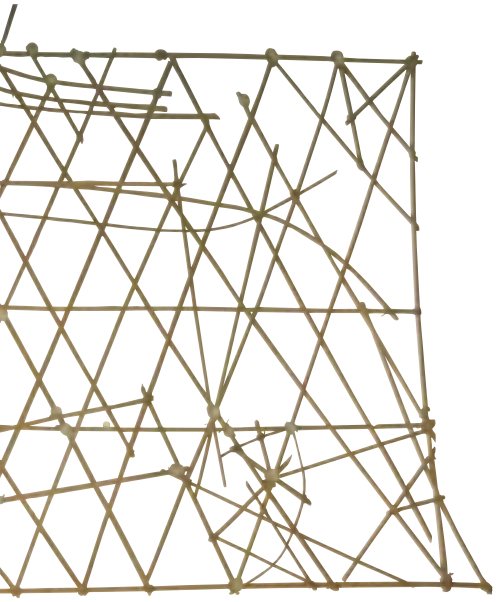
The Legacy of World Exploration



Early Pacific Navigation

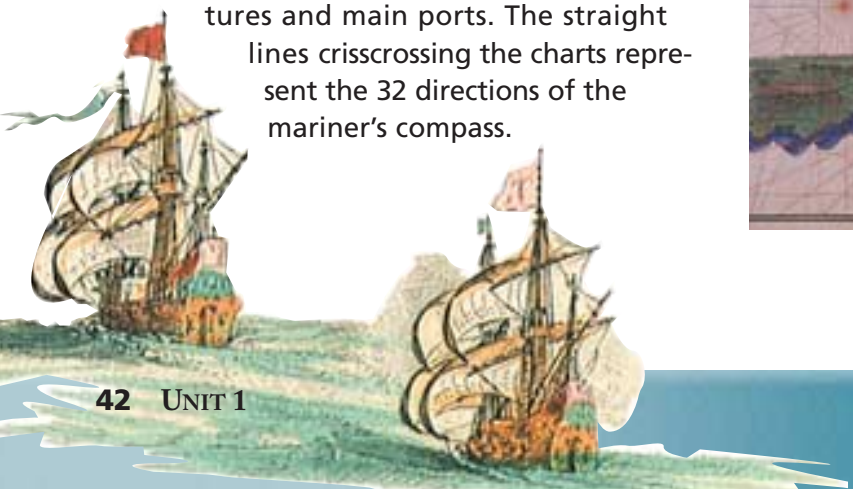
More than 2,000 years ago, Polynesian sailors were among the first people to sail the Pacific Ocean. Without charts or instruments to help them find their way, these ancient navigators made sea charts from palm sticks tied together with coconut threads, using small shells to represent islands.

Magnetic Compass

In the 1100s, mariners of China and Europe independently discovered the magnetic compass. They discovered that an iron or steel needle touched by a lodestone, or piece of magnetic ore, tends to point roughly in a north-south direction. Today, surveyors and navigators consider the magnetic compass an essential tool for determining direction.

Portolan Charts

Portolan charts were first made in the 1300s in Italy and Spain. *Portolan* comes from an Italian word meaning "navigation instructions." These charts, which were actually rough maps, were based on accounts of medieval Europeans who sailed the Mediterranean and Black seas. Drawn on sheepskin, portolan charts show coastal features and main ports. The straight lines crisscrossing the charts represent the 32 directions of the mariner's compass.



Modern Electronic Navigation

In the 1970s, the U.S. Department of Defense developed the Global Positioning System (GPS). GPS allows people on land, at sea, or in the air to pinpoint their location or to track moving objects in any weather. A network of 24 satellites that orbit Earth beam down data to palm-sized receivers, aiding the military in maneuvers. Civilians use them for hiking or finding shorter travel routes.

Astrolabe

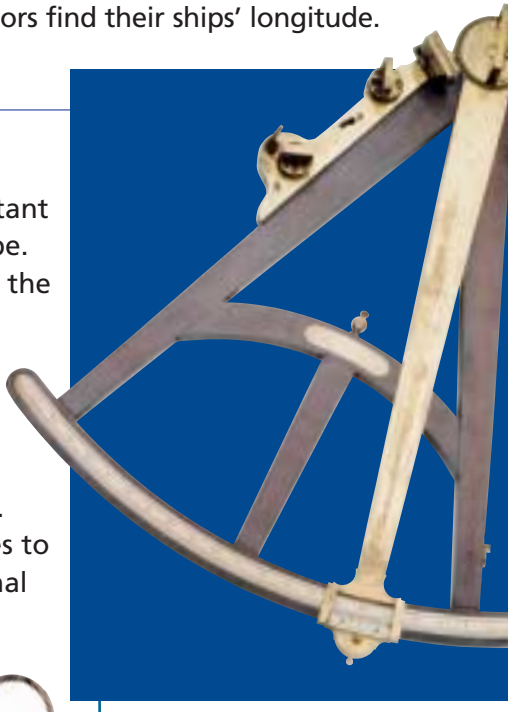
The astrolabe was first used in the 1400s in Europe and the Islamic world. It is a flat, circular piece of either metal or wood. The edge of the circle is marked to show 360 degrees. Sailors used the astrolabe to measure the sun's and stars' angles above the horizon in order to determine their ships' positions at sea.

Chronometer

John Harrison worked for nearly half a century before he perfected, in 1762, a ship's clock that would revolutionize navigation. This tool, called a chronometer, enabled sailors for the first time to determine accurately a ship's longitude, or east-west position. The modern chronometer, which looks like a large, heavy watch, continues to help sailors find their ships' longitude.

Sextant

In the 1730s, the sextant replaced the astrolabe. This device measures the angle between the horizon and the sun, the moon, or a star and is used to calculate latitude, or north-south position. The sextant continues to be a basic navigational tool today.



Find Out More About It!

Study the text and photos on these pages to learn about world exploration. Then choose the item that interests you the most and research it in the library or on the Internet to learn more about it. Use the information you gather to write a short play that you and your classmates can perform.

RESEARCH LINKS
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