

### STUDY QUESTIONS

#### Find the answers as you read.

1. What effect did the Middle Ages have on the knowledge of geography and science?
2. What climate change affected Scandinavia in the 9th century? What was the significance of this change to exploration?
3. By the year 1125, the Chinese were responsible for inventing what important navigational tool?
4. What two technological innovations did Chinese ships have by the mid-1400s?

## The Middle Ages (800 A.D.-1400)

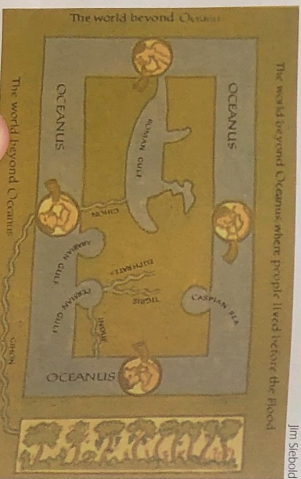
### The European Middle Ages

*What effect did the Middle Ages have on the knowledge of geography and science?*

The period of approximately 500 A.D. to 1500 in Europe is called the Middle Ages. This was the period that we think of when we think of knights, castles, and feudalism.

There's considerable speculation among historians as to what caused the Middle Ages. With the death of Romulus Augustus in 476, the Western Roman Empire ended. This may have contributed by beginning the breakup of a large European community into small, relatively isolated communities. The Catholic Church rose at about the same time. While there's much debate about its role and power, it was clearly a strong force that changed the interactions between government, church, and society. The end of the Middle Ages approximately coincides with the Catholic Church's decline in the mid-1500s. This supports the assertion that the Catholic Church of the period was a contributing factor to the social structure of the Middle Ages.

Whatever the causes, the Middle Ages suppressed further advancements in the knowledge of geography and science in the West. Europe entered an age of intellectual "darkness," which is why the period is sometimes called the Dark Ages. Communication between nations was poor, and invaders from the north swept across Europe.



Jim Seibold

2 On an Ocean Planet

Education became less common, and many of the works of previous cultures were lost. Few people could read the works that survived, and myths replaced knowledge. For example, the Greeks knew the Earth is round, but the prevailing belief in the Middle Ages was that the Earth is flat.

Except for the Viking voyages, there was little ocean exploration by Europeans during this period. However, trade continued by ship. Seafaring for trade and passage may have been important in bringing the Middle Ages to a close by helping economic growth and restoring the spread of knowledge.

### Viking Explorations and Discoveries

*What climate change affected Scandinavia in the 9th century? What was the significance of this change to exploration?*

The Viking period stretches from about 790 A.D. to 1100. During this period Vikings raided nearby land, explored, and established trade routes throughout Britain, Ireland, Southern Europe, North Africa, and Central Asia. This was the only significant exploration taking place in Europe during this period.

In the 9th century, a warming global climate freed the North Atlantic of ice. This allowed the Vikings to explore westward. The Vikings discovered Iceland and Greenland. Eventually, a Viking expedition led by Leif Eriksson landed in North America at Newfoundland, Canada.

Many of the new Viking outposts didn't last. The Vikings abandoned them due to the harsh climates. The global climate became colder (the Little Ice Age) and the sea ice returned. This effectively cut off the northern sea routes from Scandinavia.

Archaeological findings show that Scandinavian vessel design progressed considerably from 11 A.D. to 1450. Because the Vikings often buried their dead in ships, more than 400 of their craft have been recovered by archaeologists from burial mounds. Findings indicate that the Vikings built some ships primarily for warfare and raiding and others as cargo carriers. Post-Viking Scandinavian ships show that seaworthy hull designs introduced by the Vikings continued into the mid-15th century. Evidence suggests that by the mid-1400s, Scandinavian merchants sailed frequently into the Mediterranean. At this point, shipbuilders began combining the best of both Scandinavian and Mediterranean ship design. This led to the ships that ushered in the European voyages of discovery.

## Chinese Explorations and Discoveries

By the year 1125, the Chinese were responsible for inventing what important navigational tool?  
What two technological innovations did Chinese ships have by the mid 1400s?

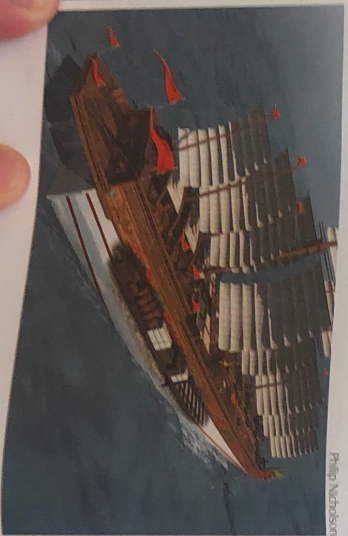
Although science and exploration lay idle in Europe during the Middle Ages, that wasn't the case in China. Among many important contributions in that era, the Chinese were responsible for inventing the magnetic compass.

Historians think that the Chinese were aware of magnetism as early as 240 B.C. However, the first definitive reference in Chinese literature to a true compass dates to approximately 1000 A.D. Chinese literature suggests that the compass was in use for sea-faring around 1125. Compare this to European culture, where the first reference to a compass appears in a poem from 1190. It wasn't until the 1400s that European sailors fully understood compass navigation.

Artifacts and other archaeological evidence suggest that Chinese seafaring was well established by about 1000 A.D. Maps from the period show extensive trade routes along the eastern Chinese coast. Some routes extended as far as Korea, Japan, and Australia.

By the mid 1400s, shipbuilding was well established in China. More than 300 ships sailed under Chinese Admiral Zheng, known for traveling to 37 countries and around the tip of Africa. Chinese ships from that period had two technological innovations that are part of modern ships today: central rudders and watertight compartments.

**Figure 2-19**  
**Chinese ship circa 1450 A.D.**  
Although science and exploration lay idle in Europe during the Middle Ages, that wasn't the case in China. Among many important contributions in that era, the Chinese were responsible for inventing the magnetic compass. By the mid 1400s, shipbuilding was well established in China. More than 300 ships sailed under Chinese Admiral Zheng.



Philip Nicholson

Life on an Ocean Planet

## European Voyages of Discovery (1400-1700)

### The End of the Middle Ages and a Route Around Africa

What were the primary motivations that led to the ocean explorations of the 15th century?

What three explorers established the route around the Cape of Good Hope to India?

In Europe, the 1400s mark an important transition at the end of the Middle Ages. This period is called the Renaissance (from the Latin *renasci*, meaning *to be born again*). It centered in Italy and spread throughout Europe through commerce and those who had studied in Italy and traveled. It was a period marked by a "rediscovery" of principles and science put forth by the Greeks, Romans, and other cultures.

With the Renaissance came new interest in long ocean expeditions. The primary motives for these were economics, politics, and religion. In the early 1400s, Prince Henry the Navigator of Portugal

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1. What were the primary motivations that led to the ocean explorations of the 15th century?
2. What three explorers established the route around the Cape of Good Hope to India?
3. What was the purpose of Christopher Columbus' four expeditions?
4. Who is credited as being the first European to recognize that South America was a new continent?
5. What was Vasco Núñez de Balboa's accomplishment?
6. Who led the first expedition around the world? Over what years did the voyage take place?
7. Who led the second expedition around the world? Over what years did the voyage take place?