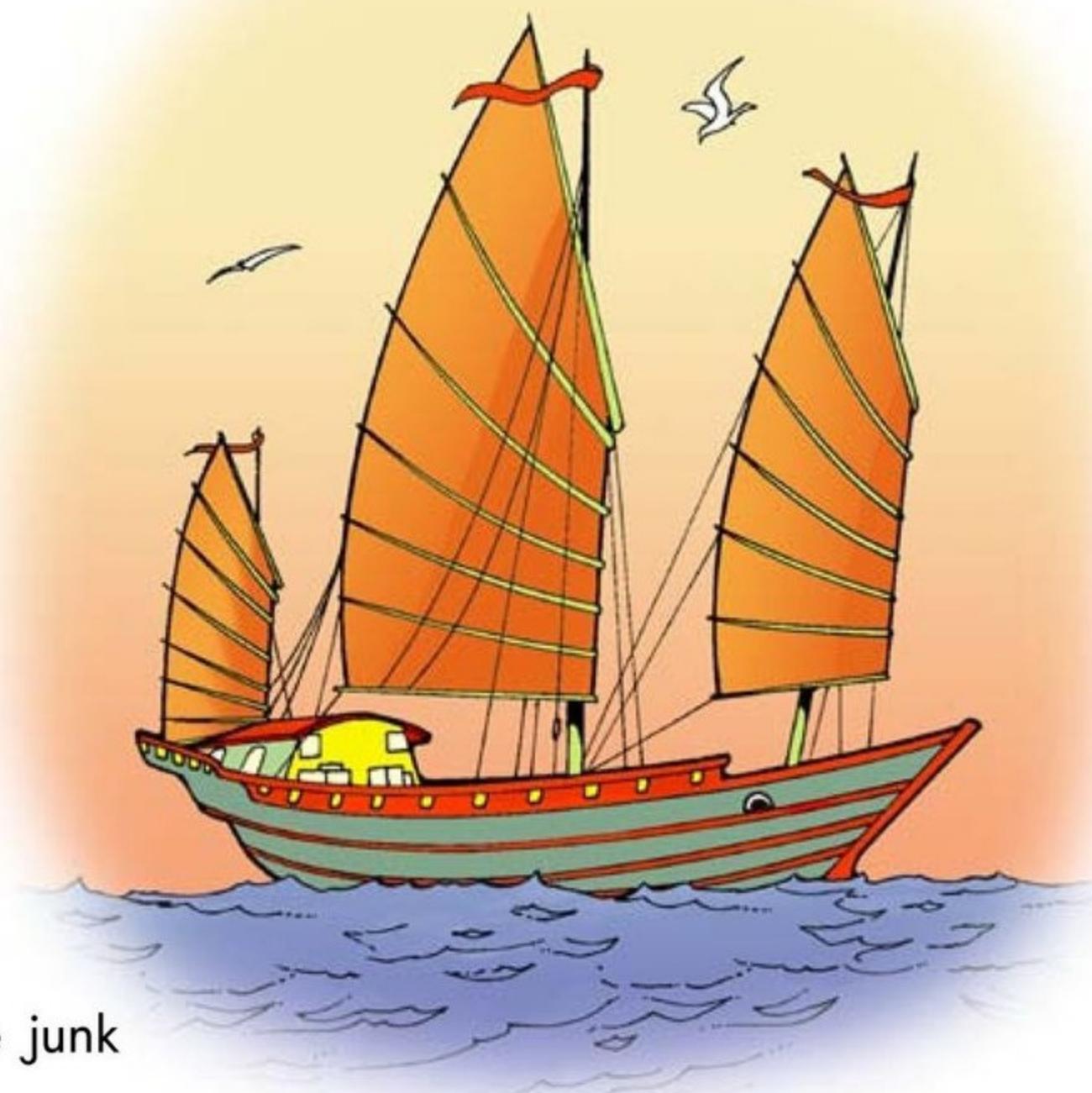
While European explorers were sailing the world, the Chinese had also taken to the sea in another part of the world. By the 1400s, they were skilled sailors. Chinese people had long since invented the magnetic compass. They also invented the rudder a thousand years before Westerners. They used rectangular sails reinforced with strips of bamboo called battens. The battens made the sails sturdier and easier to furl and unfurl, and sailors could even climb them like ladders!

From 1405 to 1443, the most famous Chinese explorer, Zheng He, traveled on seven long voyages with a fleet of sixty-two treasure ships. The Chinese called these ships “junks.” Inside the hull, the ship was divided into many sections, partitioned off with watertight walls or bulkheads to minimize potential damage. If the hull were breached, the leak could only flood a small section of the ship, rather than sinking the entire ship.

Zheng He’s junks were much larger than European ships. His largest ship was so big that it could have held all three of Columbus’s ships on its deck. This massive ship was 121 meters (400 ft) long and 45.7 meters (150 ft) wide.

In addition to the sixty-two main trading ships, more than a hundred smaller support boats were in the fleet. The Chinese sailed all the way to Africa to trade as well as to show the might of the Chinese empire to the rest of the world. Zheng He even carried a giraffe home to the emperor.

War with their Asian neighbors caused the Chinese to turn their attention away from exploration. The emperor made ocean voyages illegal and had all the treasure ships destroyed. If the Chinese had continued their explorations, we might be studying how the Chinese discovered America. And North and South Americans might be speaking Chinese instead of French, English, Spanish, and Portuguese.



Chinese junk

Later Years

As sea exploration continued, the Spanish led the way. By the 1500s, European shipbuilding had experienced vast improvements.

The newest ships, called galleons, were larger, faster, and more comfortable.

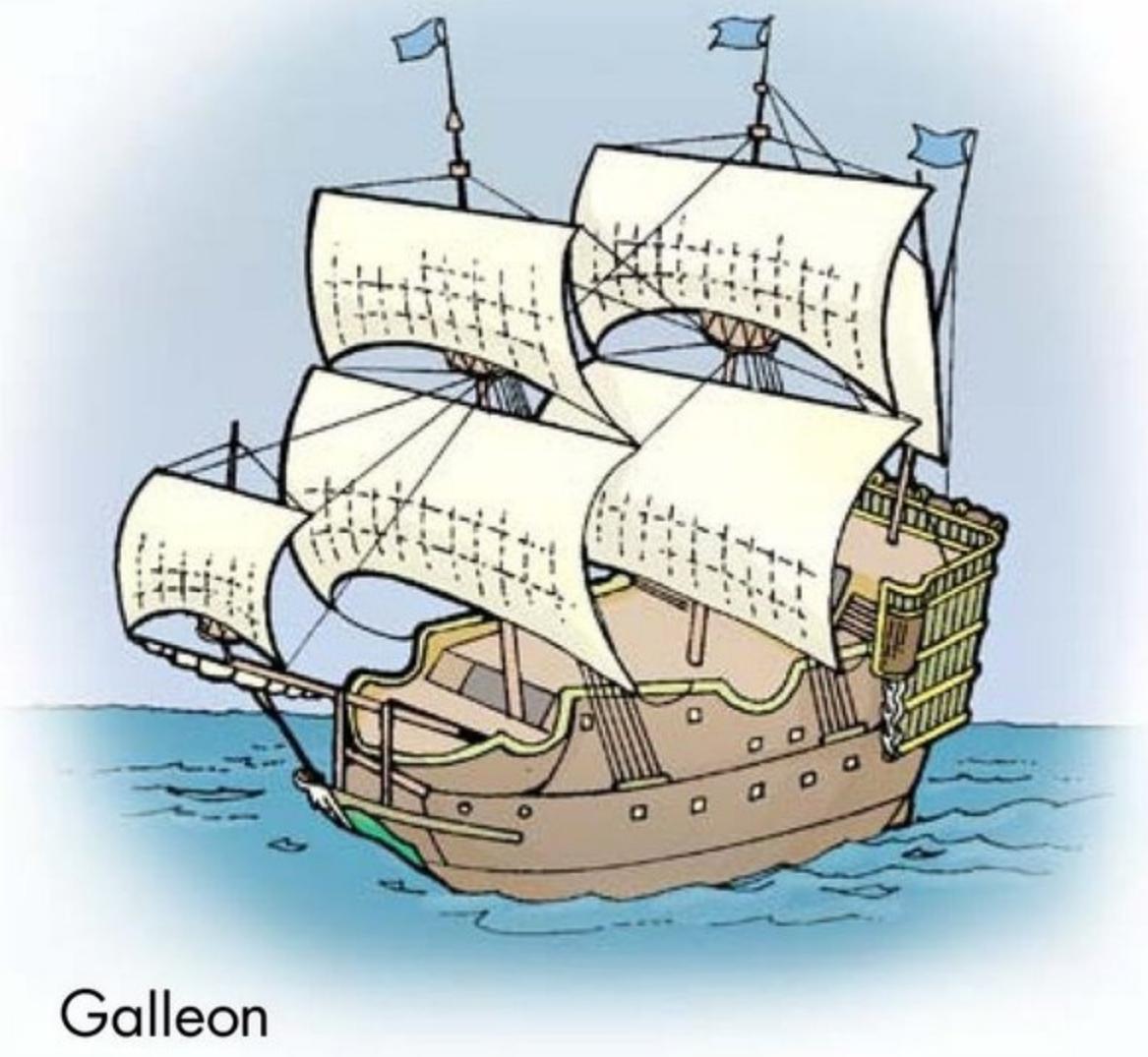
It took two thousand oak trees to build one galleon.

These vessels were as long as

42.7 meters (140 ft), but were still small compared to the Chinese ships. Many of them had nice, comfortable living quarters, at least for the officers.

Galleons were dual-purpose ships that served as both trading vessels and warships.

Because of their great size, these warships were capable of mounting many cannons, making them dangerous in battle.



In the late 1700s, Captain James Cook began some of the greatest explorations of his time. In his first ship, *Endeavour*, Cook sailed around the world.

While many previous explorers sailed to make war or find treasure, Cook was interested in knowledge and science. He brought three scientists with him when he traveled, one astronomer (a scientist who studies the night sky) and two naturalists (scientists who study plants and animals). He also took many artists to document their discoveries. Cook observed the stars as he sailed, and whenever he came to a new land, he learned as much as he could about its plants and animals. His work broadened the European understanding of the world.

Cook kept his crew healthy by making them eat foods such as limes and cabbages. Until Cook's time, up to one-half of the crew on a long voyage would die of **scurvy** or other diseases. Cook knew his success as an explorer depended on keeping his crew in good health. Soon, all British sailors knew that they needed to eat vitamin C to survive. Sadly, although Cook attempted to remain diplomatic and friendly wherever he went, he was killed in a fight in Hawaii in 1779.

Do You Know?

British sailors' use of limes to prevent scurvy led people of other nations to give them the nickname "limeys."

Conclusion

By the mid-1800s, sailors had explored and mapped most of the world's coastlines. Very fast sailing vessels called clipper ships carried people across oceans in a matter of days. One clipper, *Sir Lancelot*, set a record by sailing from Australia to England in three months. Some of these ships had as many as thirty-five sails, and they could travel even in light breezes.

By the 1870s, however, the steam engine largely replaced wind power. The industrial revolution swung into full gear, and machines became more significant to everyone. Bigger and faster ships than had ever been imagined suddenly became possible. Today, steam power is outdated, and ships run on different types of engines. Some submarines and aircraft carriers even run on nuclear power! Cruise ships carry thousands of people at a time like floating cities.

When we look at some of the ships used by early explorers to sail across oceans, we have to admire their courage and their **ingenuity**. Explorers and their ships of discovery helped create the world we live in.

Glossary

archipelago (<i>n.</i>)	a cluster or chain of islands (p. 9)
bountiful (<i>adj.</i>)	plentiful, abundant (p. 4)
buoyant (<i>adj.</i>)	able to float (p. 4)
commerce (<i>n.</i>)	the buying and selling of goods; business or trade (p. 4)
eliminated (<i>v.</i>)	removed or took away (p. 7)
habitable (<i>adj.</i>)	capable of supporting life (p. 10)
indigenous (<i>adj.</i>)	native to a particular place (p. 5)
ingenuity (<i>n.</i>)	cleverness or skill in solving a problem or challenge (p. 19)
scurvy (<i>n.</i>)	a life-threatening illness common to early sailors caused by a lack of vitamin C (p. 18)
speculated (<i>v.</i>)	guessed based on ideas and theories that were not definitely proven (p. 4)
streamlined (<i>adj.</i>)	designed to move easily through air or water (p. 7)
tiers (<i>n.</i>)	rows or levels arranged one above another (p. 8)
triremes (<i>n.</i>)	ancient galleys equipped with three banks of oars (p. 8)

Ships of Discovery
Level Y Leveled Book
© Learning A-Z
Written by William Houseman
Illustrated by Cende Hill

All rights reserved.
www.readinga-z.com

Correlation	
LEVEL Y	
Fountas & Pinnell	T
Reading Recovery	40
DRA	40