My First Britannica



Volumes are arranged thematically



Peoples of the world are presented in cross-cultural perspective



Rich illustrations and photographs bring topics to life

An exciting reference set that brings children the world and the universe beyond

Volumes 1–13

My First Britannica

TABLE OF CONTENTS

Volume 1 . . . . . The Earth and Earth Sciences
Volume 2 . . . . . Physical Sciences and Technology
Volume 3 . . . . . The Arts
Volume 4 . . . . . People in History
Volume 5 . . . . . Folklore and Religions
Volume 6 . . . . . Europe
Volume 7 . . . . . Asia, Australia, and New Zealand
Volume 8 . . . . . Africa
Volume 9 . . . . . The Americas
Volume 10 . . . . . Plants
Volume 11 . . . . . Birds, Insects, Reptiles, and Aquatic Life
Volume 12 . . . . . Mammals
Volume 13 . . . . . Reference Guide and Index

Cover photo credits: walrus, © Royalty-Free/Corbis; traditional Peking Opera performance, © Marc Garanger/Corbis; dragon illustration by Joseph Taylor

My First Britannica



The Earth
and Earth Sciences

1

MY FIRST BRITANNICA

The Earth and Earth Sciences

1



CHICAGO LONDON NEW DELHI PARIS SEOUL SYDNEY TAIPEI TOKYO

How to go to your page

This eBook contains four volumes. Each volume has its own page numbering scheme, consisting of a volume number and a page number, separated by a colon.

For example, to go to page 5 of Volume 1, type V1:5 in the "page #" box at the top of the screen and click "Go." To go to page 5 of Volume 2, type V2:5… and so forth.

© 2008 by Encyclopædia Britannica, Inc.

International Standard Book Number: 978-1-59339-476-9 (set)

No part of this work may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, recording, or by any information storage and retrieval system, without permission in writing from the publisher.

My First Britannica:
Volume 1: The Earth and Earth Sciences 2008

Britannica.com may be accessed on the Internet at http://www.britannica.com.

Encyclopædia Britannica, Britannica, and the Thistle logo are registered trademarks of Encyclopædia Britannica, Inc.

The Earth and Earth Sciences

TABLE OF CONTENTS

INTRODUCTION 5

Geography: Learning About the Earth 6

Land and Landforms

Continents: The Largest Pieces of Land 8

Antarctica: A Continent of Extremes 10

Islands: Dry Spots in a Watery World 12

Volcanoes: Mountains of Smoke and Fire 14

Mountains: Building Earth's Giant Landscapes 16

Sand: The Nitty-Gritty 18

Deserts: Lands of Little Water 20

Peninsulas: Fingers of Land 22

Rainforests: Endangered Ecosystems 24

Marshes: Grassy Wetlands 26

Swamps: Waterlogged Forests 28

Water

Rivers: The Power of Flowing Water 30

Floods: Engulfed by Water 32

Oasis: Water in the Desert 34

Oceans: The World of Water 36

Atlantic Ocean: The Youngest Ocean 38

Pacific Ocean: Largest Ocean in the World 40

Indian Ocean: Ocean Between Many Continents 42

Mediterranean Sea: The Sea in the Middle of Land 44

Tides: The Ocean's Rise and Fall 46

Waves: Movement on the Seas 48

Tsunamis: Waves of Destruction 50

Icebergs: The Biggest Ice Cubes 52

Glaciers: Rivers of Ice 54

Climate and Environment

Clouds: Floating Water 56

Thunder and Lightning: Nature's Fireworks 58

Cyclones and Tornadoes: Nature's Fury 60

Rainbows: Arcs of Color 62

Dew: Diamond Drops of Water 64

Leaves: The Science of Their Changing Colors 66

Echoes: Sounds That See in the Dark 68

Acid Rain: Killer Downpour 70

Pollution: Harming Our Environment 72

Geology and Prehistory

Geology: Studying the Earth 74

Rocks and Minerals: The Earth's Building Blocks 76

Caves: When Water Is Stronger than Stone 78

Diamonds:
The Hardest-Working Gemstones in the World 80

Chalk: The Remains of Tiny Shells 82

Fossils: Ancient Life in Stone 84

Mammoths and Mastodons: Ancient Elephants 86

Dinosaurs: Giants of the Past 88

Dinosaurs: A Mystery Disappearance 90

Tyrannosaur: The Tyrant King 92

GLOSSARY 94

INDEX 95



Lightning storm, Tucson, Arizona
© Tom Ives/Corbis

Cover photos (top): lightning storm, Tucson, Arizona, © Tom Ives/Corbis; (center): maple leaf, © Corbis; (bottom): illustration by Joseph Taylor

The Earth and Earth Sciences

INTRODUCTION

What's another name for giant floating ice cubes?
How did the dinosaurs disappear?
Is a "finger of land" smaller than your hand? What's an oasis?

In Volume 1, ***The Earth and Earth Sciences,*** you'll discover answers to these questions and many more. Through pictures, articles, and fun facts, you'll learn about weather, study oceans and landscapes, and go back in time to the days of the dinosaurs.

To help you on your journey, we've provided the following guideposts in *The Earth and Earth Sciences*:

- **Subject Tabs—**The colored box in the upper corner of each right-hand page will quickly tell you the article subject.
- **Search Lights—**Try these mini-quizzes before and after you read the article and see how much—*and how quickly*—you can learn. You can even make this a game with a reading partner. (Answers are upside down at the bottom of one of the pages.)
- **Did You Know?—**Check out these fun facts about the article subject. With these surprising "factoids," you can entertain your friends, impress your teachers, and amaze your parents.
- **Picture Captions—**Read the captions that go with the photos. They provide useful information about the article subject.
- **Vocabulary—**New or difficult words are in **bold type**. You'll find them explained in the Glossary at the back of this volume. And there's a complete listing of all Glossary terms in the set in the ***Reference Guide and Index***, Volume 13.
- **Learn More!—**Follow these pointers to related articles throughout the set.

And don't forget: If you're not sure where to start, where you saw something before, or where to go next, the Index at the back of this volume and the ***Reference Guide and Index*** (Volume 13) will point the way.

Have a great trip!

MY FIRST BRITANNICA

Learning About the Earth

Geography is a science that studies the Earth's surface. It studies what makes the different shapes and colors of the Earth—the ground, rocks, and water, what does and does not grow.

If you look at the Earth as a geographer does, then you might see it as a colorful map. Much more than half of it is blue with oceans, lakes, rivers, and streams. In some places it is tan-colored with the sands of dry deserts. In other places it is green with forests. There are purple-gray mountains and white snowcapped peaks. And there are the soft yellow of grainfields and the light green of leafy crops.

Part of learning about the Earth is learning where people can and can't live. The different colors of your Earth map can help you discover this.

You won't find many people in the tan, white, or larger blue parts—deserts, the snowfields, and oceans. Not many people live in the deserts, because deserts are hot and dry. Very few plants can grow there. In the high mountains and at the North and South poles, it is very cold. Most plants don't like the cold, and most people don't either.

You will find people in and near the green and yellow parts and the smaller blue parts—the farmlands, forests, rivers and lakes. To those regions you can add brown dots and clusters of dots, for towns and cities.

There's a lot to learn about the Earth, just as there's a lot to learn about a friend. Geography helps you become a friend of the Earth.

LEARN MORE! READ THESE ARTICLES…
CONTINENTS (VOLUME 1) • FERDINAND MAGELLAN (VOLUME 4)
OCEANS (VOLUME 1)

DID YOU KNOW?
The "big blue marble" is a nickname for the planet Earth. This is because from space our world looks like a big round marble, all blue with swirling white streaks of clouds.

The coast of Nova Scotia, in Canada, shows some of the Earth's many shapes and colors. Geography looks closely at what makes these different shapes and colors.
© Raymond Gehman/Corbis



SEARCH LIGHT

Areas where not many people live are also the areas where few plants grow. Why do you think that is? (Hint: What do you do with lettuce, beans, and apples?)

Answer: If few plants grow in an area, then few animals will live there. This is because animals need either plants or other animals to eat. And without plants or animals, there's nothing for people to eat.

The Largest Pieces of Land

NORTH AMERICA

The continents are the largest bodies of land on the Earth. Look at a globe. Whatever is blue is water. Most of the rest is land: the continents.

There are seven continents. From biggest to smallest, they are Asia, Africa, North America, South America, Antarctica, Europe, and Australia.

Some continents, such as Australia and Antarctica, are completely surrounded by water. And some continents are joined together, as Asia and Europe are.

Continents are physical bodies, defined by their shape, size, and location. They have mountains, rivers, deserts, forests, and other physical features. But humans have divided them into **political** groups, called "countries" or "nations."

Large continents, such as Asia, may include both very large countries, such as China, and very small countries, such as Nepal. Australia, the smallest continent, is also itself a country—one of the world's largest.

North America contains three large countries—Canada, the United States, and Mexico—and a few small countries in a region known as Central America. Europe, on the other hand, is the world's second smallest continent but has about 50 countries.

Africa, the second largest continent, is believed to be where the very first humans appeared. The continent of Antarctica is all by itself down at the South Pole. It is rocky and is covered by thick ice that never melts. Only a few plants and animals can be found along its seacoasts.

Earth scientists believe that the continents began forming billions of years ago. Lighter parts of Earth's **molten** core separated from heavier parts and rose to the top. As they cooled off and became solid, the land that would become the continents formed.

The continents were probably joined together at first and then drifted apart. One theory supposes that there were once two "supercontinents": Gondwanaland in the south and Laurasia in the north.

LEARN MORE! READ THESE ARTICLES…
AFRICA (VOLUME 8) • AUSTRALIA (VOLUME 7) • EUROPE (VOLUME 6)

SOUTH AMERICA

SEARCH LIGHT

Name the seven continents.



DID YOU KNOW?

Here's a silly rhyme to help you remember the continents:

Africa is hot,
Antarctica is cold.
Asia is crowded,
Europe is old.
There's an America down South,
and one up North too,
And Australia has the kangaroo.

Answer: Africa, Antarctica, Asia, Australia, North America, South America, and Europe.

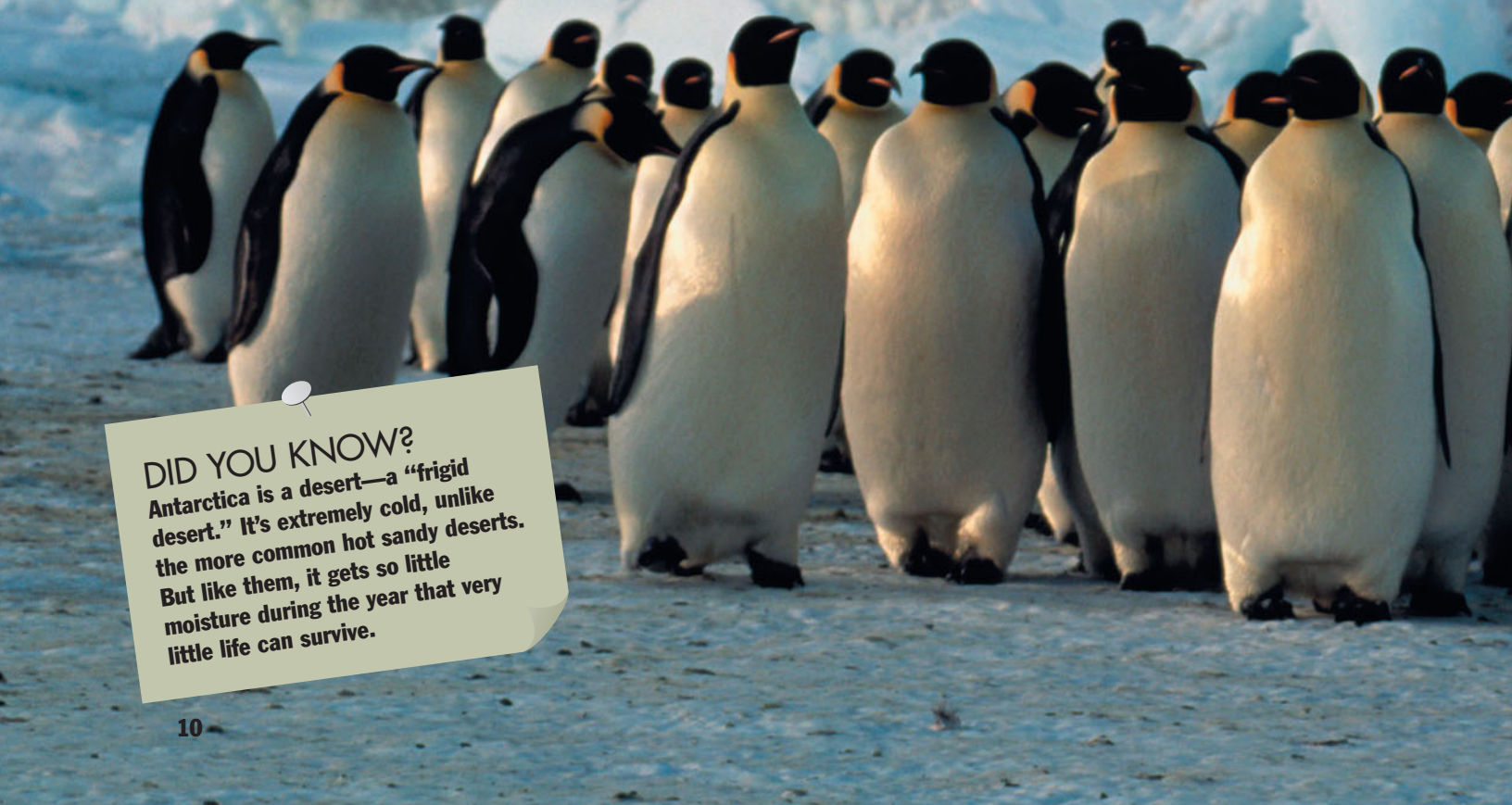
A Continent of Extremes

Antarctica is the coldest, windiest, and highest **continent** in the world! It lies at the bottom of the world, surrounding the South Pole. The name Antarctica means "opposite to the Arctic," referring to the Arctic Circle on the other side of the world.

The coldest temperature recorded in Antarctica is also the world's lowest, at –128.6° F. A sheet of ice covers the entire continent. At its thickest point, the ice is almost 3 miles deep—and that's on *top* of the ground. The continent contains most of the world's ice and much of the world's freshwater. Toward the edges of the continent, the ice becomes glaciers, creeping rivers of ice.

Strange and wonderful Antarctica has only one day in the entire year. The Sun generally rises on September 21 and sets on March 22. This one long day is the summer! From March 22 until September 21, the South Pole is dark and Antarctica has its night, or winter.

People do not live permanently in Antarctica. Only scientists and some adventurous tourists visit. There are, however, 45 species of birds in



DID YOU KNOW?

Antarctica is a desert—a "frigid desert." It's extremely cold, unlike the more common hot sandy deserts. But like them, it gets so little moisture during the year that very little life can survive.

Antarctica, including the emperor penguin and the Adélie penguin, that live near the seacoast. Also, four species of seals breed only in Antarctica.

Whales live in the water around the **frigid** continent. The killer whale, the sperm whale, the rare bottle-nosed whale, the pygmy whale, and seven species of baleen whales can all be found off the coast.

Oddly, there are active volcanoes in Antarctica. That means you can find not just the world's coldest temperatures here but, deep down, some of the hottest too.

LEARN MORE! READ THESE ARTICLES…
GLACIERS (VOLUME 1) • PENGUINS (VOLUME 11)
WHALES (VOLUME 12)

These emperor penguins are some of Antarctica's very few inhabitants. So in a way they might indeed be considered the "rulers" of this harsh and beautiful frozen desert continent.
© Galen Rowell/Corbis

SEARCH LIGHT

Match the numbers with the correct labels. You may have to do some figuring and clever thinking!

–128.6 ***bird species***
182.5 ***thickness of ice***
3 ***length of one day***
45 ***coldest temperature***

Answer: ***45 — bird species***
3 (miles) — thickness of ice
182.5 (days) — length of one day
–128.6 (° F) — coldest temperature

Dry Spots in a Watery World

Islands are areas of land surrounded on all sides by water. Islands come in all shapes and sizes. The very smallest are too small to hold even a house. The largest islands contain whole countries.

If you live in England, Iceland, Australia, or Japan, you live on an island. But these islands are so large that you might walk all day and never see water.

How do islands develop in the first place?

Some islands begin as fiery volcanoes in the ocean. Hot lava pours out of the volcano, making the island bigger and bigger. Slowly, as the lava cools, it becomes solid land, and when it rises above the water, it becomes an island. These are the volcanic islands.



Small island in the South Pacific Ocean.
© Craig Tuttle/Corbis

Other islands are actually parts of the world's **continents**. Some of the land toward the edge of the continent may have been worn away over many, many years by wind or rain, or perhaps some of it sank. Then water from the ocean filled the low places and made a new island.

A row of islands may once have been the tops of mountains in a mountain range. The Aleutian Islands off the coast of North America were probably once a part of a mountain range that connected Alaska with Asia.

Maybe most surprising are the islands that are built up from the bottom of the ocean from the skeletons of tiny sea animals called "coral." As some corals die, others live on top of them. After thousands of years a coral island rises to the ocean surface. And these islands go on living!

SEARCH LIGHT

Find and correct the error in the following sentence: Coral islands are made of tiny ocean rocks that have piled on top of each other for thousands of years.

LEARN MORE! READ THESE ARTICLES…
CORAL (VOLUME 11) • SEYCHELLES (VOLUME 8) • VOLCANOES (VOLUME 1)

This photo from the air shows one of the islands of the Maldives, a country made up of about 1,200 islands in the Indian Ocean.
© Lawson Wood/Corbis

DID YOU KNOW?

If you try to count the number of islands in the world by looking at a globe, you'll probably come up with 300 or so. But that's only the major islands. Altogether the total is closer to 130,000.

Answer: Coral islands are made of tiny ocean creatures [or creatures' skeletons] that have piled on top of each other for thousands of years.



DID YOU KNOW?

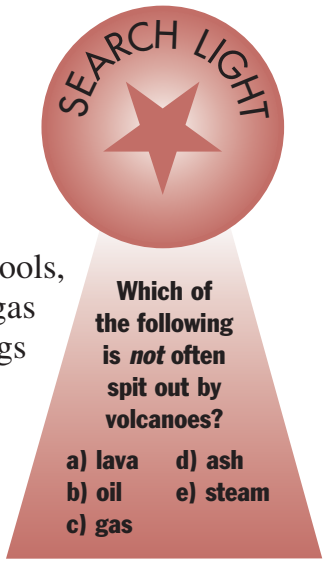
The remains of ancient Pompeii and the other cities buried by Mount Vesuvius' eruption were amazingly preserved. Loaves of bread that had been baking at the moment were found. These discoveries marked the beginning of the modern science of archaeology.

Mountains of Smoke and Fire

Deep under the Earth's surface it's so hot that even rock melts. Sometimes this molten rock, called "magma," is pushed up to the Earth's surface. At that point it is referred to as "lava." And the opening, or vent, that lets the lava out is a volcano.

A volcano may explode violently, throwing rocks for miles. Or it might push the lava out so that it flows away, cools, and hardens. Some volcanoes release clouds of poisonous gas or huge clouds of ash. Volcanoes can even do all these things underwater.

Most volcanoes have been around for a very long time. Many haven't erupted in years and have cooled off. Volcanoes that won't be erupting anymore are called "dead volcanoes."



Some volcanoes still let off smoke. These "sleeping volcanoes" may "wake up" someday and start erupting. Mount Vesuvius in Italy slept for a thousand years. But one day in AD 79 it suddenly woke up. Its eruption spewed hot ash and rocky fragments that buried the city of Pompeii. A hot mud flow buried nearby Herculaneum. The remains are so well preserved that the area has been named a World Heritage site.

But not all volcanoes are destructive. If a volcano spits out enough lava and **debris**, it piles up into a mountain. The Hawaiian Islands and the island of Iceland were created this way.

Other volcanoes help provide heat and energy. Many Icelandic homes get their hot water from springs heated by volcanic steam. That steam can also be used to produce electricity. Also, plants grow very well in the rich soil left by volcanoes. And valuable gems, such as diamonds, can sometimes be found in the rocks that volcanoes spit out.

LEARN MORE! READ THESE ARTICLES…
MOUNTAINS (VOLUME 1) • NICARAGUA (VOLUME 9) • REYKJAVIK (VOLUME 6)

© Douglas Peebles/Corbis

Answer: b) oil

Building Earth's Giant Landscapes

SEARCH LIGHT

Mountains are made when
a) volcanoes erupt.
b) earthquakes happen.
c) the Earth pushes together.
d) all of the above.

What makes mountains? Several different processes contribute to mountain building. And most mountains are formed by a combination of these, usually over millions of years.

Deep inside, the Earth is so incredibly hot that everything is melted, or molten. This molten material, or lava, escapes to the Earth's surface when volcanoes erupt. The lava cools and becomes hard and solid. This happens again and again, collecting until there is a volcanic mountain.

Mount Fuji in Japan and Mount St. Helens in Washington state, U.S., are volcanic mountains. There are also many undersea volcanic mountains—much taller than anything on land!

In some cases strong earthquakes caused the surface rock for miles and miles to break. Part of the surface would then be lower and part of it higher. More earthquakes moved the lower parts down and the upper parts up. Eventually, the high parts became tall enough to make mountains.

Still other mountains were pushed up from the bottom of an ocean when two enormous portions of the Earth crashed together—*very slowly*, over millions and millions of years. Some of the largest mountain chains formed this way. The Andes of South America are an example.

Another mountain-building process is called "folding." If you push a carpet up against a wall, it folds and rumples. That's basically the way the Appalachian Mountains in eastern North America were formed.

At first most mountains were steep and sharp. But even hard rocks can be worn away. Slowly, with the wind and the rain rubbing at them, steep sharp mountains grow smoother, shorter, and rounder.

LEARN MORE! READ THESE ARTICLES…
ANDES (VOLUME 9) • TENZING NORGAY (VOLUME 4)
VOLCANOES (VOLUME 1)

DID YOU KNOW?
To be considered a mountain, the land must rise at least 2,000 feet above its surroundings. Mount Everest, the world's highest mountain, rises 29,035 feet above sea level.

© David Muench/Corbis

Answer: d) all of the above.

The Nitty-Gritty

You can find sand at the edge of lakes, the bottoms of rivers, and the seashore. You can find it in mountain valleys, deserts, and, of course, a sandbox. Where does all this sand come from?

Sand is created when rocks break into tiny, tiny pieces. Wind, ice, and rain knock against high mountain cliffs. And slowly, over millions of years, these forces break off pieces of rock. The pieces bounce down the mountainside and break off other pieces of rock—while it's also breaking into smaller and smaller pieces itself. It isn't sand yet, but it's getting there.

Rivers and glaciers are also good at making sand. A river's water rushes along, carrying rocks with it and breaking them into little pieces. The ice of a glacier grinds away at whatever rocks it slowly rolls across.

Another great sand maker is the ocean. Every day, all over the world, tides rise and fall, pushing against rocks over and over. Waves tear at the rocks along the shore, wearing them down.

Thanks to the weather, water, and ice, some of these broken rocks finally get so small that they become what we call "sand."

Now that you have all this sand, what can you do with it? Sand is used for paving roads. Bricks made with sand are harder and stronger than other bricks. Sand is also used to filter (or clean) water. When it's sprayed with great force against stone or brick, it can grind away thick layers of dirt or even paint in a process called "sandblasting."

And, of course, sand is great for building sand castles!

LEARN MORE! READ THESE ARTICLES…
ALGERIA (VOLUME 8) • DESERTS (VOLUME 1) • OCEANS (VOLUME 1)

Mounds or ridges of sand like these are called "sand dunes." They're caused by the combined action of wind and gravity.
© Dave G. Houser/Corbis





DID YOU KNOW?

Once a year the Harrison Hot Springs resort in British Columbia, Canada, holds the world championship of sand sculpting. The rules say sculptures can be made only of water and sand, and they must be finished in under 100 work hours.

Answer: TRUE. Sandblasting is a powerful process for cleaning stone or brick.

Lands of Little Water

Deserts are places that get very little rain each year—so little rain that most trees and plants cannot grow there. Some deserts will go for years without rain. They are difficult places to live in, and the few plants, animals, and people who live there have to be tough to survive. Every continent except Europe has a desert. Even Antarctica has one, a **frigid** desert.



Golden desert snapdragons, or yellow Mojave flowers, in Death Valley, California, U.S.
© Darrell Gulin/Corbis

Most deserts, however, are arid, or dry, deserts with mile after mile of sand, baked earth, and barren rock. In the daytime these places look like lost worlds—hot, dry, and silent. Usually, the only plants growing there are low thorny ones. These plants store most of the water they are able to collect. It may be a long time before their next drink.

At night it can be quite cold in the desert. That's when creatures that have been hiding from the Sun's burning rays come out of their homes. Many of the creatures are lizards and insects such as scorpions. There are also different kinds of rats as well as other, larger animals.

You can hear the animals squeaking and growling near water holes and springs. That's where the coyotes, badgers, bobcats, foxes, and birds gather, all hunting for food and water. When the rare spring does bubble up in the desert, plants and trees begin to grow. An island of green like this is called an "oasis."

Many people choose to live in the desert. In late afternoon the sky turns crimson and gold, and the mountains make purple shadows. And at night the stars seem close enough to touch.



LEARN MORE! READ THESE ARTICLES…
ALGERIA (VOLUME 8) • CAMELS (VOLUME 12) • OASIS (VOLUME 1)

This California (U.S.) desert, called Death Valley, is both beautiful and dangerous. It's also the lowest point below sea level in the Western Hemisphere.
Joseph Sohm—Chromosohm/Photo Researchers



DID YOU KNOW?

Desert sands are known to "sing." For some reason that scientists do not yet fully understand, sand sometimes makes a booming, barking, or humming noise when walked upon or moved by some other natural force.

Answer: Every continent except Europe has a desert.



This peninsula in the U.S. state of Michigan is small by some standards. But it's an excellent example of what a peninsula looks like.
© James L. Amos/Corbis

Fingers of Land

A peninsula is a body of land surrounded by water on three sides. The word "peninsula" comes from the Latin *paene insula*, meaning "almost an island." There are peninsulas on every **continent**, but every one is different. Most peninsulas of any significance extend into oceans or very large lakes.

In the United States, Florida is a peninsula. The state of Alaska qualifies as one and has several smaller peninsulas of its own.

One of the last great wilderness areas in the United States is on the Olympic Peninsula in Washington state. It is surrounded by the Pacific Ocean, the Strait of Juan de Fuca, and Puget Sound. It has a rainforest, rivers, **alpine** peaks, glaciers, and such creatures as salmon and elk.

In Mexico there are two main peninsulas, the Yucatán Peninsula in the east and Baja California in the west. The Yucatán Peninsula draws tourists to the ruins of great Mayan cities such as Uxmal and Chichén Itzá.

Another famous peninsula is the Sinai Peninsula of Egypt. It is triangular in shape. The peninsula links Africa and Asia. In Jewish history the Sinai Peninsula is known as the site where God appeared before Moses and gave him the Ten Commandments.

Europe too has several peninsulas. In northern Europe the Scandinavian Peninsula contains the countries of Norway and Sweden. Denmark forms another. And the Iberian Peninsula in southern Europe is made up of Spain and Portugal. Italy and part of Greece are peninsulas as well.

The world's largest peninsula is Arabia, at over a million square miles. Other important peninsulas in Asia include Korea and Southeast Asia.

LEARN MORE! READ THESE ARTICLES…
ISLANDS (VOLUME 1) • ITALY (VOLUME 6) • KOREAN PENINSULA (VOLUME 7)



DID YOU KNOW?

Peninsulas such as Iberia (Spain and Portugal), Italy, and Florida tend to be popular tourist destinations. For example, Florida gets almost 59 million tourists a year.

SEARCH LIGHT

Which of the following are peninsulas? (Feel free to consult your classroom map or globe.)

Korea	**Britain**
Portugal	**Arabia**
Italy	**Denmark**
Hawaii	**Florida**

Answer: The only two that are *not* peninsulas are Hawaii and Britain. They are islands.

Endangered Ecosystems

Imagine a forest with a carpet of wet leaves littering the ground. If you look up, you see only a **canopy** of broad green leaves. There are wildflowers on the trees. You can hear water drops, insects, birds, and, perhaps, the distant screech of a monkey. The place you are picturing is a rainforest.

A rainforest is a kind of **ecosystem**—a community of all the living things in a region, their physical environment, and all their interrelationships.

Rainforests are dense, wet, and green because they get large amounts of rain. The Amazon Rainforest in South America is the world's largest rainforest. Other large rainforests lie in Central Africa and Southeast Asia. Northeastern Australia's "dry rainforest" has a long dry season followed by a season of heavy rainfall.



View of the Venezuelan rainforest canopy from the air.
© Fotografia, Inc./Corbis

In a rainforest nothing is wasted. Everything is **recycled**. When leaves fall, flowers wilt, or animals die on the forest floor, they decay. This releases nutrients into the soil that become food for the roots of trees and plants. Water **evaporates** in the forest and forms clouds above the trees. Later this water falls again as rain.

Rainforests are rich in plants and animals. Many have not even been discovered yet. Some rainforest plants have given us important medicines. These include aspirin, which is a pain reliever, and curare, used to help people relax during medical operations.

Unfortunately, the rainforests are being destroyed rapidly. The trees are felled for **timber** and to create land for farming. Animals living in these forests are facing extinction. And once lost, these animals and forests cannot be replaced.

LEARN MORE! READ THESE ARTICLES…
AMAZON: RAINFOREST RIVER (VOLUME 9) • CONGO (VOLUME 8)
MEDICINE (VOLUME 2)

DID YOU KNOW?

Rainforests are being cut down or burned at an alarming rate. Scientists estimate that every day a rainforest the size of New York City is lost.



© Gary Braasch/Corbis

SEARCH LIGHT

What's one important way that rainforests help people? (Hint: Think of aspirin.)

Answer: Rainforest plants have helped unlock the secrets of many of the drugs we use to keep ourselves healthy today. Aspirin is one of these.


SEARCH LIGHT
What's one way that swamps and marshes are alike? What's one way that they're different?

Grassy Wetlands

A marsh is a wetland, an area of land containing much soil moisture that does not drain well. Swamps are also wetlands. The main difference is that while trees grow in a swamp, grasses grow in a marsh. Marsh grasses have shallow roots that spread and bind mud together. This slows the flow of water, which creates rich soil deposits and encourages the growth of the marsh.

DID YOU KNOW?
The largest marsh in the world is the Florida Everglades. This marsh-swamp combination is somewhat more than 4,300 square miles and is home to many extraordinary animals, including the very rare Florida panther.

There are two main types of marshes, freshwater marshes and salt marshes. Freshwater marshes are found at the mouths of rivers. These marshes are famous as bird **sanctuaries** and are an important **habitat** for many birds, mammals, and insects. If we didn't have the marshes, then we would lose many of these animals. There simply isn't anywhere else where they can survive.

The Amazon in South America, the Congo in Africa, the Nile in Egypt, the Tigris and Euphrates in Iraq, and the Mekong in Vietnam all have large freshwater marshes.

Did you know that the rice you eat grows in freshwater marshes? Rice is the most important of all marsh plants. It provides a major portion of the world's food.

Salt marshes are formed by seawater flooding and draining flat land as tides go in and out. The grasses of a salt marsh will not grow if the ground is permanently flooded. Salt marshes are found along the east coast of the United States, in the Arctic, in northern Europe, in Australia, and in New Zealand.

LEARN MORE! READ THESE ARTICLES…
MOSQUITOES (VOLUME 11) • RUSHES AND REEDS (VOLUME 10)
SWAMPS (VOLUME 1)

The Ruby Marshes in the state of Nevada, U.S., provide a great example of what these grassy wetlands look like.
© David Muench/Corbis

Answer: Both swamps and marshes are wetlands and support a lot of wildlife. But while trees grow in swamps, grasses grow in marshes.

Waterlogged Forests

People once believed that drinking the tea-colored water from the Great Dismal Swamp in the eastern coastal United States was magic. They believed it prevented illness and made people live longer. The swamp water wasn't magic, of course. But its peculiar color, plus the mysterious swampland's **exotic** beauty, made an ideal setting for such folklore.

> DID YOU KNOW?
> **Mangrove trees have a special way of surviving the watery, salty conditions of the swamps they live in. They have an aboveground root system that allows the trees to take in air.**

Swamps are special wetland areas found throughout the world. They are usually very wet, wide, low, and green and have many trees. Swamps are found in areas where the water doesn't drain and thus keeps the ground **waterlogged**. Swamps are different from marshes and other kinds of wetlands by having trees as their major form of plant life.

Freshwater swamps tend to develop in low-lying regions around rivers. The trees in a swamp lack deep-growing roots. Few kinds of plants can live in swamps. But some swamps support a variety of plants and a great number of animal species as well.

For example, in the Okefenokee Swamp of the southeastern United States grow such trees as the giant tupelo and the bald cypress. Spanish moss, brush, and vines grow on these trees. There are exotic flowers such as lilies, rare orchids, and floating hearts. Wildlife is varied and plentiful too. There are 175 species of birds and at least 40 species of mammals, including raccoons, black bears, white-tailed deer, bobcats, foxes, and otters. Alligators also live there, as do mosquitoes, which breed in standing water.

Besides river swamps, there are saltwater and mangrove swamps. Salt swamps are formed by flooding seawater. Mangrove trees are very hardy and can survive in sandy, salty areas. The **deltas** of the Mekong, Amazon, Congo, and Ganges rivers have large mangrove swamps.

LEARN MORE! READ THESE ARTICLES…
ALLIGATORS AND CROCODILES (VOLUME 11) • MARSHES (VOLUME 1)
ORCHIDS (VOLUME 10)

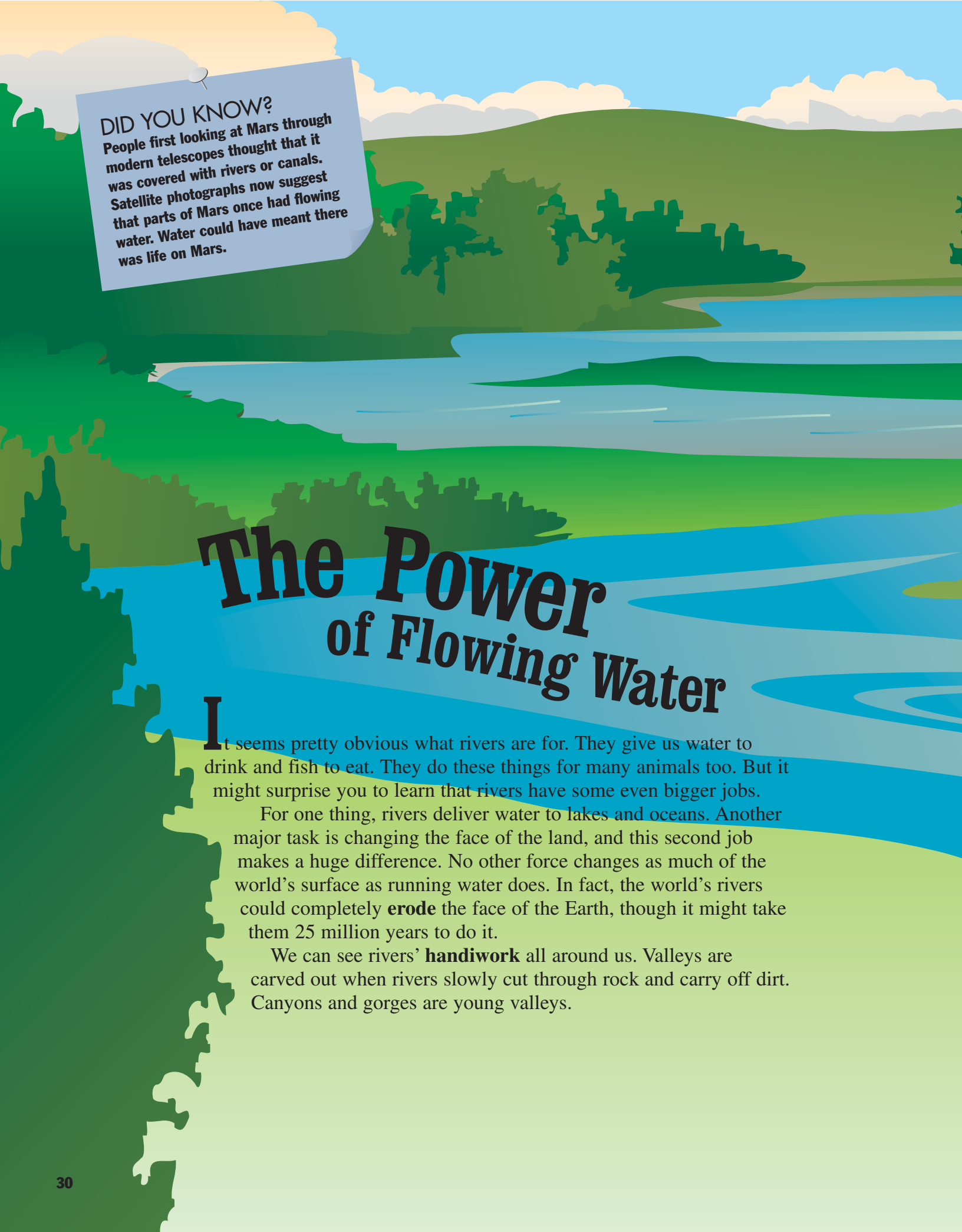
The bald cypress survives well in a swamp. Its roots tend to grow out to the sides more than straight down. They often send woody knobs, called "knees," above the waterline. The knees may be organs for getting air, and they are popular household ornaments.
© David Muench/Corbis



SEARCH LIGHT

Which item from the list below does *not* describe a swamp?
a) wet all the time
b) trees as major plant life
c) lots of grasses
d) formed by rivers and salt water

Answer: c) lots of grasses. Swamps have trees rather than grasses. Marshes are wetlands where grasses are the most common plant life.



DID YOU KNOW?

People first looking at Mars through modern telescopes thought that it was covered with rivers or canals. Satellite photographs now suggest that parts of Mars once had flowing water. Water could have meant there was life on Mars.

The Power of Flowing Water

It seems pretty obvious what rivers are for. They give us water to drink and fish to eat. They do these things for many animals too. But it might surprise you to learn that rivers have some even bigger jobs.

For one thing, rivers deliver water to lakes and oceans. Another major task is changing the face of the land, and this second job makes a huge difference. No other force changes as much of the world's surface as running water does. In fact, the world's rivers could completely **erode** the face of the Earth, though it might take them 25 million years to do it.

We can see rivers' **handiwork** all around us. Valleys are carved out when rivers slowly cut through rock and carry off dirt. Canyons and gorges are young valleys.



SEARCH LIGHT

Fill in the blank: You could describe one of a river's main jobs as being a sculptor of _____.

Another impressive bit of river handiwork is the waterfall. Waterfalls happen when a river wears away soft rock and then drops down onto hard rock that it can't erode. Some falls are **harnessed** to produce electricity.

The world's tallest waterfall is Angel Falls in Venezuela. It drops an incredible 3,212 feet. Khone Falls on the Mekong River in Southeast Asia sends 2 1/2 million gallons of water over the edge every second—the most of any falls and nearly double the flow of North America's Niagara Falls.

The world's longest river is the Nile in North Africa. The Amazon in South America is a little shorter but carries more water than any other river.

LEARN MORE! READ THESE ARTICLES…
FLOODS (VOLUME 1) • GRAND CANYON (VOLUME 9)
NILE RIVER: EGYPT'S GIFT (VOLUME 8)

Answer: You could describe one of a river's main jobs as being a sculptor of land.

Engulfed by Water

Take a small bowl and place a sponge in it. Now slowly pour water into the bowl. The sponge soaks up the water. But once the sponge is full, the bowl begins to fill up with water. If you pour more water, the bowl will overflow.

This is what happens in a flood. The ground is like a giant sponge that soaks up rainwater until it is full. Some of the water dries and goes back into the air. The rest, called "runoff," can't be soaked up and can cause floods.

DID YOU KNOW?
A disastrous flood in 1919 in Boston, Massachussetts, U.S., had nothing to do with water. A molasses tank exploded, and over 2 million sticky gallons poured out in a wave 15 feet high. Twenty-one people died, and for years Boston smelled of molasses.

There are different types of floods. Spring floods occur when heavy winter snows melt rapidly. Floods caused by heavy rains can occur at any time of the year. Rivers overflow their banks, and the ground can't soak up the extra water.

The rain and wind accompanying hurricanes (or typhoons, in the Pacific Ocean) can also cause floods. Huge ocean waves **overwhelm** coastal towns, and the heavy rains cause rivers and streams to flood nearby areas. Such hurricane-created floods struck Central America in 1998, killing more than 20,000 people and leaving one and a half million homeless.

A flash flood, however, comes without warning. When a **cloudburst** occurs in hilly country or in a dry riverbed, the runoff is fast. The ground doesn't have time to soak up the rainwater. Destructive flash floods happen when a great deal of water overflows all at once.

Volcanic eruptions and earthquakes at sea may cause huge waves, called "tsunamis," that may swamp seacoasts. The volcanic eruption of Krakatoa in 1883 formed waves that flooded whole districts in Indonesia.

LEARN MORE! READ THESE ARTICLES…
PRAGUE (VOLUME 6) • TSUNAMIS (VOLUME 1) • WATER POWER (VOLUME 2)



In 1999 these people and others suffered losses in the floods that followed Hurricane Irene in Florida, U.S.
© AFP/Corbis

SEARCH LIGHT

Fill in the blanks: When it rains, the _____ soaks up the water. Water that doesn't get soaked up is called "_____."

Answer: When it rains, the ground soaks up the water. Water that doesn't get soaked up is called "runoff."



In the Sahara desert an oasis like this depends heavily on date palms. They provide both food and enough shade to grow other plants that are too sensitive to grow directly in the desert sun.
Robert Everts–Stone/Getty Images

Water in the Desert

Probably the most precious thing in the world is fresh water. If a person was lost in a desert without any special equipment or supplies, he or she would soon die from lack of water.

It is therefore not surprising that very few people live in the desert. But some people do. Where do they stay? Obviously, they stay where there is water.

A place in the desert with a natural supply of fresh water is called an "oasis." An oasis has enough water to support a variety of plants.

Most oases (the plural of "oasis") have underground water sources such as springs or wells. Al-Hasa is the largest oasis in the Middle Eastern country of Saudi Arabia. It has acres and acres of palm groves and other crops.

But not all oases have a constant supply of water. Some areas have dry channels called "wadis," where springs sometimes flow. And desert areas at higher elevations sometimes receive extra rain to support plant life.

In the Sahara people can live year-round in the oases because the water supply is permanent. The oases allow crops to be watered, and desert temperatures make crops grow quickly. The date palm is the main source of food. However, in its shade grow citrus fruits, figs, peaches, apricots, vegetables, and cereals such as wheat, barley, and millet.

The Siwa Oasis in western Egypt has about 200 springs. It is a very fertile oasis, and thousands of date palms and olive trees grow there. In fact, the people living in this oasis export dates and olive oil to other places in the world.

LEARN MORE! READ THESE ARTICLES…
DESERTS (VOLUME 1) • LIBYA (VOLUME 8)
PALM (VOLUME 10)

DID YOU KNOW?

Few people realize just how extreme desert weather can be. The hottest desert temperature recorded is 136° F, in Libya. And in Chile there is a desert that apparently hasn't had any rain for the last 400 years.

Answer: An oasis is like an island of water surrounded by a sea of sand. It's kind of a reverse island.


SEARCH LIGHT
How does the ocean help plants to grow?

The World of Water

Did you know that nearly three-fourths of the Earth's surface is underwater? And almost all of that water is in one of the four major oceans. From biggest to smallest the oceans are: the Pacific, the Atlantic, the Indian, and the Arctic. Seas, such as the Mediterranean and the Caribbean, are divisions of the oceans.



© Kennan Ward/Corbis

The oceans are in constant motion. The **gravity** of the Moon and the Sun pulls on the oceans, causing tides—the regular rising and falling of the ocean along beaches and coastlines. The Earth's **rotation** makes the oceans circulate clockwise in the Northern **Hemisphere** and **counterclockwise** in the Southern Hemisphere. And winds cause waves to ripple across the ocean surface, as well as helping currents to flow underneath.

Currents are like rivers within the ocean. Some are warm-water currents, which can affect temperatures on land, and some are cold-water currents, which generally flow deeper. Major ocean currents, such as the Gulf Stream off the North American coast, also make for faster ocean travel.

We know less about the oceans than we do about the Moon. The ocean depths hide dramatic deep trenches and enormous mountain ranges. The Mid-Atlantic Ridge extends for about 10,000 miles. It follows a curving path from the Arctic Ocean to the southern tip of Africa.

Oceans affect our lives in important ways. They provide fish to eat. They add moisture to the air to form clouds. And the clouds then make the rain that helps plants grow. Some scientists are even working on affordable ways to turn salt water into fresh water for drinking, cooking, washing, and watering crops. If they succeed, it will be one of the most important inventions of our time.

LEARN MORE! READ THESE ARTICLES…
SEAWEED (VOLUME 10) • SHIPS (VOLUME 2) • WAVES (VOLUME 1)

DID YOU KNOW?

The Mariana Trench near the island of Guam has the deepest spot measured so far, at nearly seven miles. The world's highest mountain, Mount Everest, could sink in that spot and still have a mile of water above it.

© Doug Wilson/Corbis

Answer: Ocean water helps plants grow by adding moisture to the air, which turns into clouds. When the clouds gather enough moisture, it rains, which helps plants grow.


SEARCH LIGHT
True or false? The Atlantic is the saltiest ocean.
SOUTH AMERICA
DID YOU KNOW?
Legend says that the Atlantic Ocean hides the remains of Atlantis, an island that supposedly sank beneath the sea. People have believed stories of Atlantis for many hundreds of years and have spent almost as much time searching for it.



EUROPE

The Youngest Ocean

The Atlantic Ocean is the world's second largest ocean, after the Pacific. It covers nearly 20 percent of the Earth. If you tasted water from all the oceans, you'd find the Atlantic to be the saltiest. And even though it is very old, it is actually the youngest ocean.

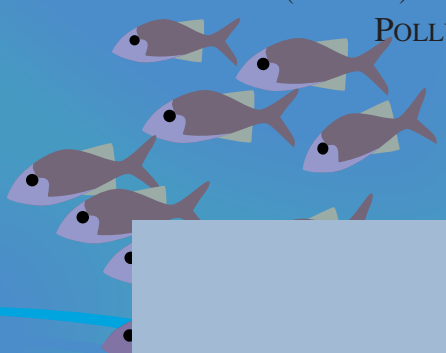
The Atlantic Ocean lies between Europe and Africa on one side of the globe and North and South America on the other. It reaches from the Arctic Ocean in the north to Antarctica in the south.

Like all oceans, the Atlantic has large movements of water **circulating** in it called "currents." Atlantic water currents move **clockwise** in the northern half of the world, but **counterclockwise** in the southern half. The Gulf Stream, a powerful and warm current in the North Atlantic, moves along the east coast of North America. There and elsewhere, the Gulf Stream has important effects on the weather.

Millions of tons of fish are caught each year in the waters of the Atlantic Ocean. In fact, more than half of all the fish caught in the world come from the Atlantic. The Atlantic is also used for activities such as sailing, windsurfing, and whale watching.

But despite the usefulness and magnificence of the Atlantic Ocean, the level of pollution has increased. People have allowed fertilizers, pesticides, and waste from toilets and sinks and factories to get into the ocean waters. As people and businesses try harder to stop pollution, the Atlantic will again become a healthier home for its animal and plant life.

LEARN MORE! READ THESE ARTICLES…
EUROPE (VOLUME 6) • MEDITERRANEAN SEA (VOLUME 1)
POLLUTION (VOLUME 1)



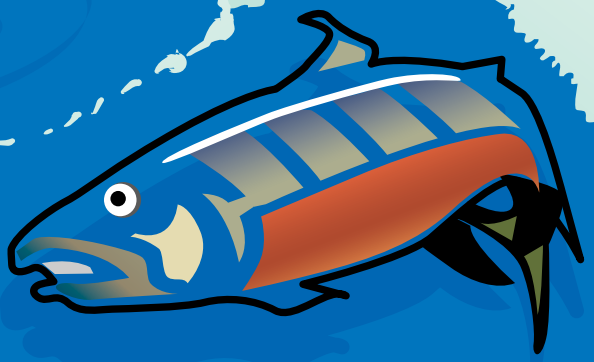
AFRICA

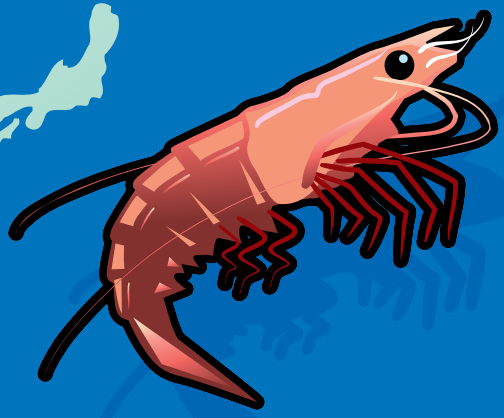
Answer: TRUE.

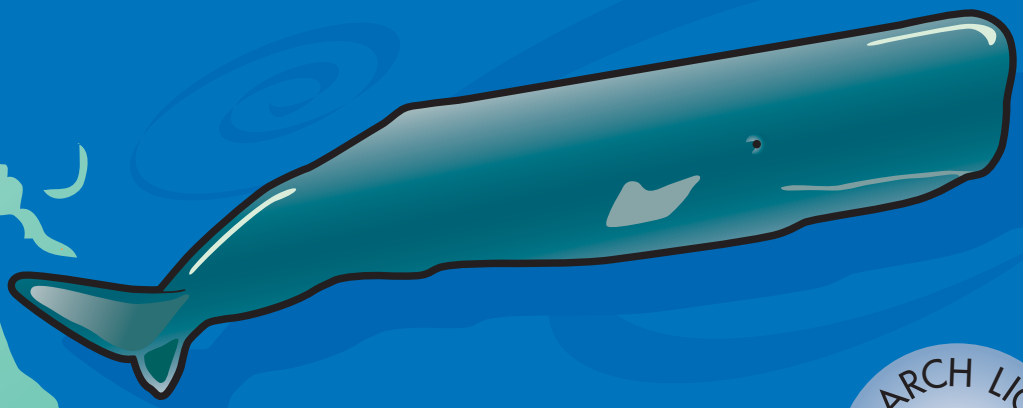
ASIA

DID YOU KNOW?

Whales, the largest animals in the Pacific, have had a strange evolutionary journey. Their early ancestors were land mammals with legs but eventually came to live in the sea and became whales.







AUSTRALIA

SEARCH LIGHT

Fill in the blanks: The Pacific is the _____ and the _____ of all the oceans.

Largest Ocean in the World

NORTH AMERICA

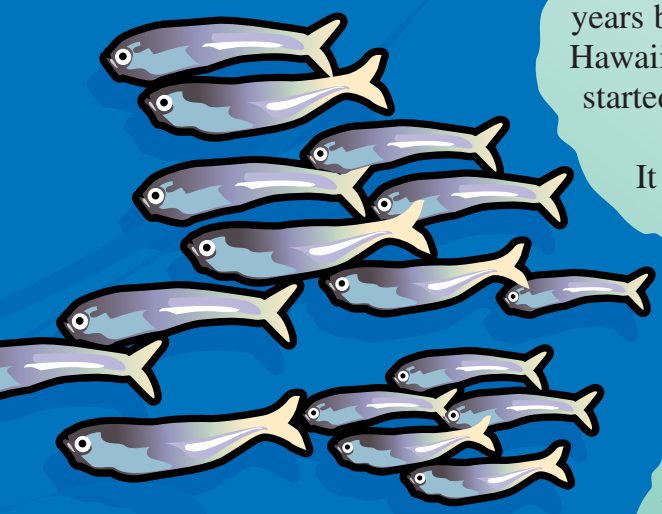
The Pacific Ocean is the largest ocean in the world. It covers nearly one-third of the Earth. The Pacific is also deeper than any other ocean. The Pacific Ocean lies between the **continents** of Asia and Australia on the west and North and South America on the east.

The Pacific's deepest parts are the ocean trenches. These trenches are long, narrow, steep, and very deep holes at the bottom of the ocean. Of the 20 major trenches in the world, 17 are in the Pacific Ocean. The deepest trench is the Mariana Trench. Part of the trench is nearly 7 miles deep.

There are also many islands in the Pacific Ocean. Some islands were once part of the continents. Some that were part of Asia and Australia include Taiwan, the Philippines, Indonesia, Japan, and New Zealand.

Other Pacific islands have risen up from the floor of the ocean. Many of them are born from volcanoes. These islands are built over thousands of years by the lava that comes out of the volcanoes. The Hawaiian Islands and the Galapagos, for example, started as volcanoes.

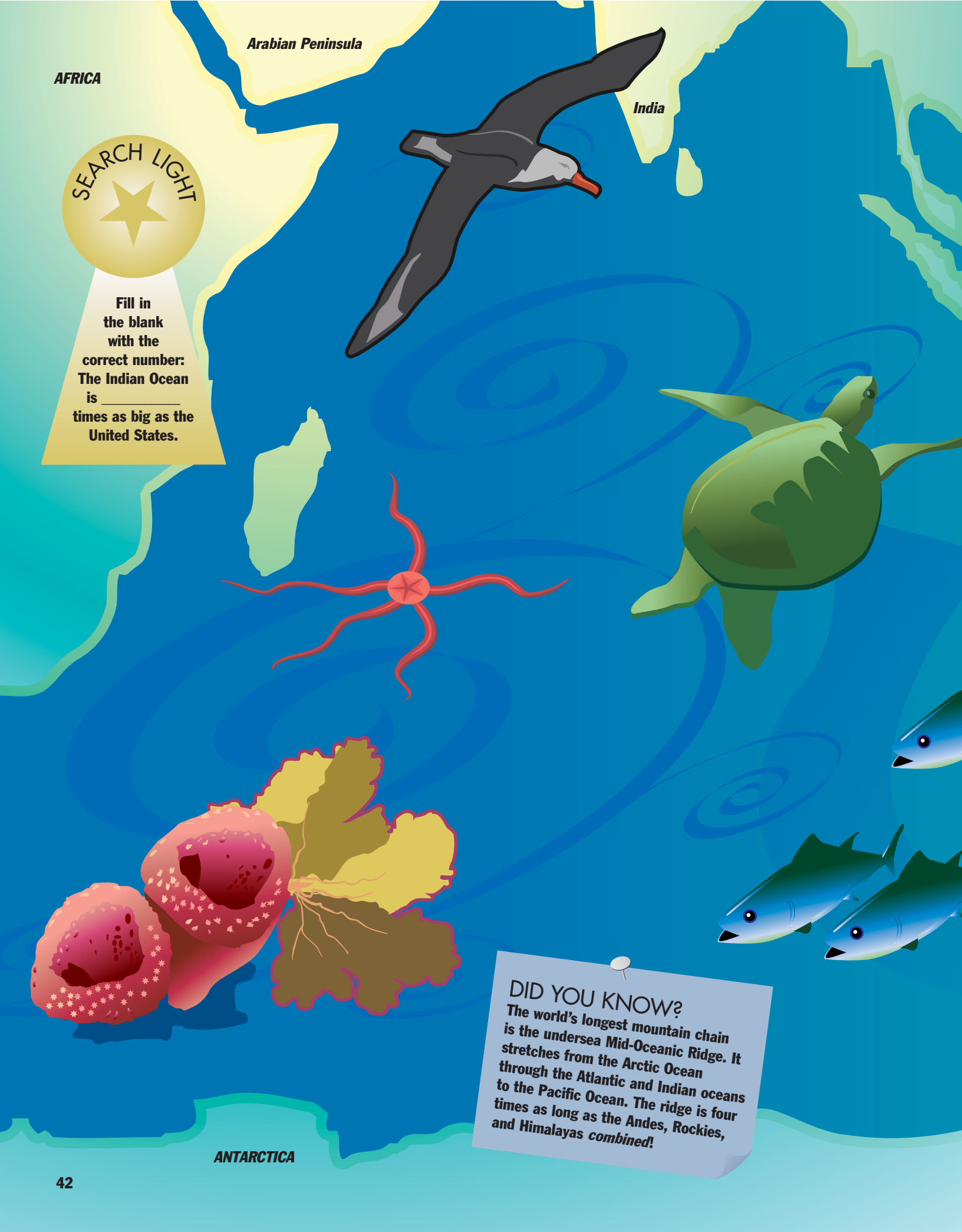
The Pacific Ocean is very rich in **minerals**. It also has large supplies of oil and natural gas. And there is rich **marine** life in the Pacific. Fish such as salmon in northwestern America, bonito and prawns in Japan and Russia, and anchovy in Peru are all major food sources for people worldwide.



SOUTH AMERICA

LEARN MORE! READ THESE ARTICLES…
ATLANTIC OCEAN (VOLUME 1) • GALAPAGOS ISLANDS (VOLUME 9)
JAPAN: VOLCANOES, EARTHQUAKES, AND PLUM RAINS (VOLUME 7)

Answer: The Pacific is the largest and the deepest of all the oceans.


Arabian Peninsula
AFRICA
India
SEARCH LIGHT
Fill in the blank with the correct number: The Indian Ocean is _____ times as big as the United States.
DID YOU KNOW?
The world's longest mountain chain is the undersea Mid-Oceanic Ridge. It stretches from the Arctic Ocean through the Atlantic and Indian oceans to the Pacific Ocean. The ridge is four times as long as the Andes, Rockies, and Himalayas *combined*!
ANTARCTICA

PACIFIC OCEAN

Ocean Between Many Continents

Millions of years ago, there was one huge mass of land in the Southern **Hemisphere**. It was the continent of Gondwanaland. But over many, many years Gondwanaland slowly broke up into the continents of South America, Africa, Antarctica, and Australia, as well as most of India.

The water that filled the growing space between these continents is now the Indian Ocean. The Indian Ocean is a huge body of salt water. It is the third largest ocean in the world—about five and a half times the size of the United States!

People from India, Egypt, and ancient Phoenicia (now mostly in Lebanon) were the first to explore this ocean. Later, Arabian merchants set up trade routes to the east coast of Africa. And Indian traders and priests carried their civilization into the East Indies. The dependable winds from the rainy season known as the "monsoon" made these voyages possible.

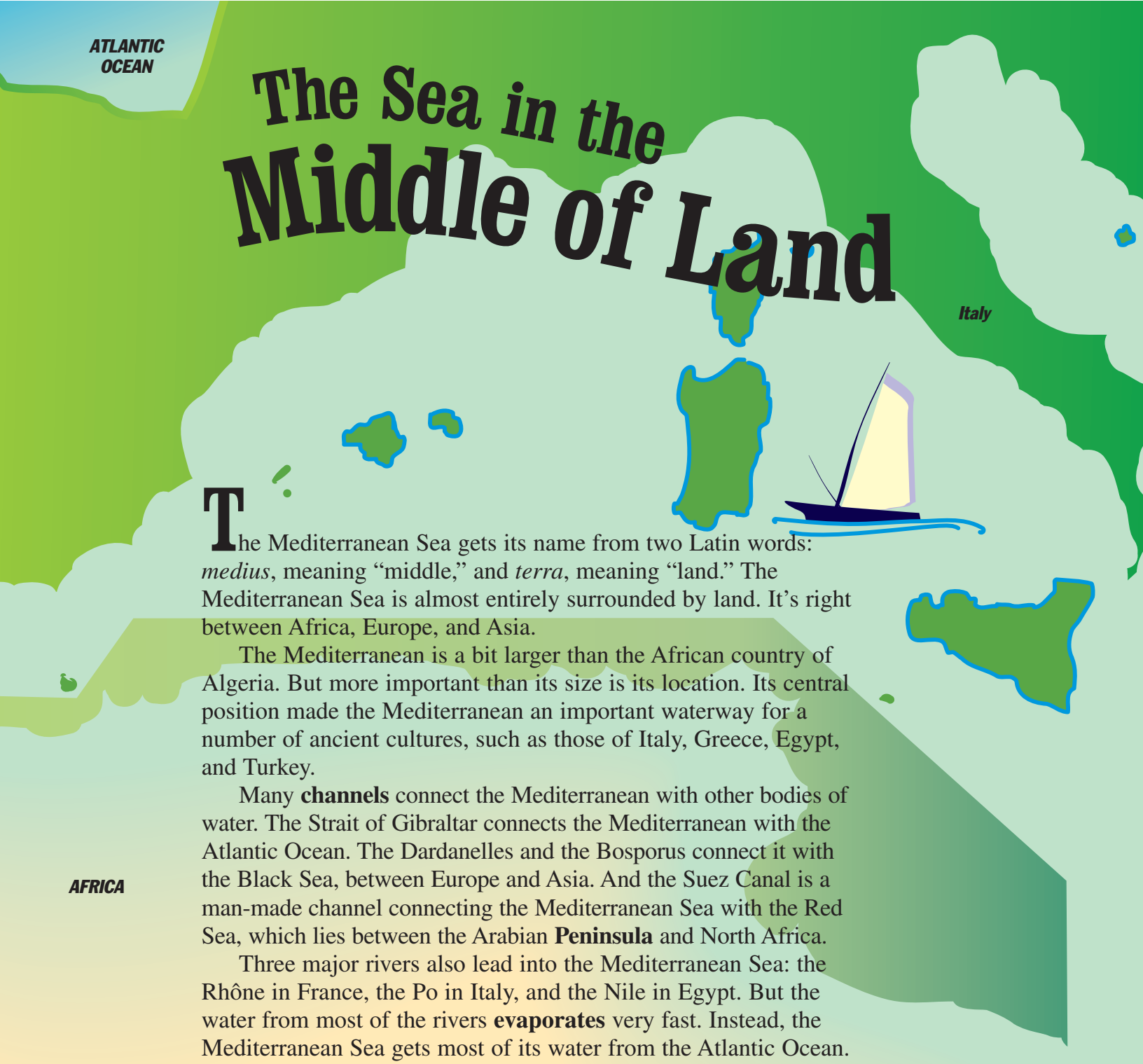
AUSTRALIA

Today the Indian Ocean has major sea routes. They connect the Middle East, Africa, and East Asia with Europe and the Americas. Ships carry tanks of **crude oil** from the oil-rich Persian Gulf and Indonesia. The oil is important to modern society, but spills from these oil tankers can endanger ocean life.

The Indian Ocean is alive with plants, as well as animals such as sponges, crabs, brittle stars, flying fish, dolphins, tuna, sharks, sea turtles, and sea snakes. Albatross, frigate birds, and several kinds of penguins also make their home there.

LEARN MORE! READ THESE ARTICLES…
INDIA (VOLUME 7) • OIL (VOLUME 2)
PACIFIC OCEAN (VOLUME 1)

Answer: The Indian Ocean is 5½ times as big as the United States.



The Sea in the Middle of Land

The Mediterranean Sea gets its name from two Latin words: *medius*, meaning "middle," and *terra*, meaning "land." The Mediterranean Sea is almost entirely surrounded by land. It's right between Africa, Europe, and Asia.

The Mediterranean is a bit larger than the African country of Algeria. But more important than its size is its location. Its central position made the Mediterranean an important waterway for a number of ancient cultures, such as those of Italy, Greece, Egypt, and Turkey.

Many **channels** connect the Mediterranean with other bodies of water. The Strait of Gibraltar connects the Mediterranean with the Atlantic Ocean. The Dardanelles and the Bosporus connect it with the Black Sea, between Europe and Asia. And the Suez Canal is a man-made channel connecting the Mediterranean Sea with the Red Sea, which lies between the Arabian **Peninsula** and North Africa.

Three major rivers also lead into the Mediterranean Sea: the Rhône in France, the Po in Italy, and the Nile in Egypt. But the water from most of the rivers **evaporates** very fast. Instead, the Mediterranean Sea gets most of its water from the Atlantic Ocean. So Mediterranean water is very salty.

There are many popular tourist **resorts** along the Mediterranean. These include some of the Mediterranean's many islands, such as Corsica, Sardinia, Sicily, Malta, Crete, and Cyprus. Tourists often like to take a **cruise** across the Mediterranean. They get to visit many different countries, try lots of different food, and see the **remains** of various ancient civilizations.

LEARN MORE! READ THESE ARTICLES…
ITALY (VOLUME 6) • NILE RIVER: EGYPT'S GIFT (VOLUME 8)
SUEZ CANAL (VOLUME 8)

EUROPE

DID YOU KNOW?

Various Mediterranean regions have special marriage customs. One area's custom is to cut the groom's tie into many pieces, which are then sold to the wedding guests for honeymoon money.

Bosporus

Dardanelles

Turkey (ASIA)

Egypt

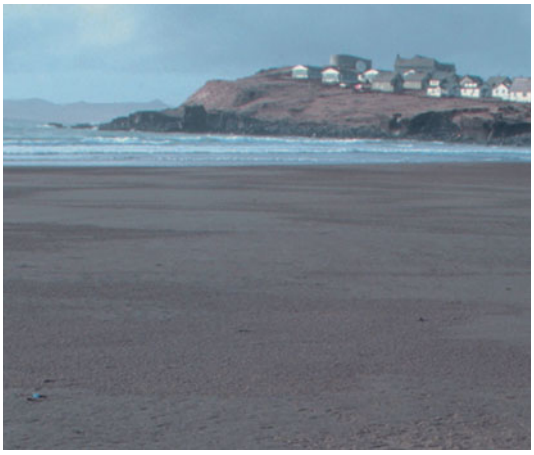
SEARCH LIGHT

What ocean provides the most water to the Mediterranean?

Answer: The Atlantic Ocean supplies most of the Mediterranean's water.

The Ocean's Rise and Fall

Perhaps you have been to the beach and put your towel really close to the water. Then, when it was time to leave, the water seemed to have shrunk and was now far away from your towel.



At low tide the water slips low down on the beach. At high tide it will creep back up.
© Tim Thompson/Corbis

What actually happens is even more surprising. At high tide the water creeps up the beach. At low tide the water slips down. So the water really doesn't shrink; it simply goes away! But how, and where?

Most seashores have about two high tides and two low tides per day. It takes a little more than 6 hours for the rising waters to reach high tide. It takes another 6 hours for the falling waters to reach low tide. This 12-hour rise and fall is called the "tidal cycle."

Tides are caused mainly by the gravity of the Moon and the Sun pulling on the Earth. This causes ocean waters to pile up in a big bump of water directly beneath the Sun and the Moon. As the Earth **rotates**, the tidal bumps try to follow the two heavenly bodies.

The Sun and the Moon are in line with the Earth during a full moon or a new moon. Their gravity added together causes higher-than-normal high tides called "spring tides." When the Moon and the Sun are farthest out of line, their gravity forces offset each other. This causes lower-than-normal high tides, called "neap tides."

The tides in the Bay of Fundy in Canada rise higher than 53 feet. Beach towels and umbrellas at the Bay of Fundy don't stand a chance!

DID YOU KNOW?

Some narrow rivers that empty into the sea develop large waves when extremely high tides rush into them. These waves, called "tidal bores," force the river's flow to change direction as they pass.

LEARN MORE! READ THESE ARTICLES…
GRAVITY (VOLUME 2) • MOON (VOLUME 2)
WAVES (VOLUME 1)

© Tim Thompson/Corbis



At high tide the water creeps high up on the beach.

SEARCH LIGHT

It takes 6 hours for the tide to rise or fall. When the tide has both risen and fallen, it equals one tidal cycle. How long does it take for two tidal cycles?

Answer: Each tidal cycle has one rising tide and one falling tide. It takes 6 hours for the tide to rise or fall, so it takes 12 hours for it to do both. That is, 12 hours for one tidal cycle. Two tidal cycles then take 24 hours.



DID YOU KNOW?

According to researchers in Canada, the tallest ocean wave ever recorded was 112 feet high.

Movement on the Seas

The ocean never seems to sit still. Its waves rise and fall. On beaches they push forward and fall back. But what makes ocean water into waves?

Most waves are created by the wind. The wind blows along the surface of the water and forces waves in the same direction. The top of a wave is called the "crest," and the lowest part in between the crests is known as the "trough." When waves roll through the open ocean, they're called "swell." As they reach the shore, their crests get higher and closer together and finally topple over. Then they're called "breakers" or "surf."

SEARCH LIGHT

"Breakers" is another word for
a) surf.
b) trough.
c) crest.

A gentle wind makes long waves that don't rise very high. But stronger winds push harder on the water and create taller waves. Big storms mean strong winds, and that means huge, powerful waves.

Major ocean storms, called "hurricanes" or "typhoons," can cause enormous waves. Some are so big they can smash oceanside houses into pieces or tip over ships that get in their way. During violent storms waves have been known to reach to the tops of lighthouses and to toss boats completely out of the water.

The most destructive waves are tsunamis, but they're quite different from other waves. Tsunamis—also wrongly called "tidal waves"—are not caused by tides or by the wind. These huge waves are created by underwater earthquakes or volcanic eruptions.

LEARN MORE! READ THESE ARTICLES…
OCEANS (VOLUME 1) • RADIO (VOLUME 2) • TIDES (VOLUME 1)

Without waves the very popular sport of surfing wouldn't be possible. Riding a surfboard in waves like these requires great balance, skill, and a lot of nerve!
© Rick Doyle/Corbis

Answer: a) surf.

Waves of Destruction

A powerful earthquake struck the coast of Chile in 1960. Many people were frightened and got into their boats in the harbor to escape the disaster. Soon enormous waves caused by the earthquake rose up from the ocean. These violent waves, each more than three stories high, destroyed all the boats and killed the people in them. The waves then traveled for 15 hours across the Pacific Ocean to Hilo in Hawaii, where they destroyed more property.

These waves are known as "tsunamis," from the Japanese for "harbor wave."

A tsunami is a large destructive wave created by the shock from an earthquake or volcanic eruption. The impact of a **meteorite** could also create a tsunami. Tsunamis travel fast and have the force to destroy entire coastal communities within moments.



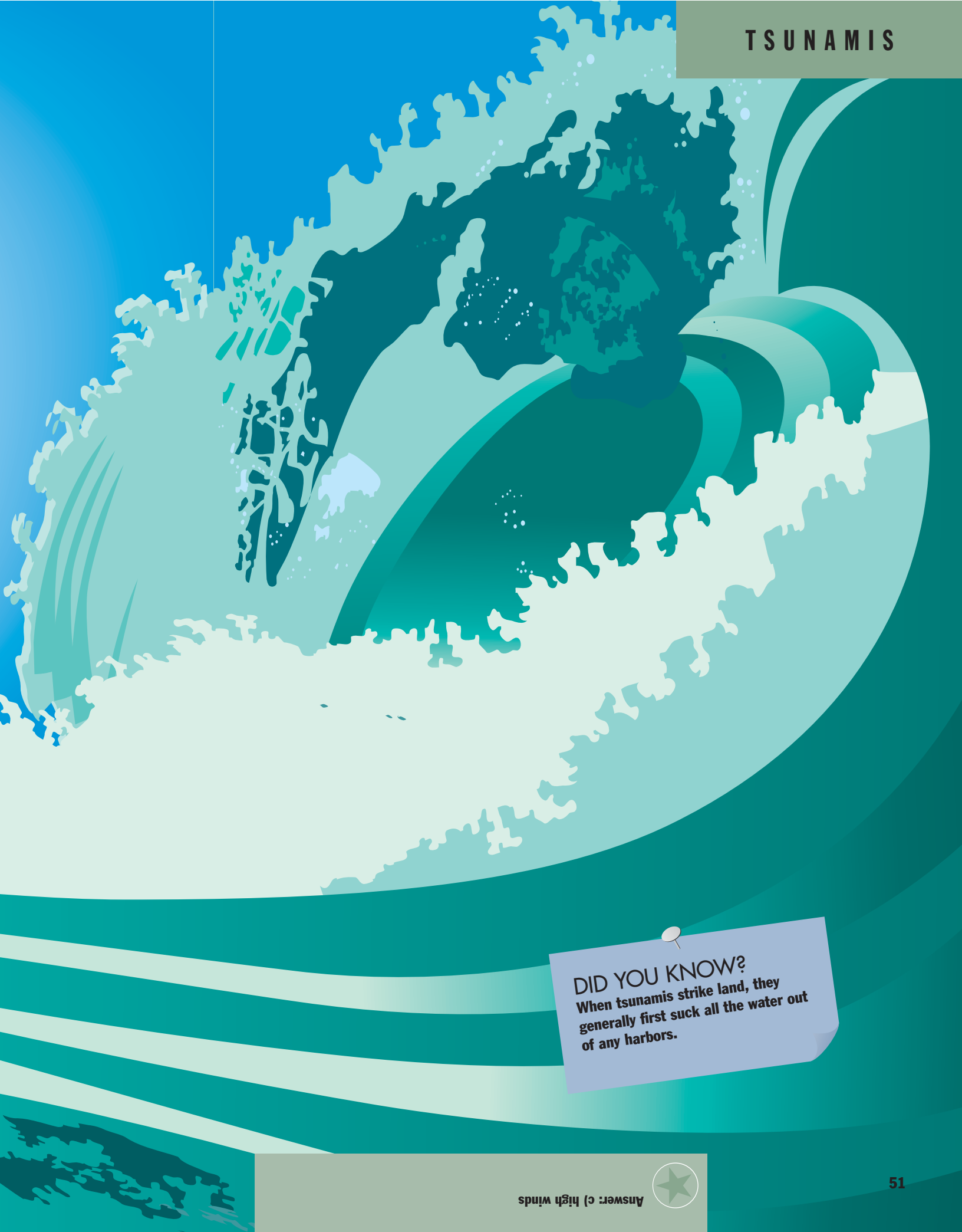
A tsunami can travel at speeds of 450 miles per hour or more (as fast as a jet plane) and packs tremendous force. As the tsunami approaches land, it grows larger. It continues to travel until its energy is completely used up. All low-lying coastal areas are **vulnerable** to a tsunami disaster.

In December 2004 an earthquake caused a major tsunami in the Indian Ocean. The earthquake struck off the coast of Indonesia. Two hours later, waves as high as 30 feet **devastated** coastal areas some 750 miles away. The tsunami killed more than 200,000 people in at least 10 countries.

SEARCH LIGHT

Which of these does *not* cause a tsunami?
a) earthquake
b) volcanic eruption
c) high winds

LEARN MORE! READ THESE ARTICLES…
CYCLONES (VOLUME 1) • VOLCANOES (VOLUME 1) • WAVES (VOLUME 1)



DID YOU KNOW?

When tsunamis strike land, they generally first suck all the water out of any harbors.

Answer: c) high winds

The Biggest Ice Cubes

Icebergs are simply broken-off pieces of glaciers or polar ice sheets that float out into the ocean. Very big pieces. Even little icebergs called "growlers" are as big as a bus. Big ones are longer than a freight train and as high as a skyscraper.

One especially surprising thing about an iceberg is that the part you see above the water is only a small bit of the whole iceberg. Most of the iceberg is underwater. You can see the way an iceberg floats by doing an easy experiment at home.

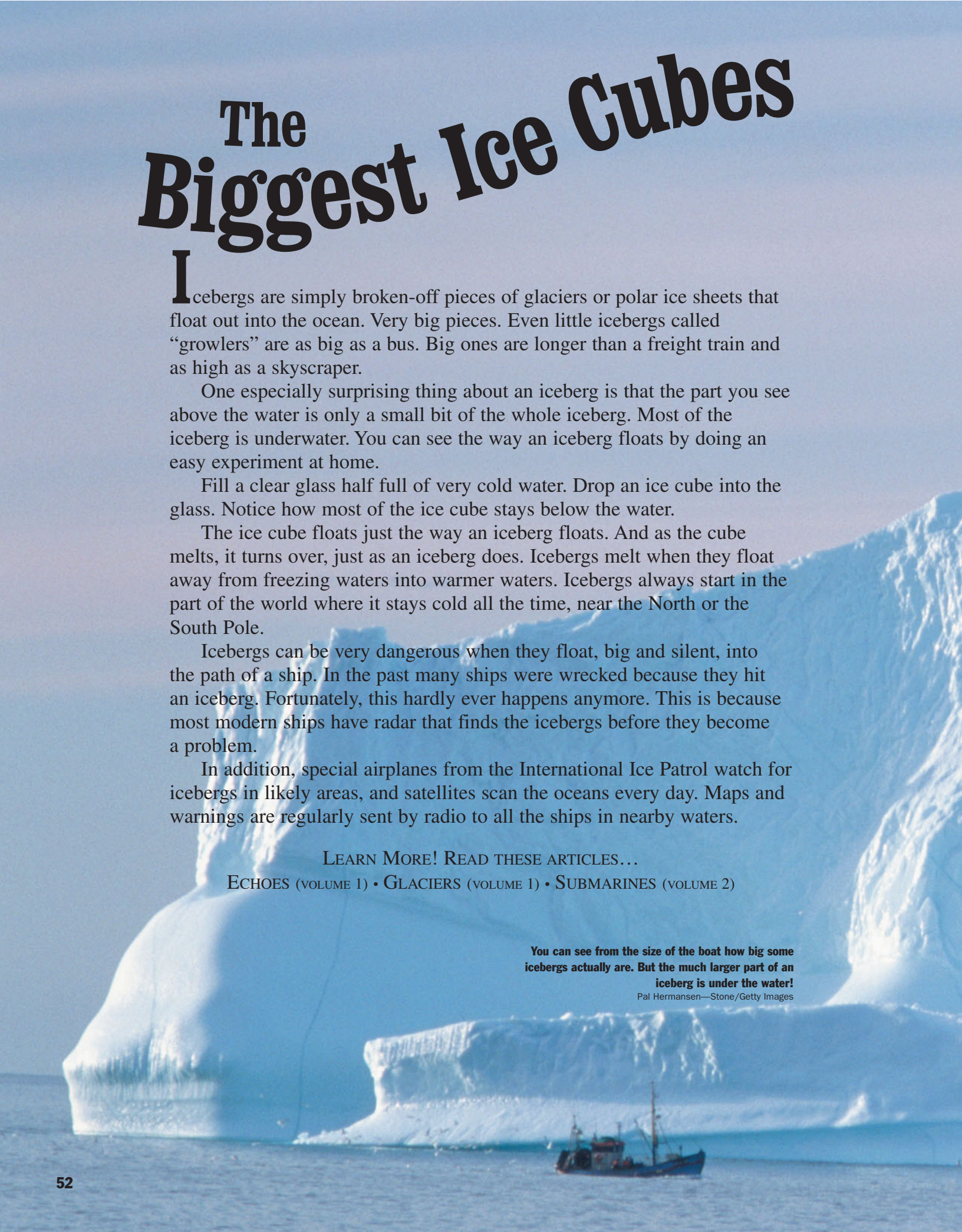
Fill a clear glass half full of very cold water. Drop an ice cube into the glass. Notice how most of the ice cube stays below the water.

The ice cube floats just the way an iceberg floats. And as the cube melts, it turns over, just as an iceberg does. Icebergs melt when they float away from freezing waters into warmer waters. Icebergs always start in the part of the world where it stays cold all the time, near the North or the South Pole.

Icebergs can be very dangerous when they float, big and silent, into the path of a ship. In the past many ships were wrecked because they hit an iceberg. Fortunately, this hardly ever happens anymore. This is because most modern ships have radar that finds the icebergs before they become a problem.

In addition, special airplanes from the International Ice Patrol watch for icebergs in likely areas, and satellites scan the oceans every day. Maps and warnings are regularly sent by radio to all the ships in nearby waters.

LEARN MORE! READ THESE ARTICLES…
ECHOES (VOLUME 1) • GLACIERS (VOLUME 1) • SUBMARINES (VOLUME 2)



You can see from the size of the boat how big some icebergs actually are. But the much larger part of an iceberg is under the water!
Pal Hermansen—Stone/Getty Images



DID YOU KNOW?

On April 14-15, 1912, just before midnight, the ocean liner *Titanic* struck an iceberg and sank on its very first voyage. Only 705 people survived, while 1,522 of the passengers and crew died.

SEARCH LIGHT

Icebergs are broken-off pieces of
a) islands.
b) glaciers.
c) ice cubes.

Answer: b) glaciers.



DID YOU KNOW?

In 1998 Christian Taillefer of France set a cycling speed record. He rode down the face of a glacier on a bicycle and reached a speed of 132 miles an hour.

Rivers of Ice

In high mountains there are places that are packed full of ice. These ice packs are called "glaciers" and look like giant frozen rivers. And like rivers, glaciers flow—but usually so slowly you can't see them move.

It takes a long time to make a glacier. First, snow falls on the mountains. It collects year after year, until there is a thick layer called a "snowfield."

In summer the surface of the snowfield melts and sinks into the snow below it. There it freezes and forms a layer of ice. This too happens year after year, until most of the snowfield has been changed into ice. The snowfield is now a glacier.

The snow and ice in a glacier can become very thick and heavy. The glacier then begins to actually move under its own weight and creeps down the mountain valley. It has now become a valley glacier.

SEARCH LIGHT

A valley glacier is
a) a glacier that has grown up in a valley.
b) a thick layer of snow.
c) a glacier that has started to move down a mountain.

The valley glacier moves slowly but with enormous force. As it moves, it scrapes the sides of the mountain and tears off pieces of it. Sometimes it tears off chunks as big as a house. As the glacier moves down the mountain into warmer regions, the ice begins to melt. The icy water fills rivers and streams.

Many thousands of years ago, much of the Earth's surface was covered with moving glaciers. This period is sometimes called the Ice Age. As the world warmed, most of the ice melted away and formed many of the rivers, lakes, and seas around us today—including the Great Lakes in North America, which have an area greater than the entire United Kingdom.

LEARN MORE! READ THESE ARTICLES…
ICEBERGS (VOLUME 1) • NORWAY (VOLUME 6) • RIVERS (VOLUME 1)

In Alaska's Glacier Bay National Park, the 16 glaciers that descend from the mountains present an amazing sight.
© Neil Rabinowitz/Corbis

Answer: c) a glacier that has started to move down a mountain.

Floating Water

Have you ever looked up at the clouds and wondered what they're made of?

Well, they're made of water—thousands of gallons of water, floating high in the air.

It's easier to believe this when you know that cloud water takes the form of tiny droplets. The droplets are so tiny that you couldn't see one if it was separated from all the others.

Sometimes the water droplets join together around tiny pieces of dust in the air. These drops get bigger and bigger as more droplets collect. When they become too heavy to float, they fall—"plop!" That's rain!

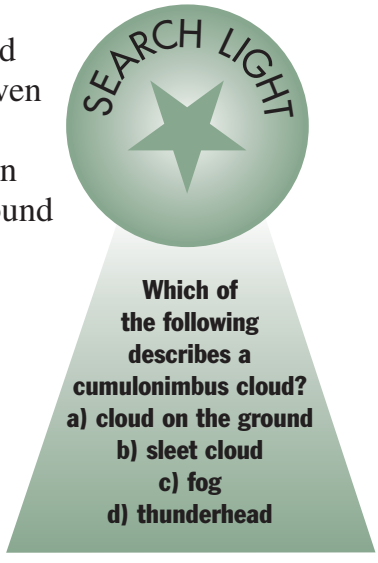
There are three main kinds of clouds. "Cumulus" refers to the small puffballs or great wooly-looking clouds that are flat on the bottom. "Stratus" are low clouds, usually streaky or without much shape. And "cirrus" are light feathery clouds, like the ones in the photo. Sometimes cirrus clouds are so high, where the air is very cold, that the whole cloud is made of ice.

Adding "nimbus" to any of these names changes it to mean a rain cloud. Tall white cottony rain clouds are called "cumulonimbus," or thunderheads. They often bring thunderstorms. Flat gray rain clouds are called "nimbostratus." They usually bring only rain.

Snow, **sleet**, and **hail** also fall from clouds. Snow and sleet fall only on cold winter days. Hailstones can fall even on a warm summer day.

And you may not realize it, but you've probably been right inside a cloud yourself. A cloud so close to the ground that we can walk through it is what we know as "fog."

LEARN MORE! READ THESE ARTICLES…
ACID RAIN (VOLUME 1)
LIQUIDS, SOLIDS, AND GASES (VOLUME 2)
NEW ZEALAND (VOLUME 7)



© W. Perry Conway/Corbis

DID YOU KNOW?

Being on "cloud nine" means you are feeling especially good, flying high. One explanation for the term comes from the military, where cloud types were numbered. Type nine was a tall thunder cloud, and jets would have to fly very high to get over one.



Answer: d) thunderhead

Nature's Fireworks



It can be fun playing in a gentle rain, splashing in puddles and chasing raindrops. But this would be a dangerous thing to do when there are thunderheads above.

Thunderheads are the large, dark, often fast-moving clouds that come out during storms. Thunderheads rumble mightily during storms, and that rumbling indicates the presence of lightning. The rumbling is the sound lightning makes as it arcs across the sky.

During a thunderstorm, electricity collects in the clouds. And often that electricity gets released as lightning. It's dangerous to be out when lightning is a possibility because lightning can quite easily kill from miles away. People have died from lightning strikes even though the storm the lightning came from was barely visible on the **horizon**.

Lightning bolts frequently race to the ground, drawn by objects such as trees and lamp posts that are especially good conductors of electricity. Lightning is most attracted to tall objects, which is why trees, buildings, and radio towers are often struck.

Actually, there are two parts to a lightning strike. The bolt from the sky is the part we don't see, because it is so fast and faint. The part we do see is the return strike. This is a bright flash of lightning that jumps up out of the ground to meet the lightning coming down and then races up to the base of the clouds.

Lightning can hurt or kill people who are struck by it. If you ever are caught in a lightning storm, get inside quickly. Or get into a car. Lightning that hits a car will travel into the ground harmlessly.

DID YOU KNOW?
Florida is known as the "lightning capital of the world." Every year lightning strikes in Florida more often than any other state in the United States. Also, lightning kills more people in Florida than in any other state.

LEARN MORE! READ THESE ARTICLES…
CLOUDS (VOLUME 1) • ELECTRICITY (VOLUME 2)
VICTORIA FALLS (VOLUME 8)

© A & J Verkaik/Corbis

Answer: FALSE. A tree is likely to be struck by lightning in a storm. It's better to get inside a car or a house, which will protect you even if it's struck.



SEARCH LIGHT

Fill in the blank: The quietest part of a cyclone is the _____, where there are no winds or clouds.

Nature's Fury

A cyclone is a **rotating** storm that can be hundreds of miles across. These storms can be very destructive. The winds in a cyclone usually blow at more than 75 miles per hour.

When a cyclone starts in the warmer waters of the Atlantic Ocean, it is called a "hurricane." In the western Pacific Ocean, it is known as a "typhoon."

From above, a cyclone looks like a huge spinning doughnut of clouds. The center of the storm, the doughnut hole, is called the "eye." The eye is quiet and cloudless. When the eye passes overhead, it might seem like the storm has ended. But within an hour or two, the eye passes and the other side of the storm hits.

With its strong winds a cyclone also brings flooding rains and sometimes very high ocean waves. When a cyclone hits land, it causes severe damage. The combination of wind, rain, and waves can knock down trees, flatten houses, and wash away roads.

Most cyclones start over **tropical** oceans because areas of warm water are their source of energy. Strong rotating winds that start on land are called a "tornado." A tornado, such as the one pictured here, starts for different reasons and is smaller than a cyclone. But a tornado also has very strong winds, so it too can be very destructive. It can knock a train off its track or lift a house straight into the air. Fortunately, tornadoes usually die soon after they start.

LEARN MORE! READ THESE ARTICLES…
FLOODS (VOLUME 1) • PHILIPPINES (VOLUME 7) • WAVES (VOLUME 1)

Paul and LindaMarie Ambrose/Taxi/Getty Images

DID YOU KNOW?
The best way for scientists to learn a cyclone's size and strength is to fly a plane through it. That's the most sure way—but certainly not the safest!

Answer: The quietest part of a cyclone is the eye, where there are no winds or clouds.



Arcs of Color

If you've ever looked at a rainbow and wondered how all those bright colors got in the sky, you're not alone.

The ancient Greeks thought these **arcs** of color were signs from the gods to warn people that terrible wars or storms were going to happen. The Norse people believed a rainbow was a bridge the gods used to walk down from the sky to the Earth. Other legends said there was a pot of gold waiting at the end of a rainbow.

SEARCH LIGHT

How can the name "Roy G. Biv" help you remember the colors of the rainbow?

But as beautiful as rainbows are, they aren't magic. And they aren't solid enough to walk on. In fact, a rainbow is just colored light. The seven colors are always the same and appear in the same order: red, orange, yellow, green, blue, indigo (a very deep blue), and violet. The name "Roy G. Biv" helps you remember the first letters and the order of the colors.

Rainbows often appear after or at the end of a storm—when the Sun is shining again but there is still some rain in the air. The sunlight looks white, but all seven rainbow colors are mixed together in it. So when a beam of sunlight passes through raindrops, it's broken into the seven different colors.

But you don't have to wait for rain to see rainbows. They can show up in the spray of a fountain or a waterfall, or you can make your own with a hose. Set the nozzle to create a spray, aim it away from the Sun, and then stand between the Sun and the spray. You've got an instant rainbow!

DID YOU KNOW?

In spite of some legends, there really is no "end" of a rainbow. Rainbows are actually full circles. But because we can see only a limited distance, to the horizon of Earth and sky, we see only part of the circle.

LEARN MORE! READ THESE ARTICLES…
SIR ISAAC NEWTON (VOLUME 4)
NIAGARA FALLS (VOLUME 9)
THUNDER AND LIGHTNING (VOLUME 1)

© Jeff Vanuga/Corbis

Answer: The name gives you the first letter of each of the colors of the rainbow, in the order that they occur in the rainbow. Like this: Red Orange Yellow Green Blue Indigo Violet.



DID YOU KNOW?

People used to think that tiny spider webs in the grass were actually the beds of fairies. This is because the webs, covered with dew, looked like magic nets.

Diamond Drops of Water



Susan and her mother had come to the park for an early morning walk. The weather had been nice and warm recently. The nights were still, and there was hardly a cloud in the sky.

The park's grass glittered and winked. "Are those diamonds?" Susan asked. It looked as if someone had sprinkled tiny diamonds all across the grass during the night.



© W. Perry Conway/Corbis

Susan bent down to touch one of the glittering points. "It's water!" she cried out in surprise. "How did it get here? Did it rain last night?"

"No, this isn't rainwater. It's dew."

"What's dew?" Susan was eager to know.

"It came from the air. All air has some water in it, you know," said Mother.

"But I don't see any water in the air," said Susan, looking around.

"No, of course you don't. It's in the form of **vapor**, like fog, only very light," said Mother.

"So how does the water get onto the grass?"

"You know that steam turns into water again if it touches something cold, right?" Susan nodded. "Well, on certain nights the air is warm and full of moisture," Mother continued, "but the grass and the ground are cool. So when the vapor in the warm air touches these cooler surfaces..."

"...it changes to water drops on the grass," finished Susan. "That must be why sometimes in the morning our car is covered with tiny drops of water."

"That's right," Mother smiled. "Now let's get going on that walk!"

LEARN MORE! READ THESE ARTICLES…
CLOUDS (VOLUME 1) • KOALAS (VOLUME 12)
LIQUIDS, SOLIDS, AND GASES (VOLUME 2)

© Julie Habel/Corbis

Answer: When warm air touches the cool ground, the water in the air turns into drops of dew.



SEARCH LIGHT

Find and correct the error in the following sentence: Leaves turn red if they have a lot of carbon dioxide in them when the sunlight shines on them.

The Science of Their Changing Colors

Trees that shed their leaves every year are called "deciduous" trees. Their leaves grow back again in spring.

Scientists think that plants get rid of things they can't use. After flowers have helped make new seeds for a plant, its petals fall off. And soon after leaves have lost their green stuff, called "chlorophyll," they fall off.

A leaf's chlorophyll uses sunlight to make sugar out of water and carbon dioxide, a gas in the air. Plants need carbon dioxide to live and grow. When leaves use carbon dioxide, another gas, called "oxygen," is left over. The plant can't use the oxygen. So it lets the oxygen go.

Animals and humans need oxygen to live. Their bodies use the oxygen, and what do you think they have left over? Carbon dioxide. When animals and humans breathe out, they let the carbon dioxide go.

It's easy to see that plants and animals and humans help each other this way.

In places where it gets cool in autumn, a plant loses its chlorophyll, and its leaves may turn yellow or red. The yellow was there all summer, but there was so much green that the yellow didn't show until the green went away.

Yellow leaves turn red only if they have lots of sugar in their sap and the sunlight shines on them. The more sugar a leaf has, the redder it becomes. If a leaf is kept in the shade, it will stay yellow even if it has a lot of sugar.

LEARN MORE! READ THESE ARTICLES…
CHAMELEON (VOLUME 11) • ENERGY (VOLUME 2)
MAPLE (VOLUME 10)

DID YOU KNOW?

Deciduous forests are one of the world's six major life zones: the often frozen tundra, the mostly evergreen taiga, temperate (mild) deciduous forest, tropical rainforest, grassland and savanna, and desert.

Answer: Leaves turn red if they have a lot of sugar in them when the sunlight shines on them.

Sounds That See in the Dark

"Hel-l-o-o-o-o-o!"

A boy hears the echo coming from the hills.

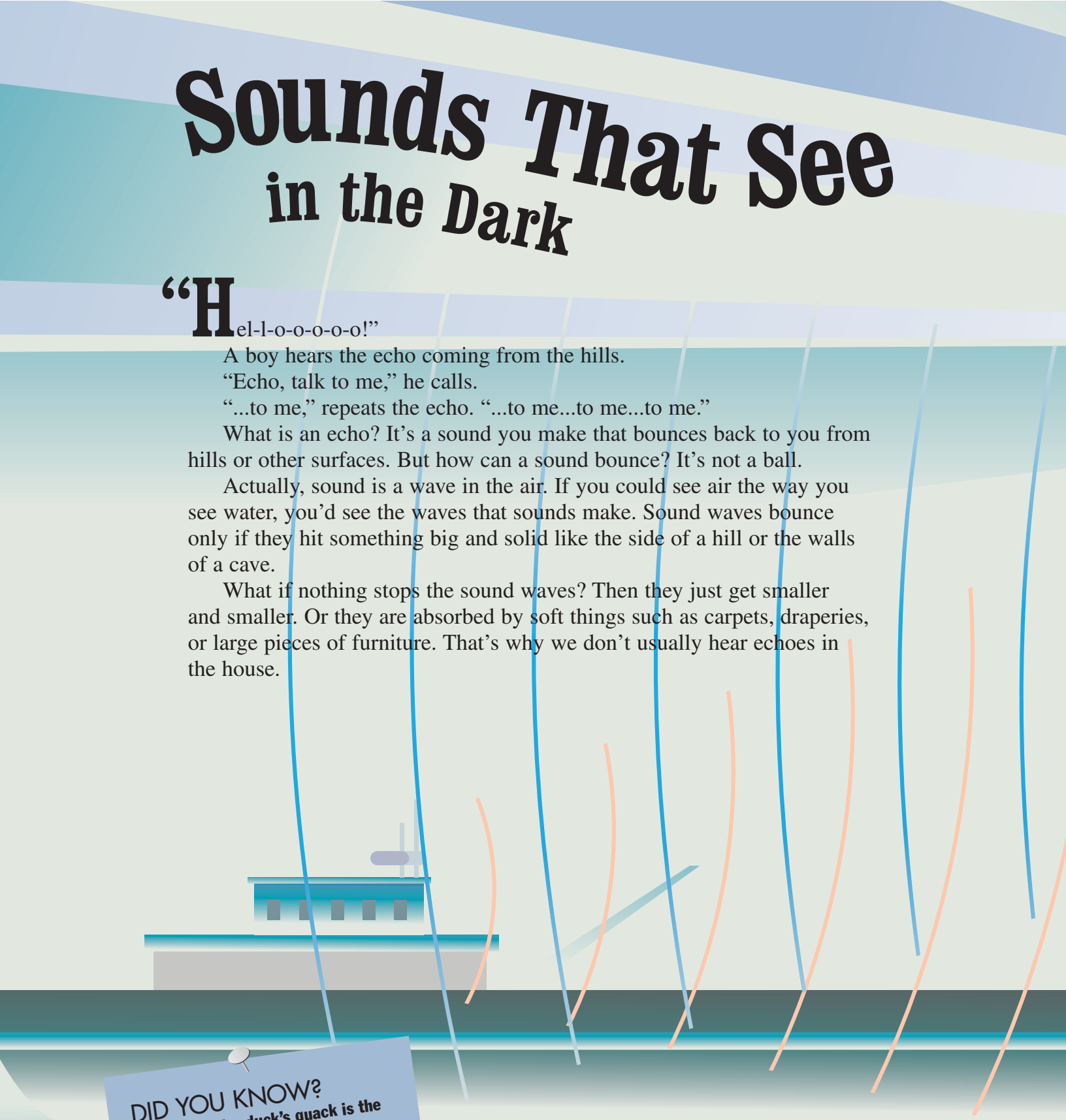
"Echo, talk to me," he calls.

"...to me," repeats the echo. "...to me...to me...to me."

What is an echo? It's a sound you make that bounces back to you from hills or other surfaces. But how can a sound bounce? It's not a ball.

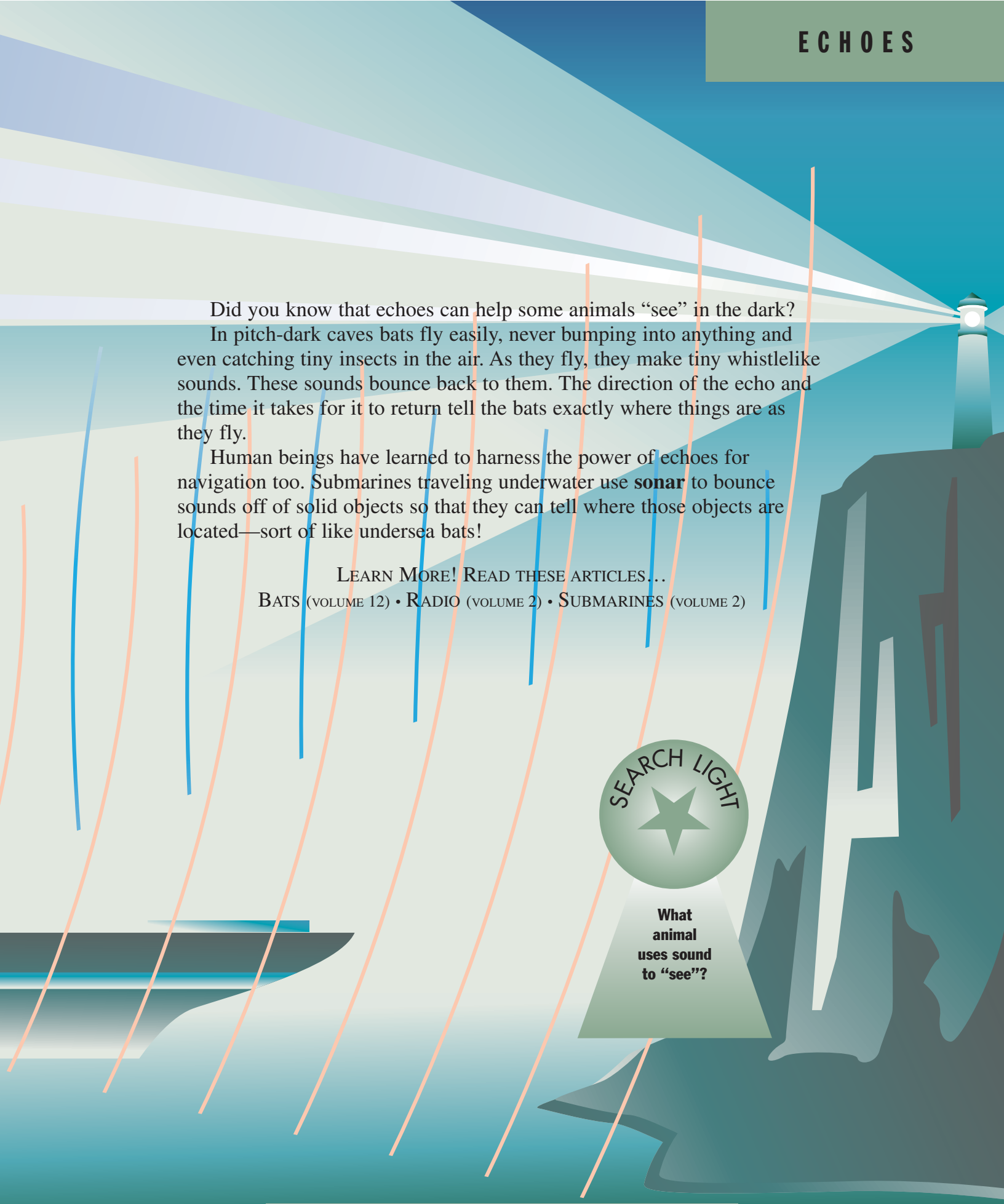
Actually, sound is a wave in the air. If you could see air the way you see water, you'd see the waves that sounds make. Sound waves bounce only if they hit something big and solid like the side of a hill or the walls of a cave.

What if nothing stops the sound waves? Then they just get smaller and smaller. Or they are absorbed by soft things such as carpets, draperies, or large pieces of furniture. That's why we don't usually hear echoes in the house.



DID YOU KNOW?

It is said that a duck's quack is the only sound that doesn't echo. If you happen to have a duck and a long hallway, you could test this theory yourself.



Did you know that echoes can help some animals "see" in the dark?

In pitch-dark caves bats fly easily, never bumping into anything and even catching tiny insects in the air. As they fly, they make tiny whistlelike sounds. These sounds bounce back to them. The direction of the echo and the time it takes for it to return tell the bats exactly where things are as they fly.

Human beings have learned to harness the power of echoes for navigation too. Submarines traveling underwater use **sonar** to bounce sounds off of solid objects so that they can tell where those objects are located—sort of like undersea bats!

LEARN MORE! READ THESE ARTICLES…
BATS (VOLUME 12) • RADIO (VOLUME 2) • SUBMARINES (VOLUME 2)

SEARCH LIGHT

What animal uses sound to "see"?

Answer: Bats use echoes to tell what is around them in the dark. Dolphins do the same thing underwater.

Killer Downpour

Rain seems to make things cleaner, doesn't it? Rain helps flowers grow and helps keep plants green. It washes the dust from cars and houses. It leaves roads shiny. And it leaves a fresh smell in the air.



Scientist testing polluted lake water containing melted acid snow.
© Ted Spiegel/Corbis

But rain can be dirty. That's because as the rain falls, it gathers up any **pollution** that's in the air. It can leave cars looking streaky and windows spotty.

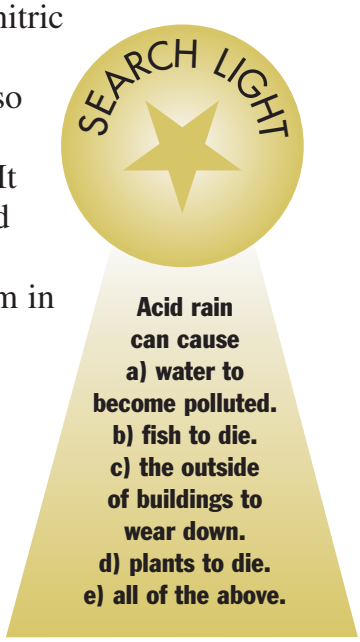
Some rain will even ruin the paint on cars. It will damage or kill the plants it falls on and the fish living in lakes that are fed by rain. Such rain is called "acid rain."

This is how it happens. We burn fuels such as coal, gas, and oil in our factories. This releases gases containing **elements** such as sulfur, carbon, and nitrogen into the air. These combine with moisture in the air to form damaging substances such as sulfuric acid, carbonic acid, and nitric acid. When it rains, these acids fall to earth with the water.

Acid doesn't fall to earth only in the form of rain. It can also fall as snow, sleet, and hail. It can even be in fog.

Acid rain harms many forms of life, including human life. It also damages buildings. The acid eats through stone, metal, and concrete. Acid rain has injured some of the world's great monuments, including the **cathedrals** of Europe, the Colosseum in Rome, and the Taj Mahal in India.

LEARN MORE! READ THESE ARTICLES…
LIQUIDS, SOLIDS, AND GASES (VOLUME 2) • POLLUTION (VOLUME 1)
TAJ MAHAL (VOLUME 7)



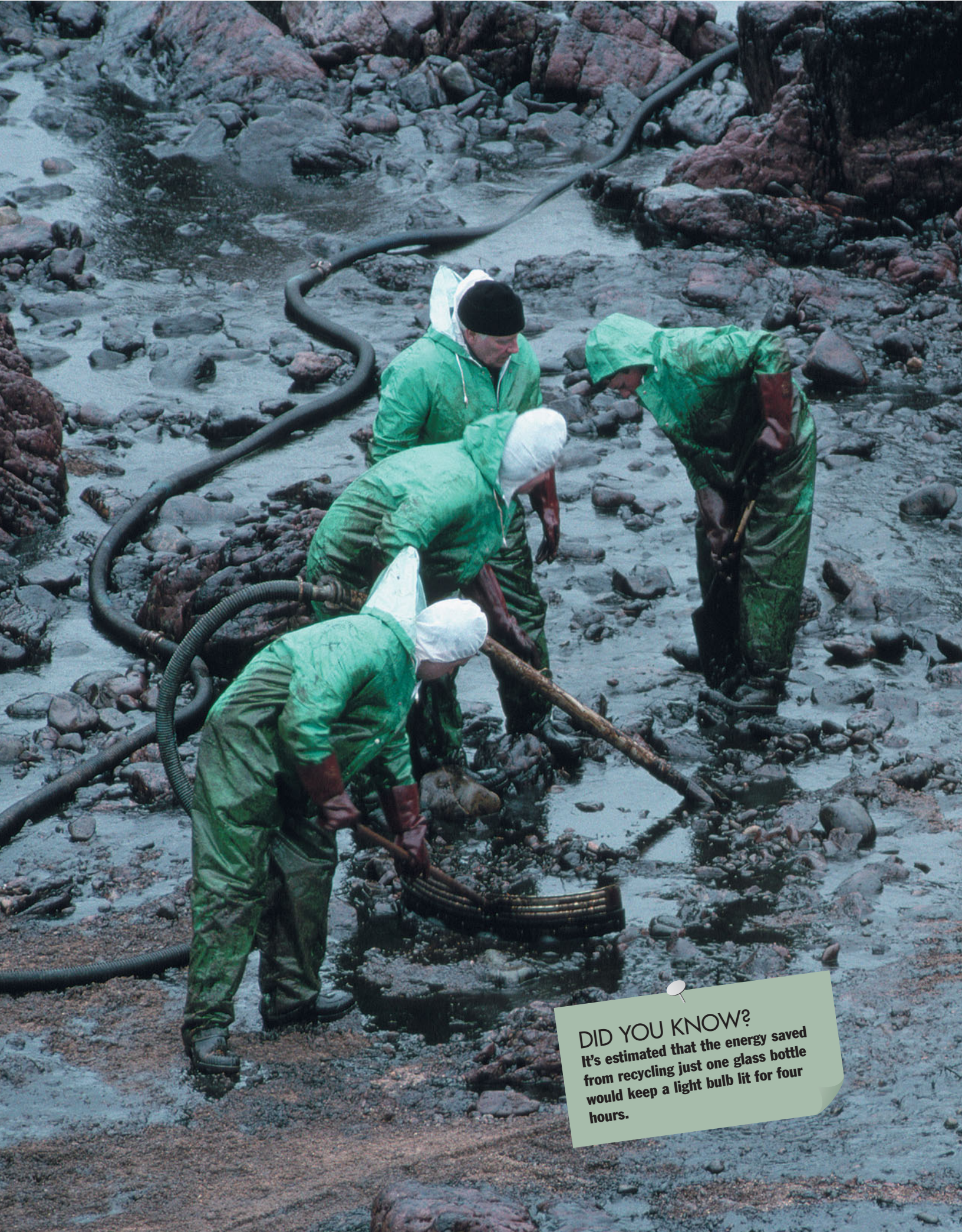


The unhealthy branch on the left shows the damage that acid rain can do to plants.
© Ted Spiegel/Corbis

DID YOU KNOW?

Acid rain destroys trees. We need trees to make oxygen and to get rid of carbon dioxide, which can be poisonous to us. Just one acre of trees gets rid of 2.5 tons of carbon dioxide a year.

Answer: e) all of the above.



DID YOU KNOW?

It's estimated that the energy saved from recycling just one glass bottle would keep a light bulb lit for four hours.

Harming Our Environment

Have you ever seen black smoke spilling out of factory chimneys, turning the sky a dirty gray? This is air pollution. Cars, trucks, buses, and even lawnmowers release gases and particles that pollute the air too. Smoke from fires and barbeque grills pollutes the air.

Land pollution, water pollution, and even noise pollution are also big problems. Both factories and ordinary citizens may thoughtlessly dump trash and **waste** on land or in water. When farm chemicals that kill insect pests or help crops grow sink into the ground and water, they pollute too. And noise pollution is created by loud machines and honking cars.

Ocean life isn't safe from pollution. The picture you see here shows a cleanup crew at a polluted seashore after an oil spill. Ships carrying petroleum sometimes have accidents that dump their oil into the ocean.

Dirty air, land, and water are dangerous. Dirty air, or **smog**, is hard to breathe and makes people and animals sick. Dirty water makes people and animals sick when they drink it or wash or live in it. It also kills plants. If land takes in too much waste, nothing will grow on it, and it becomes unfit to live on.

Stopping pollution isn't easy. Most people find it hard to change the way they live, even if they want to. And governments and big companies find it even harder to change, since the changes are often unpopular or costly.

Even small changes help, however. Reusing things instead of throwing them away helps. Using less water each day helps. So does **recycling**. And perhaps the future will find people using cleaner forms of energy, such as wind power and solar energy.

SEARCH LIGHT

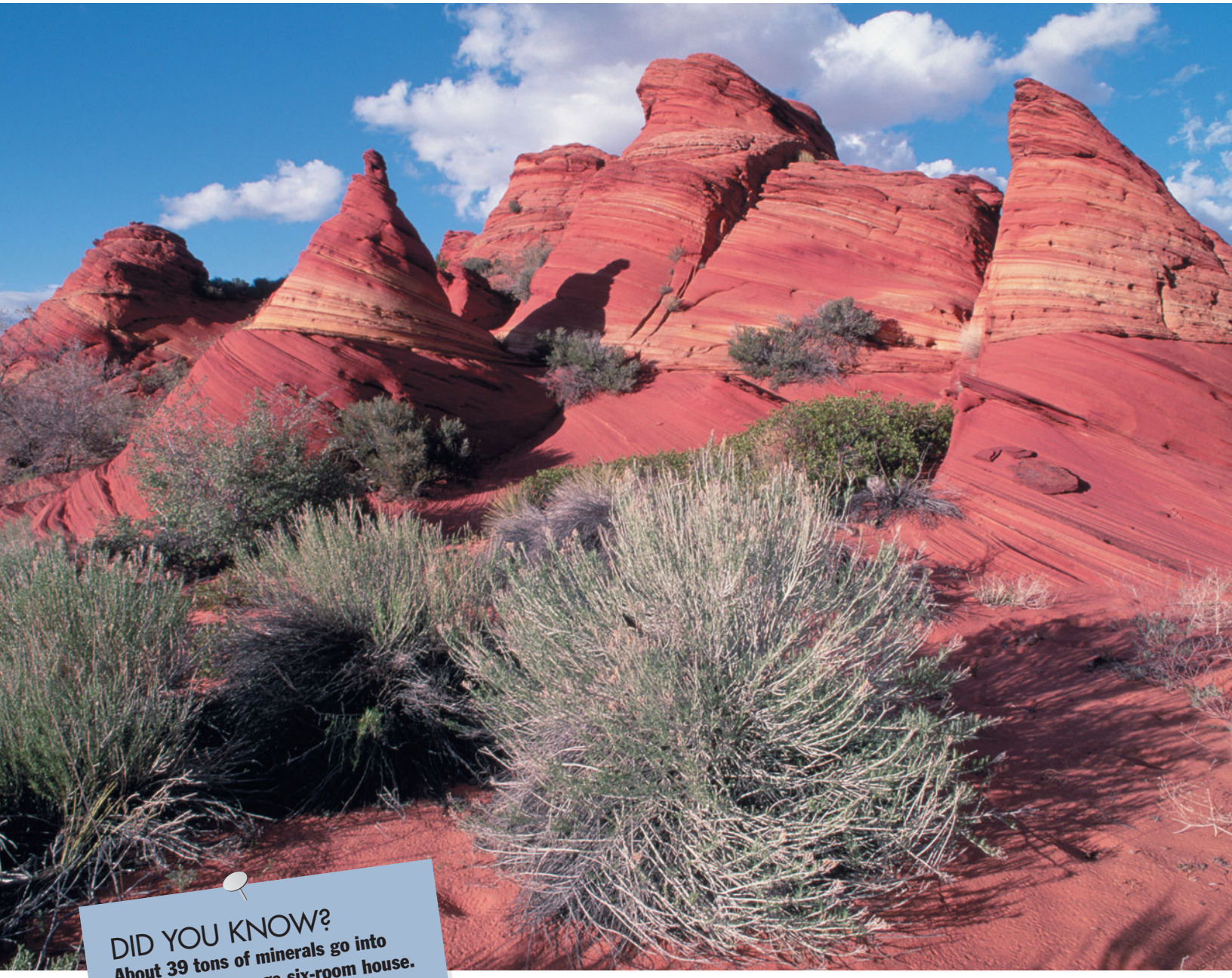
Match each item to the kind of pollution it creates.

litter	***air***
smog	***land***
car honking	***water***
oil spill	***noise***

LEARN MORE! READ THESE ARTICLES…
ACID RAIN (VOLUME 1) • AUTOMOBILES (VOLUME 2)
WIND POWER (VOLUME 2)

© Chinch Gryniewicz—Ecoscene/Corbis

Answer: litter = *land* smog = *air* oil spill = *water* car honking = *noise*



DID YOU KNOW?
About 39 tons of minerals go into building the average six-room house.

To most of us, this landscape is beautiful. But to a geologist, it also tells the story of millions of years of Earth's history.
© Layne Kennedy/Corbis

Studying the Earth

How did the Earth get its shape?

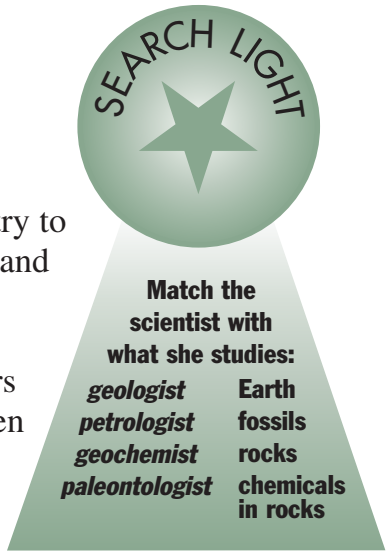
What was the world like millions of years ago?

What is the Earth made of?

Why do earthquakes happen?

These are some of the many questions that geologists try to answer. Geologists are people who study the Earth's form and its history. The word "geology" comes from Greek words meaning "earth science."

Geology is an important science. Geologists help others to find useful fossil fuels such as oil and coal that lie hidden in the Earth's crust. Geologists also help figure out where earthquakes are likely to happen. This helps people know where it's safest to put up buildings.



Because there are so many things about the Earth that geologists study, geology is divided into many individual areas. For instance, the study of physical geology looks at the changes that take place inside the Earth and the reasons for those changes. Geochemistry is concerned with the chemical **elements** that make up rocks, soil, and **minerals**. Petrology deals with rocks themselves.

Did you know that paleontology is a form of geology? Paleontologists study life forms that existed on Earth millions of years ago, from the tiniest **bacteria** to the most enormous dinosaurs. But because these creatures died so many millions of years ago, their bodies have turned into fossils—living things preserved as rock.

LEARN MORE! READ THESE ARTICLES…
GEOGRAPHY (VOLUME 1) • OIL (VOLUME 2)
ROCKS AND MINERALS (VOLUME 1)

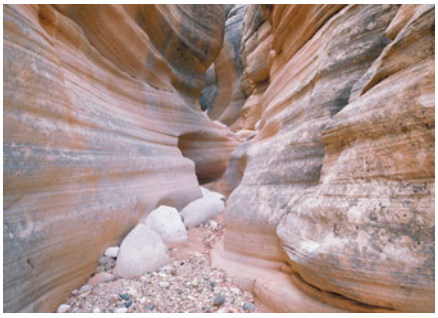
Answer: *geologist*—Earth, *petrologist*—rocks, *geochemist*—chemicals in rocks, *paleontologist*—fossils

The Earth's Building Blocks

You might think that rocks are pretty dull. But rocks tell the history of the Earth, including stories of giant explosions, mountains rising from the sea, and buried forests turning to stone.

Rocks are made up of one or more **minerals**. Most minerals are inorganic, which means that they are not made from living things. They are substances that occur naturally in the earth. Some minerals are metals, such as iron and gold. Others are nonmetallic, like quartz and calcite.

Some minerals contain the hardened **remains** of animals and plants. Limestone rock, for example, is made up largely of bits and pieces of shells and skeletons of sea creatures.



Sandstone canyon.
© Scott T. Smith/Corbis

All rocks fall into one of three groups, depending on how they are formed.

Igneous rocks are formed from cooling magma, which is the lava released in a volcanic eruption. The earliest rocks on Earth were igneous.

Rocks don't stay the same forever. They break down into small pieces because of the effects of wind, water, and ice. When small pieces of rock settle together, they're known as "sediment." As layers settle on other layers over many years, their weight squeezes the pieces together into solid sedimentary rock. Both photos show the very common sedimentary rock called "sandstone," which is cemented sand.

The third group of rocks gets its name from the word "metamorphosis," which means "change." Metamorphic rocks are created when extreme temperatures or pressures cause changes in igneous or sedimentary rocks. Marble is a metamorphic rock formed from intensely squeezed and heated limestone. And limestone, you'll remember, began as seashells and skeletons. This is another amazing Earth story told by a rock!

DID YOU KNOW?

Gold is the most easily shaped and stretched of all metals. It can be hammered as thin as 4 millionths of an inch. And an ounce of gold can be drawn into a wire more than 40 miles long.

LEARN MORE! READ THESE ARTICLES…
FOSSILS (VOLUME 1) • GRAND CANYON (VOLUME 9)
TAJ MAHAL (VOLUME 7)

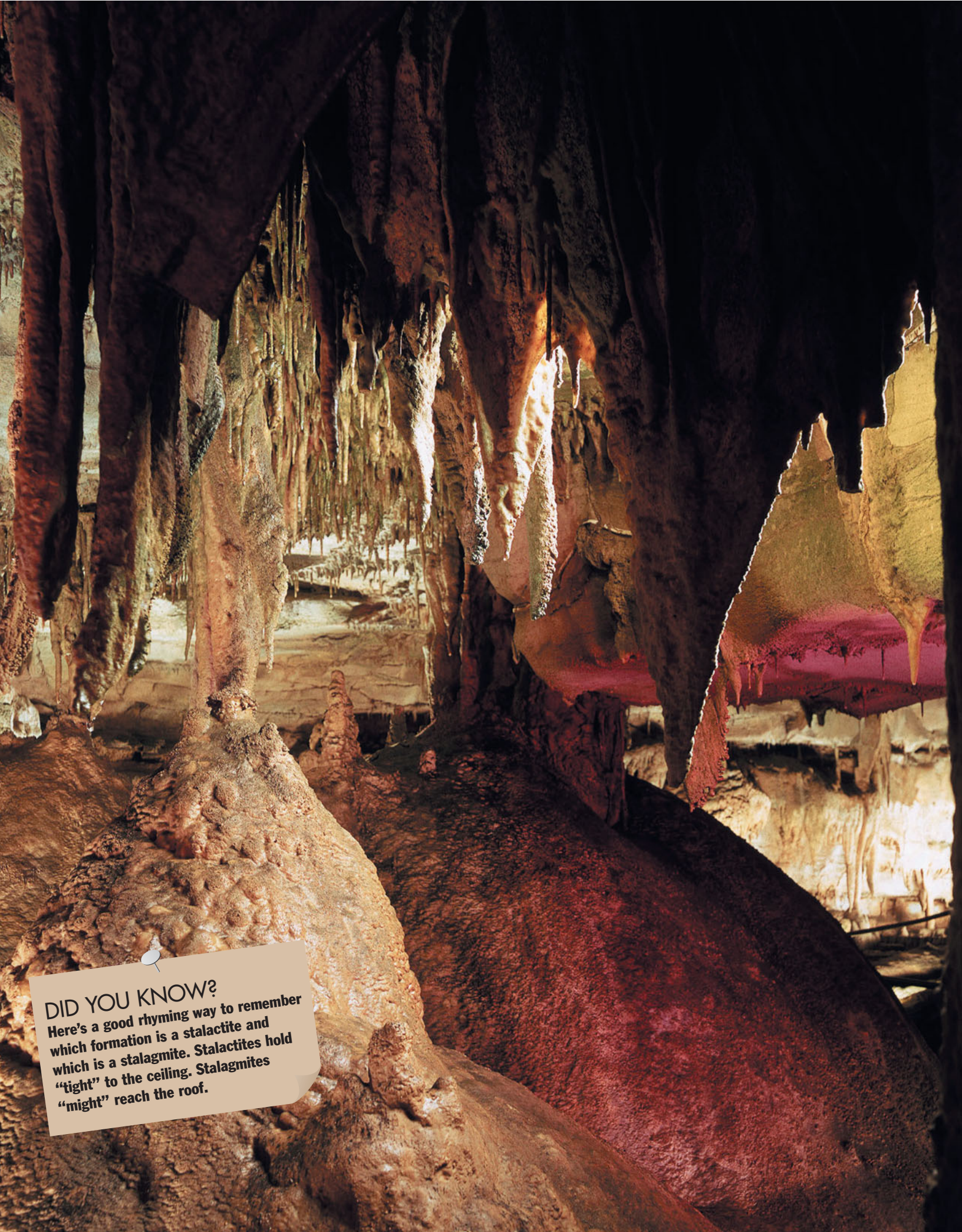
Sandstone is fairly easily worn away by rushing water. Here you see a deep, narrow sandstone formation called a "slot canyon."
© David Muench/Corbis



SEARCH LIGHT

Most minerals are inorganic, which means they are not _____ _____ _____ _____.

Answer: Minerals are inorganic, which means they are not made from living things.



DID YOU KNOW?

Here's a good rhyming way to remember which formation is a stalactite and which is a stalagmite. Stalactites hold "tight" to the ceiling. Stalagmites "might" reach the roof.

When Water Is Stronger than Stone

Caves are natural openings in the Earth large enough for a person to get in. Most have been made when rainwater or streams have worn away rock—usually a softer rock such as limestone. The wearing-away process is called "erosion."

Slowly, over millions of years, the water works away at the soft rock, making a small tunnel-like opening. As more and more rock wears away, the opening grows wider and deeper. Soon even more water can flow in. In time, many of these openings become huge caves, or caverns.

Mammoth Cave-Flint Ridge in Kentucky is a linked system of caverns. It is 345 miles long, one of the longest in the world. In France the Jean Bernard, though much shorter (11 miles long), is one of the world's deepest caves, reaching down more than 5,000 feet.

SEARCH LIGHT

Which of the following is *not* a way that caves are formed?
ocean waves
lava
lightning
water erosion
ice melts

Some caves have beautiful craggy formations called "stalactites," like those pictured here, that hang from the cave's roof. These are made by water seeping into the cave. Each drop leaves a very tiny bit of dissolved rock on the ceiling of the cave. After thousands and thousands of years, an icicle-shaped stalactite forms.

When water drips to the cave's floor, it deposits small **particles** of solids. These slowly build up into a stalagmite, which looks like an upside-down icicle.

There are other kinds of caves that are made in different ways. When lava flows out of a volcano, it sometimes leaves gaps, making volcanic caves. When ice melts inside a glacier, glacier caves result. And ocean waves pounding on the shore year after year can wear away a cave in the face of a cliff.

LEARN MORE! READ THESE ARTICLES…
BATS (VOLUME 12) • GLACIERS (VOLUME 1)
ROCKS AND MINERALS (VOLUME 1)

© David Muench/Corbis

Answer: Caves aren't formed by lightning.

The Hardest-Working Gemstones in the World

Diamonds were made millions and millions of years ago when fuming volcanoes melted the **element** called "carbon" inside some rocks. Gigantic masses of earth pressed the carbon tightly. The hot melted carbon was squeezed so tightly that by the time it cooled, it had changed into the hard **gemstones** called "diamonds."



Diamond jewelry.
© Lynn Goldsmith/Corbis

Some diamonds are found in the gravel and sand near rivers. Others are left in the mountains by **glaciers**. Most diamonds are mined from rocks deep underground, usually in Africa. The country of South Africa is the major source for the diamonds used in jewelry.

Diamonds usually look like pieces of glass or dull stones when they're first taken out of the ground. They must be cut and shaped to be used in jewelry. And diamonds are so hard that nothing can cut them except another diamond.

Using diamond-edged tools, the diamond cutter carefully shapes and polishes the diamond so that it has straight edges and smooth surfaces. These edges and surfaces help the diamond reflect light so that it sparkles and flashes with tiny bursts of color.

Diamonds often seem to flash like white fire. But there are diamonds that have other colors. Red, blue, and green diamonds are difficult to find. Yellow, orange, and violet diamonds are more common. Sometimes people even find black diamonds.

Only the clearest diamonds become glittering gems. But because of their hardness, even dull-looking diamonds are still valuable as cutting tools. These are called "**industrial** diamonds." Only about 25 percent of all diamonds are fine enough to become jewels, so most of the world's diamonds are the hard-working industrial type.

LEARN MORE! READ THESE ARTICLES…
GEOLOGY (VOLUME 1) • ROCKS AND MINERALS (VOLUME 1)
SOUTH AFRICA: DIAMOND COUNTRY (VOLUME 8)



DID YOU KNOW?

The Hope diamond is one of the biggest blue diamonds known in the world. Unfortunately, it is supposed to be cursed. Several of its owners have died tragically or have had very bad luck.



Raw diamonds look like chunks of glass when they're first found.
© Dave G. Houser/Corbis

Answer: Diamonds are so hard that only another diamond can cut them.



DID YOU KNOW?

Much of the chalk on Earth dates from 66 million to 144 million years ago. So much chalk comes from this time, in fact, that the whole period was named the Cretaceous Period, from the Latin word for "chalk."

The Remains of Tiny Shells

SEARCH LIGHT

Why does it take millions of years to make chalk?

The material we call "chalk" had its beginnings during the time when dinosaurs lived on Earth. At that time the oceans were rising higher and higher until finally they covered most of the Earth's land.

In those oceans lived billions of tiny animals. They were so small you could not have seen them—even smaller than the period at the end of this sentence. These tiny creatures had shells made of the **element** calcium. When these animals died, their shells fell to the bottom of the oceans. After thousands of years there were many layers of shells on the ocean floor.

As more and more of the tiny shells pressed down from the top, those on the bottom became harder and began to stick together. Eventually the shells changed into a **mineral** called "calcite," the main ingredient of the rock known as "limestone."



Drawing chalk, an entirely different material from natural chalk.
© Michael T. Sedam/Corbis

Many millions of years passed after the first chalk was made. The Earth's surface changed its shape, and the land and sea developed new shorelines. This left many chalk layers on dry land, both in the middle of **continents** and along coastlines. In some parts of England there are chalk cliffs 800 feet high. These are the famous White Cliffs of Dover, and they are almost solid chalk!

If you had a piece of chalk from those cliffs, you could use it to write on a chalkboard. But the chalk that you now use in classrooms is not a piece dug from the cliffs or the ground. It is made in factories by mixing several other materials together.

LEARN MORE! READ THESE ARTICLES…
CORAL (VOLUME 11) • ENGLISH CHANNEL (VOLUME 6)
ROCKS AND MINERALS (VOLUME 1)

The fabulous White Cliffs of Dover in England are made of chalk millions of years old.
© Bob Krist/Corbis

Answer: Many shells have to pile up to be heavy enough to press the bottom ones together and change them into stone.

Ancient Life in Stone

Would you like to see something that lived millions of years ago? You can if you find a fossil.

The **remains** or traces of plants, animals, and even **bacteria** that are preserved in stone are called "fossils." If you've ever pressed a coin into clay and then removed it, you've seen the sort of image you'll find in many fossils. The original thing isn't there anymore, but there's an **impression** of it left in the stone.



Fossilized fern.
© Wolfgang Kaehler/Corbis

Many fossils are easy to recognize as the living things they once were. The plant fossil you see in the smaller photo here, for example, looks like the tracing of a fern leaf.

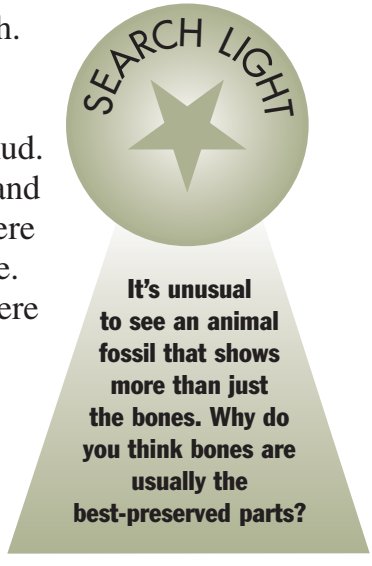
Usually, the harder portions of an **organism** are what last long enough to become fossils. Sometimes the hard structures are preserved almost whole. For instance, entire fossilized dinosaur bones have been petrified, or changed to a stony substance.

Fossils are not always easy to find. Only a small fraction of all ancient life ever became fossils. And the fossils that did form are often buried deep underground.

You can tell the fossils in the big photo used to be fish. After they died—millions of years ago—they sank to the riverbed and became covered with soft mud. Their flesh wasted away, but their bones were held together by the mud.

Eventually, the river dried up. It was filled with dust and dirt blown by the winds. The bones of the fish stayed where they were. Slowly, the mud of the riverbed turned to stone.

Finally, somebody found this fossil while digging where the river once was.



LEARN MORE! READ THESE ARTICLES…
CHARLES DARWIN (VOLUME 4)
DINOSAURS: GIANTS OF THE PAST (VOLUME 1)
OIL (VOLUME 2)



This fossil shows a rare picture of life in action millions of years ago. Look carefully and you can see that a big fish was eating a smaller one when they both died.
© Layne Kennedy/Corbis

DID YOU KNOW?

Over millions of years, many plant and animal remains have turned into the coal, oil, and natural gas we use for fuel. These underground energy sources are known as "fossil fuels."

Answer: It takes a long time for a fossil to form. Bones last much longer than flesh and organs do. So only the bones are left by the time the animal turns into a fossil.

SEARCH LIGHT

Mammoths and mastodons are related to
a) horses.
b) elephants.
c) dinosaurs.



This woolly mammoth was created as part of a museum exhibit. But primitive artists first painted these creatures on the walls of caves.
© Jonathan Blair/Corbis

Ancient Elephants

Believe it or not, thousands of years ago some elephants wore heavy fur coats.

Actually, the mammoth was an ancestor of the modern elephant. And mastodons were distant relatives of the mammoth. Neither animal is around today. But at one time they roamed the Earth in great numbers.

We know a lot about these ancient creatures because scientists have found many frozen mammoth bodies, especially in the icy area of Russia known as Siberia. Both beasts largely died out at the end of the last Ice Age, about 10,000 years ago.

Mastodons and mammoths were a lot alike, but the mastodons were on the planet first. They appeared about 20 million years ago. They were smaller than mammoths and had thick legs like pillars. Mastodons were covered with long reddish brown hair.

The mammoth didn't show up until about 1 1/2 million years ago. Mammoths were the size of modern elephants. The woolly mammoth had a thick furry yellowish brown undercoat with longer bristly hair over it. Like the mastodon, the mammoth had small ears and very long tusks. Despite these dangerous tusks, both animals ate only grass and other plants. The tusks may have been for shoveling snow and ice to uncover food.

Mastodons and mammoths were around at the same time as early humans. The people of the day hunted the animals, but hunting didn't wipe them out. Scientists think that the mastodon and the mammoth vanished because the **glaciers** of the Ice Age destroyed much of the vegetation they relied on for food.

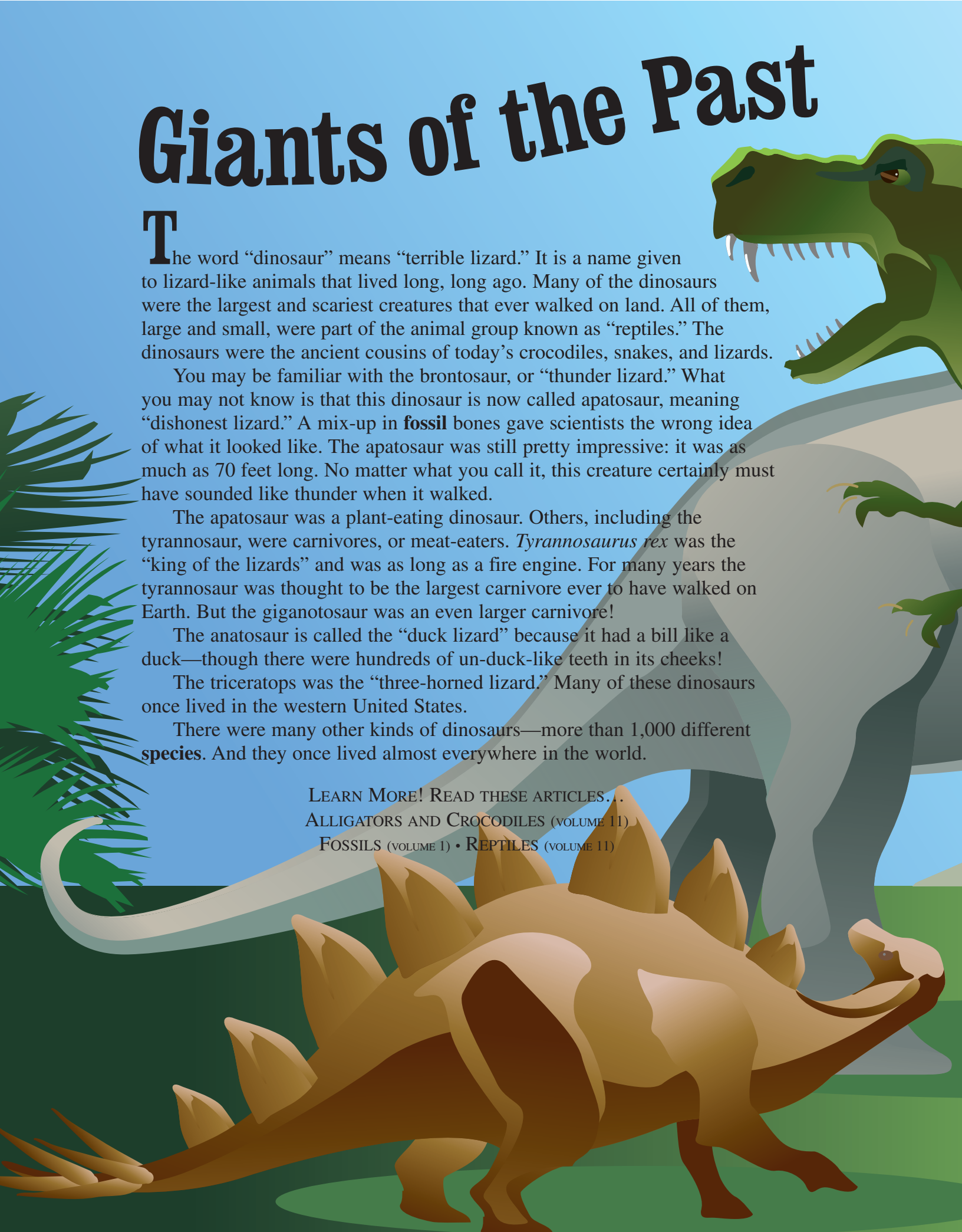
LEARN MORE! READ THESE ARTICLES…
ELEPHANTS (VOLUME 12) • FOSSILS (VOLUME 1)
GLACIERS (VOLUME 1)

DID YOU KNOW?

In 1816, when coal-gas lights were first being used, one of the first museum exhibits to be lit with the new invention was a mastodon skeleton.

Answer: b) elephants.

Giants of the Past



The word "dinosaur" means "terrible lizard." It is a name given to lizard-like animals that lived long, long ago. Many of the dinosaurs were the largest and scariest creatures that ever walked on land. All of them, large and small, were part of the animal group known as "reptiles." The dinosaurs were the ancient cousins of today's crocodiles, snakes, and lizards.

You may be familiar with the brontosaur, or "thunder lizard." What you may not know is that this dinosaur is now called apatosaur, meaning "dishonest lizard." A mix-up in **fossil** bones gave scientists the wrong idea of what it looked like. The apatosaur was still pretty impressive: it was as much as 70 feet long. No matter what you call it, this creature certainly must have sounded like thunder when it walked.

The apatosaur was a plant-eating dinosaur. Others, including the tyrannosaur, were carnivores, or meat-eaters. *Tyrannosaurus rex* was the "king of the lizards" and was as long as a fire engine. For many years the tyrannosaur was thought to be the largest carnivore ever to have walked on Earth. But the giganotosaur was an even larger carnivore!

The anatosaur is called the "duck lizard" because it had a bill like a duck—though there were hundreds of un-duck-like teeth in its cheeks!

The triceratops was the "three-horned lizard." Many of these dinosaurs once lived in the western United States.

There were many other kinds of dinosaurs—more than 1,000 different **species**. And they once lived almost everywhere in the world.

LEARN MORE! READ THESE ARTICLES...
ALLIGATORS AND CROCODILES (VOLUME 11)
FOSSILS (VOLUME 1) • REPTILES (VOLUME 11)



DID YOU KNOW?

If you hold up your hand, you'll be looking at something still smaller than a tyrannosaur tooth.

SEARCH LIGHT

Find and correct the error in the following sentence: The apatosaur's name means "dishonest lizard," referring to the beast's habit of robbing its neighbors.

Answer: The apatosaur's name means "dishonest lizard," referring to the mix-up in fossils that confused scientists.



DID YOU KNOW?

Scientists think that some dinosaurs swallowed rocks, just as some birds do, to help break up food in their bellies.

A Mystery Disappearance

Many of the dinosaurs that once roamed the Earth were so big and strong that they didn't need to be afraid of any living thing. So why aren't there dinosaurs today?

Some scientists think that when new kinds of plants began to grow on Earth, dinosaurs couldn't eat them. New kinds of animals smaller than dinosaurs also appeared during this time. They may have been able to survive better than the dinosaurs. It's also possible that disease killed dinosaurs by the millions.

Not all scientists think that all dinosaurs died at once. Another explanation is that a changing **climate** killed them. We know that when they were living, the weather began to change. Summers grew shorter and winters grew colder. In some places heat waves dried up rivers and swamps. Elsewhere, new lakes and rivers appeared, and many places were flooded. Some dinosaurs may have died because it gradually became too cold or too hot for them.

Many scientists believe that dinosaurs died because an **asteroid** struck the Earth about 65 million years ago. The dust raised by the impact would have blocked out sunlight for months, so that plants stopped growing and the temperature dropped. When plant-eating dinosaurs died from lack of food, so would the meat eaters that hunted them.

Some scientists think that many dinosaurs **evolved** into birds. So the next time you see a robin, consider that you may be looking at a dinosaur's relative.

SEARCH LIGHT

Which of the following is *not* thought to be a reason for the disappearance of dinosaurs?
a) an asteroid striking Earth
b) climate change
c) disease
d) poisoned plants
e) flood

LEARN MORE! READ THESE ARTICLES…
ASTEROIDS (VOLUME 2) • DINOSAURS: GIANTS OF THE PAST (VOLUME 1)
LIZARDS (VOLUME 11)

Dinosaur tracks remain, but scientists still don't know what happened to the giant creatures that made them.
© Tom Bean/Corbis

Answer: e) flood

The Tyrant King

It was longer than a bus, weighed more than four tons, and had teeth up to a foot long. The tyrannosaur may have died out 65 million years ago, but it is still one of the largest meat-eating land animals that ever lived. It's no wonder that the first scientist who discovered this frightening creature's bones called it *Tyrannosaurus rex*: "**tyrant** lizard king."

Dinosaurs were not true lizards. When scientists first discovered tyrannosaur **fossils**, however, they did believe that such a dangerous-looking animal would have been a powerful and mean bully among the dinosaurs. The tyrannosaur's jagged teeth and huge jaws make it clear that the tyrannosaur was a powerful carnivore, or meat eater.

Tyrannosaurs lived mainly in what is now North America and Asia. The creature was about 40 feet long from its head to its thick and heavy tail. The tyrannosaur probably stooped forward, with the big tail balancing its weight when it walked.

The tyrannosaur had large, powerful rear legs but small front arms. These forearms wouldn't even have been able to reach its mouth. So the tyrannosaur probably planted its clawed rear feet on a dead animal, bit hard, and ripped the flesh away from the **carcass**.

The tyrannosaur is one of the most popular of all dinosaurs, thanks to movies and books. But scientists still don't know a lot about the beast. Did it hunt by sight or by smell? Was tyrannosaur a hunter at all, or did it just eat dead animals it found? Was it a fast runner?

With so many questions, we're still getting to know the tyrannosaur—but from a safe distance!

SEARCH LIGHT

Find and correct the error in the following sentence: *Tyrannosaurus rex* means "tyrant wizard king."

DID YOU KNOW?

Tyrannosaur fossils show features that support the theory that dinosaurs may be the distant ancestors of birds. For instance, its bones were very lightweight for their size, just as birds' are. And its walking posture resembles that of modern birds.

LEARN MORE! READ THESE ARTICLES…
DRAGONS (VOLUME 5) • FOSSILS (VOLUME 1)
REPTILES (VOLUME 11)



Sue, the famous *T. rex* in Chicago's Field Museum, was sick when she was alive. Researchers say that she suffered from gout, a painful disease that causes swelling in bones and joints.
Courtesy, Field Museum

Answer: *Tyrannosaurus rex* means "tyrant lizard king."

GLOSSARY

alpine relating to mountainous or hilly areas above the line where trees grow

arc a curved line

asteroid small, often rocklike heavenly body orbiting the Sun

bacterium (plural: bacteria) tiny one-celled organism too small to see with the unaided eye

canopy overhead covering

carcass dead body or leftover parts of an animal

cathedral large church where a bishop is in charge

channel narrow passageway between two areas of water

circulate to flow

climate average weather in a particular area

clockwise in the direction that a clock's hands move, as viewed from the front

cloudburst sudden heavy rainfall

continent one of the largest of Earth's landmasses

counterclockwise in the direction opposite to the way a clock's hands move, as viewed from the front

crude oil oil taken from the ground and not yet cleaned or separated into different products; also called "petroleum"

cruise a pleasure trip on a large boat or ship

debris trash or fragments

delta large triangular area made of material deposited at the mouth of a river, where it empties into the sea

devastate to wreck or destroy

ecosystem community of all the living things in a region, their physical environment, and all their interrelationships

element in science, one of the simplest substances that make up all matter

erode to wear down

evaporate to change into a vapor or gaseous form, usually by means of heating

evolve (noun: evolution) to change, especially over time

exotic unusual and unfamiliar

fossil an imprint or other trace in rock of an animal, plant, or other living thing

frigid frozen or extremely cold

gemstone natural material that can be cut and polished for use in jewelry

glacier a large riverlike body of ice moving slowly down a slope or spreading over a land surface

gravity force that attracts objects to each other, keeps people and objects anchored to the ground, and keeps planets circling the Sun

habitat the physical environment in which a living thing dwells

hail small balls or lumps of ice that fall from the sky, as rain does

handiwork creative product

harness to control, much as an animal may be hitched up and controlled by its harness

hemisphere half of the planet Earth or any other globe-shaped object

horizon distant point where the land and the sky appear to meet

impression mark or figure made by pressing one object onto the surface of another; also, the effect or feeling an object or person creates

industrial having to do with businesses that construct or produce something

marine having to do with the ocean

meteorite a mass of material from space that reaches the Earth's surface

mineral substance that is not animal or plant and is an important nutrient for living things

molten melted

organism living thing

overwhelm to defeat, beat down, or swallow up

particle tiny bit or piece

peninsula a finger of land with water on three sides

pesticide poison that kills insects dangerous to growing plants

political having to do with creating and controlling a government

pollute (noun: pollution) to poison or make dirty, often with man-made waste

recycle to pass used or useless material through various changes in order to create new useful products from it

remains (noun) parts that are left after time passes or some event occurs

resort (noun) fancy vacation spot

rotate (noun: rotation) to spin or turn

sanctuary safe place

sleet frozen or partly frozen rain

smog dirty air, a word made by combining "**sm**oke" and "f**og**" to describe how the air looks

sonar method of locating objects (usually underwater) by sending out sound waves to be reflected back from the objects

species group of living things that have certain characteristics in common and share a name

timber wood that is cut down for use in building something

tropical having to do with the Earth's warmest and most humid (moist) climates

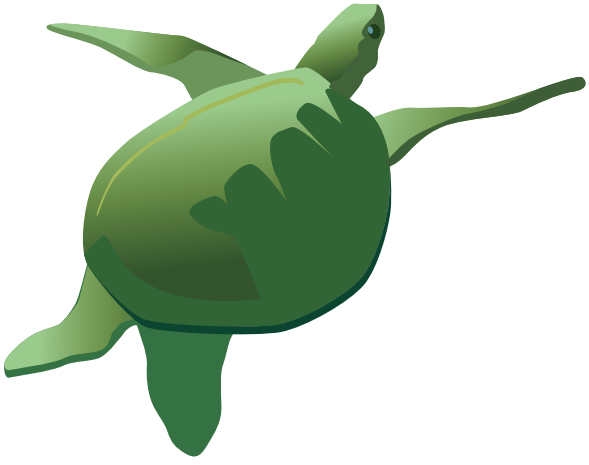
tyrant powerful and cruel ruler; also, someone who acts like a tyrant

vapor a substance in the state of a gas (rather than a solid or liquid)

vulnerable exposed or in danger

waste materials that are unused or left over after some work or action is finished

waterlogged filled or soaked with water and therefore heavy or hard to manage



I N D E X

acid rain (pollution) *page* **70**
LEARN MORE *look under* pollution

Africa (continent)
continents *page* **8,** map *page* **8**
diamonds *page* **80**

Amazon (river and region in South America)
marshes *page* **26**
rivers *page* **31**
swamps *page* **28**
LEARN MORE *look under* rainforests

anatosaurs (dinosaurs)
dinosaurs *page* **88**

Antarctica (continent) *page* **10**
continents *page* **8,** map *page* **8**

apatosaurs, *also called* brontosaurs (dinosaurs)
dinosaurs *page* **88**

Asia (continent)
continents *page* **8,** map *page* **8**

Atlantic Ocean *page* **39**
LEARN MORE *look under* Mediterranean Sea

Australia (island, continent, and country)
continents *page* **8,** map *page* **8**

autumn (season)
leaves *page* **67**

brontosaurs (dinosaurs): *look under* apatosaurs

canyons (deep narrow valleys)
sandstone canyon photograph *page* **76,** photograph *page* **77**

caves, *also called* caverns *page* **79**

chalk (rock) *page* **83**

chlorophyll
leaves *page* **67**

cirrus clouds
clouds *page* **56,** photograph *page* **57**

clouds *page* **56**
LEARN MORE *look under* cyclones; dew; thunder and lightning

continents *page* **8**
LEARN MORE *look under* caves; deserts; marshes; mountains; oasis; peninsulas; rainforests; rivers; swamps

cumulonimbus clouds, *also called* thunderheads
clouds *page* **56**
thunder and lightning *page* **58**

cumulus clouds
clouds *page* **56**

currents (water)
Atlantic Ocean *page* **39**
oceans *page* **37**

cyclones, *also called* hurricanes, *or* typhoons (wind storms) *page* **61**
floods *page* **32**
waves *page* **49**

deserts *page* **20**
LEARN MORE *look under* Antarctica; oasis

dew *page* **65**
LEARN MORE *look under* clouds

diamonds *page* **80**

dinosaurs (ancient reptiles) *page* **88**
disappearance *page* **91**
LEARN MORE *look under* mammoths and mastodons; tyrannosaurs

earthquakes
floods *page* **32**
mountains *page* **16**
tsunamis *page* **50**

echoes *page* **68**
LEARN MORE *look under* waves

ecosystems: *look under* deserts; marshes; oasis; rainforests; swamps

electricity
thunder and lightning *page* **58**

environment
pollution *page* **73**
rainforests *page* **24**
LEARN MORE *look under* acid rain

erosion
caves *page* **79**
mountains *page* **16**
rivers *page* **30**

Europe (continent)
continents *page* **8,** map *page* **8**
peninsulas *page* **22**

floods *page* **32**
LEARN MORE *look under* tsunamis

fog
clouds *page* **56**

fossils *page* **84**
LEARN MORE *look under* chalk; dinosaurs; mammoths and mastodons; paleontology

geography (science) *page* **6**
LEARN MORE *look under* caves; continents; deserts; islands; marshes; mountains; oasis; oceans; peninsulas; rainforests; rivers; swamps; volcanoes

geology (science) *page* **75**
LEARN MORE *look under* caves; chalk; rocks and minerals; volcanoes

glaciers (ice formations) *page* **54**
caves *page* **79**
mammoths and mastodons *page* **87**
sand *page* **18**
LEARN MORE *look under* icebergs

gravity
oceans *page* **37**
sand dunes photograph *page* **18**
tides *page* **46**

Gulf Stream (ocean current)
Atlantic Ocean *page* **39**
oceans *page* **37**

hail (weather)
clouds *page* **56**

hurricanes (wind storms): *look under* cyclones

icebergs (ice formations) *page* **52**
LEARN MORE *look under* glaciers

igneous rocks
rocks and minerals *page* **76**

Indian Ocean *page* **42**
island in the Maldives photograph *page* **13**

islands *page* **12**

lava (volcanoes)
mountains *page* **16**
volcanoes *page* **15**

leaves *page* **67**

lightning (weather): *look under* thunder and lightning

limestone (rock)
chalk *page* **83**
rocks and minerals *page* **76**

magma (molten rock)
rocks and minerals *page* **76**
volcanoes *page* **15**

mammoths and mastodons (animals) *page* **87**
LEARN MORE *look under* fossils

mangroves (trees)
swamps *page* **28**

Mariana Trench (Pacific Ocean)
Did you know? *page* **37**
Pacific Ocean *page* **41**

marshes *page* **26**
LEARN MORE *look under* swamps

mastodons (animals): *look under* mammoths and mastodons

Mediterranean Sea *page* **44**

metamorphic rocks
rocks and minerals *page* **76**

meteorites (astronomy)
tsunamis *page* **50**

minerals: *look under* rocks and minerals

mountains *page* **16**
geography *page* **6**
volcanoes *page* **15**
LEARN MORE *look under* glaciers; volcanoes

nimbostratus clouds
clouds *page* **56**

North America (continent)
continents *page* **8,** map *page* **8**

oasis *page* **34**
deserts *page* **20**

oceans *page* **37**
pollution *page* **73**
sand *page* **18**
LEARN MORE *look under* Atlantic Ocean; Indian Ocean; Mediterranean Sea; Pacific Ocean; tides; waves

oil spill
pollution *page* **73,** photograph *page* **72**

Pacific Ocean *page* **41**
islands photograph *page* **12**

paleontology (science)
geology *page* **75,** *page* **75**
LEARN MORE *look under* dinosaurs; fossils

peninsulas *page* **22**

photosynthesis (biology)
leaves *page* **67**

pollution *page* **73**
Atlantic Ocean *page* **39**
LEARN MORE *look under* acid rain

rain (weather)
clouds *page* **56**

rainbows (weather) *page* **63**

rainforests *page* **24**
LEARN MORE *look under* Amazon

recycling
Did you know? *page* **72**

rivers *page* **30**
sand *page* **18**
swamps *page* **28**
LEARN MORE *look under* floods; glaciers

rocks and minerals *page* **76**
Did you know? *page* **74**
volcanoes *page* **15**
LEARN MORE *look under* chalk; diamonds; fossils; sand

sand *page* **18**
Did you know? *page* **21**

sandstone (rock)
canyons photograph *page* **76,** photograph *page* **77**

sediment (geology)
rocks and minerals *page* **76**

smog (air pollution)
pollution *page* **73**

snow (weather)
clouds *page* **56**

sonar
echoes *page* **69**

sound
echoes *page* **68**

South America (continent)
continents *page* **8,** map *page* **8**
rainforests *page* **24,** photograph *page* **24**

stalactites and stalagmites (mineral formations)
caves *page* **79,** photograph *page* **78**

storms: *look under* cyclones; floods; thunder and lightning

stratus clouds
clouds *page* **56**

swamps *page* **28**
LEARN MORE *look under* marshes

thunder and lightning *page* **58**
clouds *page* **56**

thunderheads: *look under* cumulonimbus clouds

tidal bores (waves in a river)
Did you know? *page* **46**

tidal waves: *look under* tsunamis

tides *page* **46**
oceans *page* **37**
sand *page* **18**
LEARN MORE *look under* floods

tornadoes (wind storms) *page* **61**

triceratops (dinosaurs)
dinosaurs *page* **88**

tsunamis, *also called* tidal waves *page* **50**
floods *page* **32**
waves *page* **49**

typhoons (wind storms): *look under* cyclones

tyrannosaurs, *also called* Tyrannosaurus rex (dinosaurs) *page* **92**
dinosaurs *page* **88**
LEARN MORE *look under* fossils

vapor
dew *page* **65**

volcanoes *page* **15**
Antarctica *page* **11**
caves *page* **79**
floods *page* **32**
islands *page* **12**
mountains *page* **16**
rocks and minerals *page* **76**

waterfalls
rivers *page* **31**

waves *page* **49**
sand *page* **18**
LEARN MORE *look under* echoes; tsunamis

weather: *look under* clouds; cyclones; dew; rainbows; thunder and lightning; tsunamis; waves

wetlands: *look under* marshes; swamps

wind
cyclones and tornadoes *page* **61**
sand dunes photograph *page* **18**
waves *page* **49**

woolly mammoths (animals)
mammoths and mastodons *page* **87,** illustration *page* **86**

Learn about weather, landscapes, and the Earth's natural wonders in THE EARTH AND EARTH SCIENCES


Volume 1: **The Earth and Earth Sciences**


Volume 2: **Physical Sciences and Technology**


Volume 3: **The Arts**


Volume 4: **People in History**


Volume 5: **Folklore and Religions**


Volume 6: **Europe**


Volume 7: **Asia, Australia, and New Zealand**


Volume 8: **Africa**


Volume 9: **The Americas**


Volume 10: **Plants**


Volume 11: **Birds, Insects, Reptiles, and Aquatic Life**


Volume 12: **Mammals**


Volume 13: **Reference Guide and Index**



AV

My First Britannica



Physical Sciences and Technology

2

My First Britannica

Physical Sciences and Technology

2



Chicago London New Delhi Paris Seoul Sydney Taipei Tokyo

© 2008 by Encyclopædia Britannica, Inc.

International Standard Book Number: 978-1-59339-476-9 (set)

No part of this work may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, recording, or by any information storage and retrieval system, without permission in writing from the publisher.

My First Britannica:
Volume 2: Physical Sciences and Technology 2008

Britannica.com may be accessed on the Internet at http://www.britannica.com.

Encyclopædia Britannica, Britannica, and the Thistle logo are registered trademarks of Encyclopædia Britannica, Inc.

Physical Sciences and Technology

TABLE OF CONTENTS

INTRODUCTION 5

Journey Through Space

Astronomy: Studying the Stars 6
Universe: Infinite Space 8
Stars: Distant Fire 10
Galaxies: Star Clusters 12
Extraterrestrial Life: Life Beyond the Earth 14
Spacecraft: Exploring the New Frontier 16
Astronauts: Going up in Space 18
Solar System: Family of the Sun 20
Asteroids: Minor Planets 22
Comets: Rocketing Masses with Fuzzy Tails 24
Moon: A Trip to the Moon 26
Planets: Wanderers in the Sky 28
Mercury: The Planet Nearest to the Sun 30
Venus: A Morning and Evening Star 32
Mars: The Red Planet 34
Jupiter: King of the Planets 36
Saturn: The Ringed Planet 38
Uranus: King George's Star 40
Neptune: The Eighth Planet 42
Pluto: The Dwarf Planet 44

Nature's Basics

Atoms: Building Blocks of Matter 46
Energy: The Power of Life 48
Gravity: The Invisible Magnet 50
Liquids, Solids, and Gases: Same Stuff, Different Forms 52
Temperatures: Hot and Cold 54

Practical Science

Electricity: Cables, Fuses, Wires, and Energy 56
Measurement: Figuring Out Size and Distance 58
Medicine: Looking to Nature for Remedies 60
Nuclear Energy: Big Energy from a Small Source 62
Thermal Power: Energy from Heat 64
Water Power: Streams of Energy 66
Wind Power: Energy in the Air 68

Gadgets and Systems

Airplanes: The First Flights 70
Automobiles: How Henry Ford Made the American Car . . . 72
Braille: Books to Touch 74
Calendar: Charting the Year 76
Computers: The Machines That Solve Problems 78
Internet and the World Wide Web: Network of People 80
Motion Pictures: Photos That Move 82
Oil: From the Ground to the Filling Station 84
Paper: Turning Trees to Paper 86
Photography: Drawing with Light 88
Printing: Gutenberg's Gift 90
Radio: Thank You, Mr. Marconi 92
Ships: From Rafts to Ocean Liners 94
Sight and Sound: Eyes That Hear, Speech That's Seen . . . 96
Submarines: Silent Stalkers of the Sea 98
Telephones: Staying in Touch 100
Telescopes: Exploring the Sky 102
Television: The World in a Box 104
Transportation: Before There Were Automobiles 106
Weaving: Making Cloth 108

GLOSSARY 110
INDEX 111



Spiral-shaped galaxy.
© Myron Jay Dorf/Corbis

Cover photos (top): hot-air balloons, Albuquerque, New Mexico, © Joseph Sohm—ChromoSohm Inc./Corbis; (center): illustration by Joseph Taylor; (bottom): Galaxy, © Myron Jay Dorf/Corbis

Physical Sciences and Technology

I N T R O D U C T I O N

Where does medicine come from? What was Gutenberg's gift?
Are aliens waiting for us in outer space?
Can eyes ever hear?

In Volume 2, ***Physical Sciences and Technology,*** you'll discover answers to these questions and many more. Through pictures, articles, and fun facts, you'll journey through space, meet great inventors, and investigate wonderful things about the world.

To help you on your journey, we've provided the following guideposts in *Physical Sciences and Technology*:

■ **Subject Tabs—**The colored box in the upper corner of each right-hand page will quickly tell you the article subject.

■ **Search Lights—**Try these mini-quizzes before and after you read the article and see how much—*and how quickly*—you can learn. You can even make this a game with a reading partner. (Answers are upside down at the bottom of one of the pages.)

■ **Did You Know?—**Check out these fun facts about the article subject. With these surprising "factoids," you can entertain your friends, impress your teachers, and amaze your parents.

■ **Picture Captions—**Read the captions that go with the photos. They provide useful information about the article subject.

■ **Vocabulary—**New or difficult words are in **bold type**. You'll find them explained in the Glossary at the back of this volume. And there's a complete listing of all Glossary terms in the set in the ***Reference Guide and Index***, Volume 13.

■ **Learn More!—**Follow these pointers to related articles throughout the set.

And don't forget: If you're not sure where to start, where you saw something before, or where to go next, the Index at the back of this volume and the ***Reference Guide and Index*** (Volume 13) will point the way.

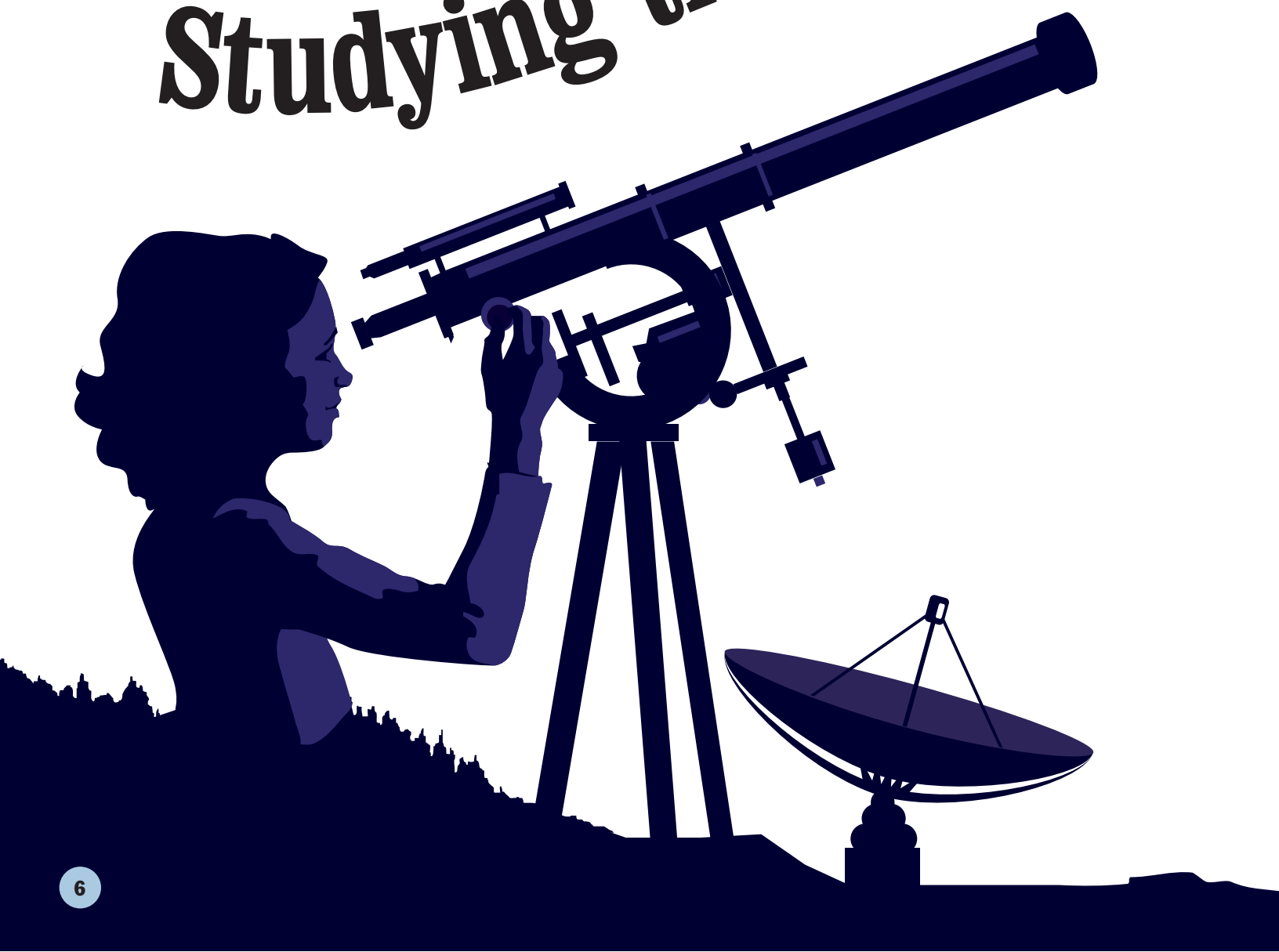
Have a great trip!

MY FIRST BRITANNICA

SEARCH LIGHT

Which of these things do astronomers study?
- stars
- planets
- moons
- astronauts
- comets

Studying the Stars



DID YOU KNOW?
Sunlight takes about eight minutes to travel the 93 million miles from the Sun to the Earth.

Look at the sky. What do you see?

If it's day you'll see the Sun. If it's night you'll see the Moon. And if the sky is clear you'll see stars. In big cities you may see only a few hundred stars. But out in the country or on the ocean you'll see many thousands. You may even see planets and, if you're lucky, a **comet**.

There are people who look at the sky for hours and hours, night after night. They study the stars, the planets, and other objects in the sky. These people are called "astronomers." The word "astronomy" comes from the Greek for "star" and "arrangement."

Astronomers study the universe in many different ways. Some watch faraway objects. Others work in **laboratories**, where they look at samples of **meteorites**, rocks from the Moon, and space **debris** from other planets. Some try to make models of different objects people have studied.

Not all astronomers get paid for the work they do. Some do it for a hobby. Such people are called "amateur astronomers."

How do astronomers study objects that are millions, even billions, of miles away? They use powerful telescopes that make things look large enough to be seen in detail. Some telescopes are small enough to be held in the hand. Others are as big as a school bus!

LEARN MORE! READ THESE ARTICLES…
GALILEO GALILEI (VOLUME 4) • TELESCOPES (VOLUME 2) • UNIVERSE (VOLUME 2)

Answer: They study all of these except for astronauts.

Infinite Space

The universe is a vast **expanse** of space that contains all matter and energy, from the smallest particle to the biggest galaxy. It contains all the planets, the Sun, stars, asteroids, our Milky Way Galaxy, and all the other galaxies too.

No one knows how big the universe is. Astronomers believe that it is still growing outward in every direction.

How did it all begin? No one knows that for sure either.

Most scientists believe that at first everything was one incredibly solid, heavy ball of matter. This ball exploded billions of years ago—and the universe was born. The moment of this explosion is called the "big bang." It is from this moment that time began.

After the explosion the early universe was small and extremely hot. As it cooled, it expanded and pieces spread out. Small pieces formed the basic

SEARCH LIGHT

If the universe is still growing, is it moving toward or away from the Earth?

elements hydrogen and helium. Other pieces began to join together, and objects began to form. Over billions of years the objects became galaxies, stars, and planets.

This is still only a theory, an idea. But different parts of it have proved true over the years. Astronomers try to **investigate** the theory all the time. One way they do this is to use a "spectroscope." A spectroscope measures the color of light coming from an object. Changes in the color indicate whether an object is moving away from or toward the Earth.

Because of spectroscope readings scientists believe that the universe is still growing outward in every direction.

LEARN MORE! READ THESE ARTICLES…
ATOMS (VOLUME 2) • GALAXIES (VOLUME 2)
SOLAR SYSTEM (VOLUME 2)

DID YOU KNOW?

Scientists believe that much of the universe may be made of something called "dark matter." This hidden mass may be a substance that human beings have never before encountered.

Answer: Everything in the universe is moving away from everything else. You can see how this works if you put black dots on a balloon, blow it up, and watch the dots spread apart.

Distant Fire

All stars are basically enormous balls of fire. They are made up of gases that give off both heat and light as they burn. Their power comes from nuclear energy, the same source that both powers atomic bombs and produces electricity in many parts of the world.

The life of a star spans billions of years. A star is born from clouds of dust and the **element** hydrogen. This cloud mass forms a spinning ball that pulls all the material toward the center. It becomes more and more dense, or thick, as the material comes together. It also becomes extremely hot. Eventually it becomes so hot that the hydrogen gas begins to glow. The glowing gas ball is called a "protostar" ("proto" means "beginning" or "first").

A protostar becomes a star when it starts a process called fusion. This happens when hydrogen atoms combine to form the element helium. The fusion process releases a huge amount of energy in the form of heat and light. A star can continue to glow for millions of years.

When the star finally runs out of hydrogen for the fusion reaction, it starts to cool. Some stars expand into "red supergiants" when they run out of hydrogen. If the conditions are right, these red supergiants then explode in a huge, violent blast called a "supernova." In some cases, what is left may become a black hole. Black holes are like giant vacuum cleaners in space that suck up everything around them, including light.

Our Sun is still a young star, though it is already billions of years old. It will be many more billions of years before it begins to die. So there's still time to finish your homework.

DID YOU KNOW?

After our own Sun, the nearest star to Earth is Alpha Proxima Centauri. It is 4.2 light-years away, or almost 25 trillion miles from Earth.

SEARCH LIGHT

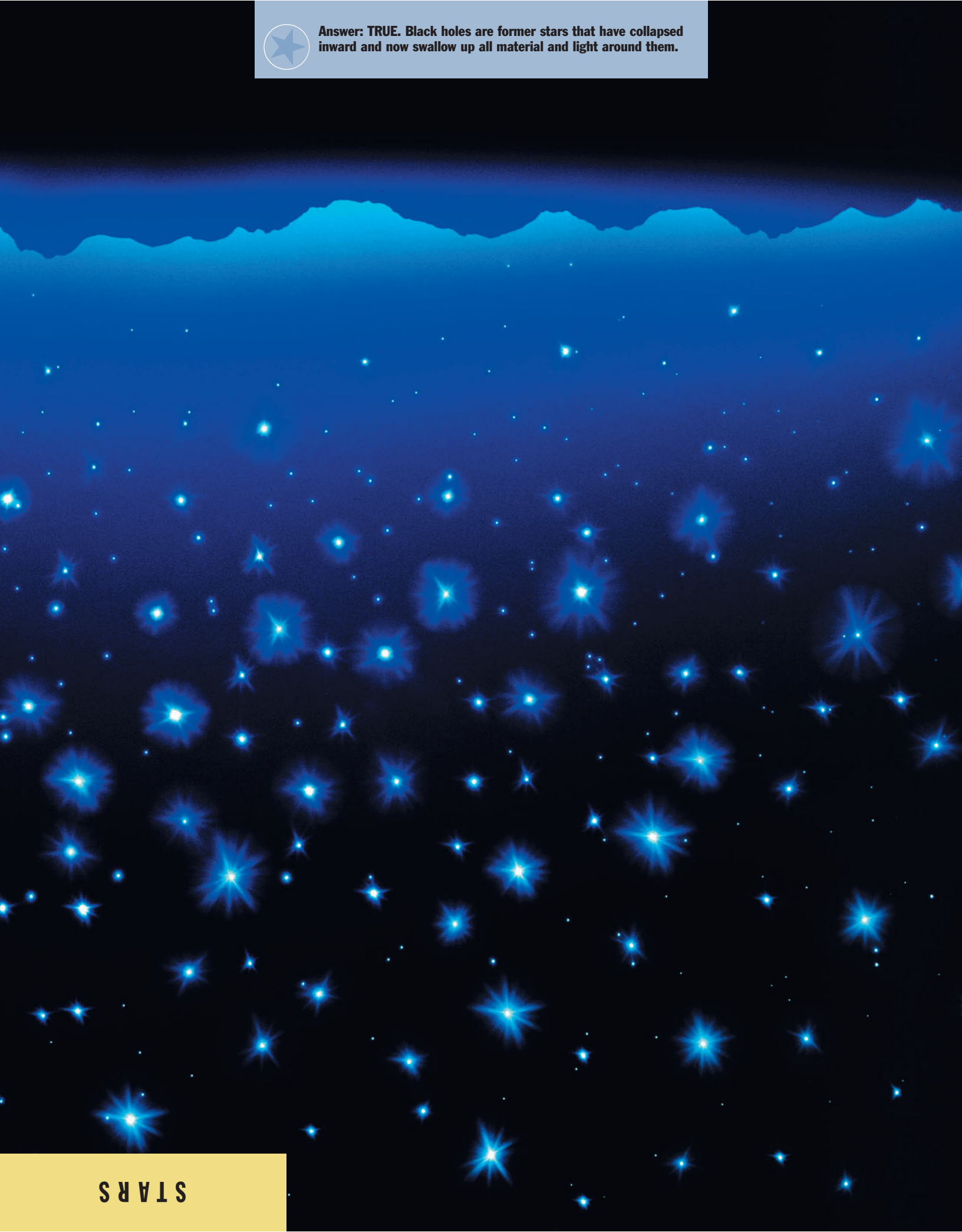
True or false? Black holes were once stars.

LEARN MORE! READ THESE ARTICLES…
GALAXIES (VOLUME 2) • NUCLEAR ENERGY (VOLUME 2)
UNIVERSE (VOLUME 2)

It's hard to believe, when you look up at the night sky, that all those twinkling stars are actually enormous balls of fire.

© Matthias Kulka/Corbis

Answer: TRUE. Black holes are former stars that have collapsed inward and now swallow up all material and light around them.





Star Clusters

When we look at the sky at night, we may see thousands of stars shining brightly. They look as if they are just scattered around the sky. But actually, most stars are clustered together in huge groups. These groups are called "galaxies."

Our Sun is part of a galaxy. It is the Milky Way Galaxy. On a very clear night, if you look carefully at the sky, you might see part of this whitish band of stars stretching from one side to the other.

The universe is so huge that the Milky Way Galaxy is only one of many. Astronomers think that there are billions of galaxies in the universe. Each of these galaxies may contain trillions of stars, many much bigger than our own Sun! The Milky Way itself contains several billion stars.

Some galaxies have no regular shape. Others, like the Milky Way, are shaped somewhat like giant merry-go-rounds. Each has a center around which stars move in circles.

It is hard to see the other galaxies in the sky with the naked eye. Even though they are incredibly large, they are also incredibly far away. Scientists must use powerful telescopes to study other galaxies. For this reason it takes a long time to learn even a little bit about another galaxy. And there's still a great deal we haven't learned about our own galaxy.

SEARCH LIGHT

Find and correct the error in the following sentence: There are many, many universes in the galaxy.

LEARN MORE! READ THESE ARTICLES…
SOLAR SYSTEM (VOLUME 2) • TELESCOPES (VOLUME 2)
UNIVERSE (VOLUME 2)

DID YOU KNOW?

Constellations, unlike galaxies, are groups of stars that people imagined as connecting to make pictures in the night sky. Named mostly for animals and mythological figures, constellations still help astronomers and navigators locate certain stars.

Our galaxy, the Milky Way, is shaped somewhat like a giant merry-go-round. Its billions of stars move in circles around a center.
© Myron Jay Dorf/Corbis

Answer: There are many, many galaxies in the universe.

Life Beyond the Earth

Could there be life elsewhere in the universe? There are some people who think that it's possible. They have given the idea a name, extraterrestrial life. "Extra" means "beyond" and "terrestrial" means "of the Earth," so altogether the name means "life beyond the Earth."

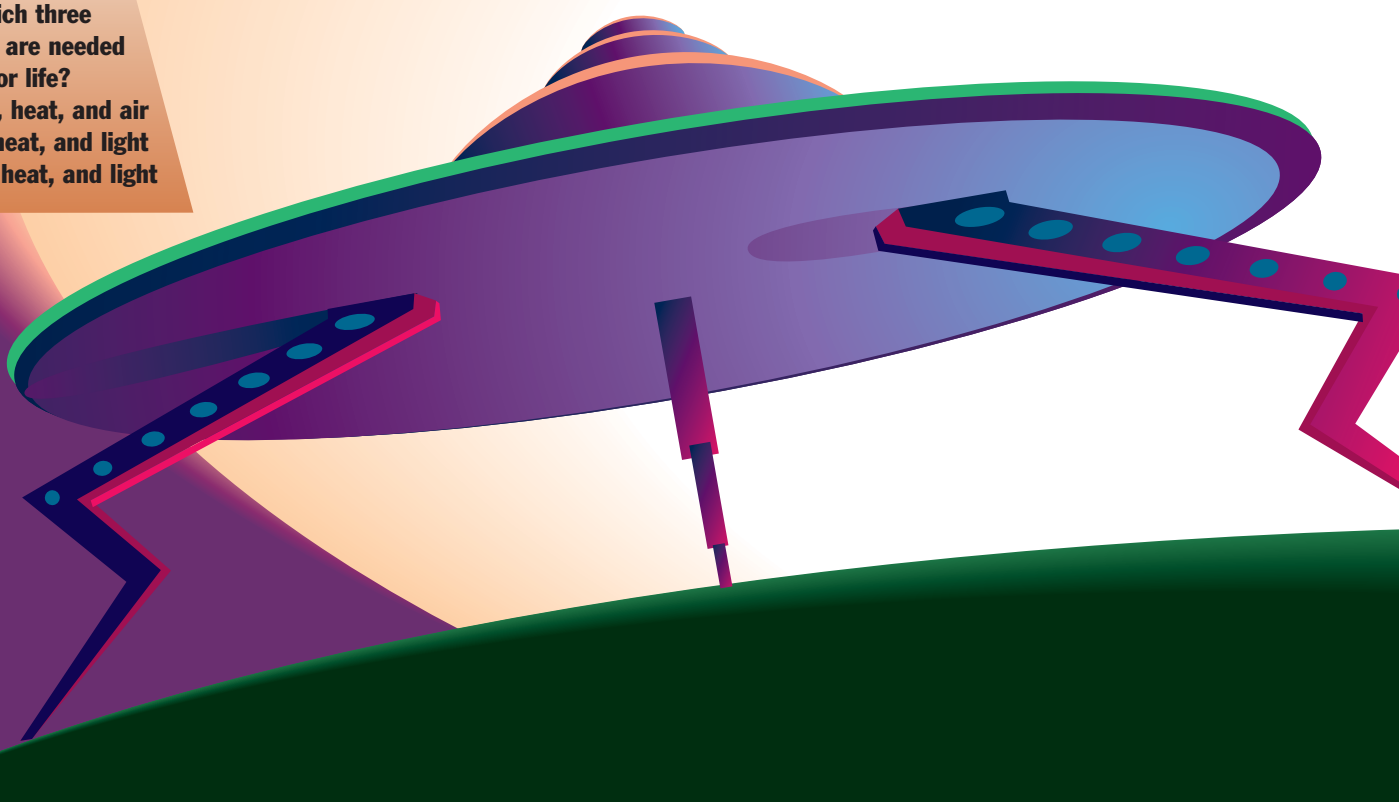
Most scientists believe that for another planet to have life on it, it must have an **atmosphere** (air), light, heat, and water like the Earth does.

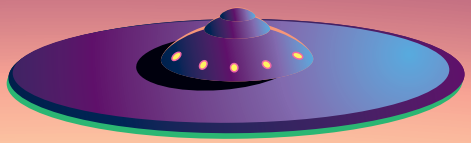
We get our light and heat from the Sun. The universe is filled with millions of stars like our Sun. Scientists are trying to find out if these stars have planets, maybe Earth-like planets. If there is such a planet, then it could have life on it.

It's not easy to find extraterrestrial life. The universe is an immense place to search. Some scientists believe that if there is intelligent life elsewhere, it may send radio signals to us. So far, the only signals that scientists have found are the natural ones that come from stars and planets themselves.

SEARCH LIGHT

In addition to an atmosphere, which three things are needed for life?
a) water, heat, and air
b) dirt, heat, and light
c) water, heat, and light





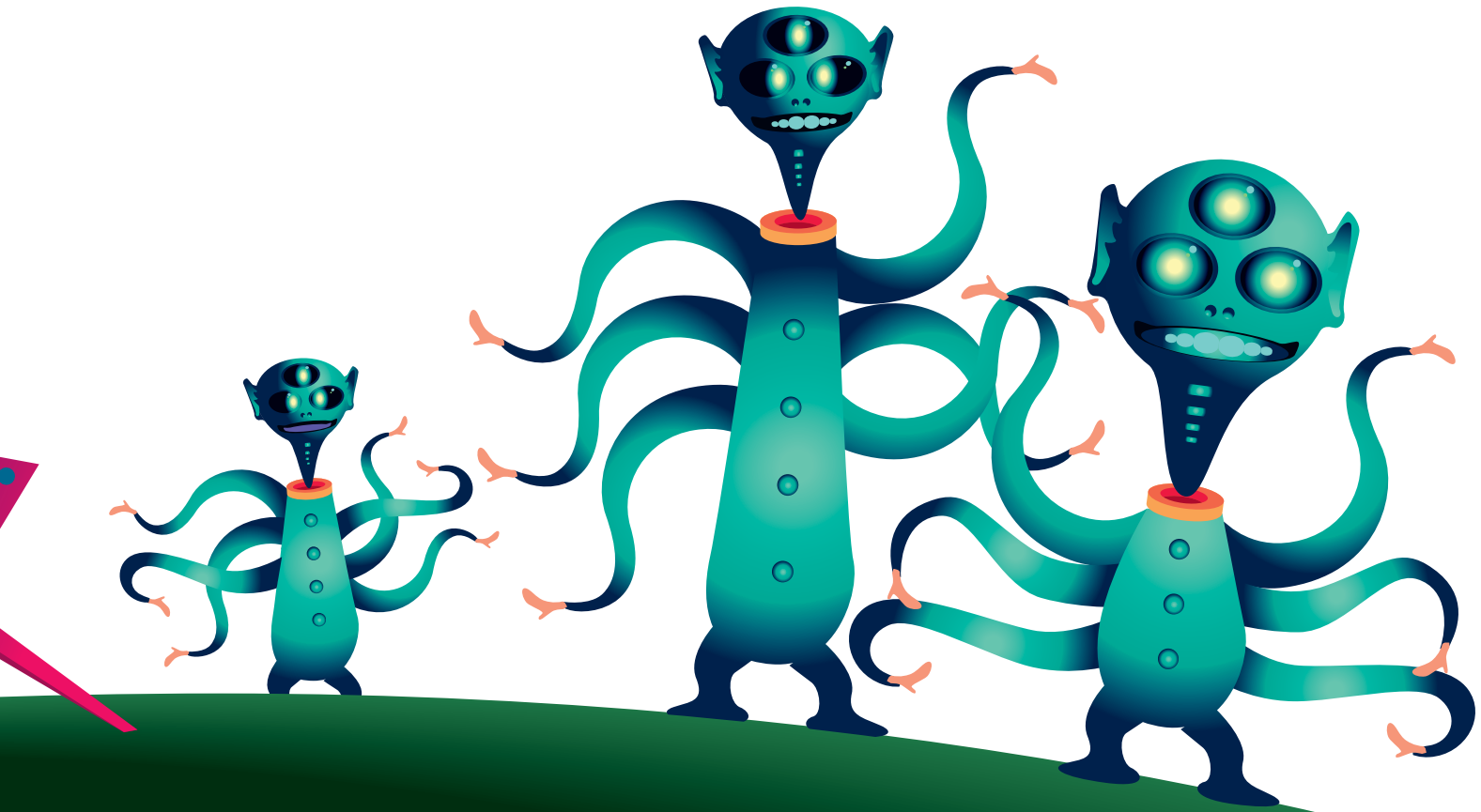
DID YOU KNOW?

Today the Foo Fighters are a rock band, but in World War II American pilots gave that name to mysterious UFOs—floating lights they saw over Germany.

Whether it is possible or not, the idea of beings on other planets has excited people for years. Some believe that aliens from other worlds have even visited Earth. They call these aliens "extraterrestrials," or "ETs." Some even claim to have seen ETs and their spaceships, which are called "unidentified flying objects," or simply "UFOs."

What do you think, are there creatures living on other planets? And how do you think they would live?

LEARN MORE! READ THESE ARTICLES…
ASTRONAUTS (VOLUME 2) • SPACECRAFT (VOLUME 2) • UNIVERSE (VOLUME 2)



Answer: c) water, heat, and light

Exploring the New Frontier

Once the Moon was the only important thing in **orbit** around planet Earth. Today many objects circling the Earth have been launched into space by human beings. All these orbiters, including the Moon, are called "**satellites**." Those launched by people are called "**artificial** satellites."

Communications satellites send telephone, television, and other electronic signals to and from places on Earth. Weather satellites take pictures of the clouds and wind systems. Various scientific satellites gather information about outer space. There are even "spy" satellites to take pictures for the military. And there are space stations.

In the late 20th century the United States, Russia, the European Space Agency, Japan, and Canada joined forces to build the International Space Station (the ISS). It is meant to have people on it all the time. In 1998 the first two ISS **modules** were launched and joined together in space. In November 2000 the first three-person crew, an American and two Russians, occupied the still-growing station.

Large space stations are planned for the future. These will have many people working in them all the time. They may be like airports are today, where a person changes planes to go to a specific destination. But from a spaceport people would change spacecraft to travel to the Moon, another planet, or another space station.

DID YOU KNOW?

In order to leave the Earth's gravity and visit a space station, you must travel at a speed of 7 miles per second.

SEARCH LIGHT

Why is a space station called a satellite?

LEARN MORE! READ THESE ARTICLES…
MOON (VOLUME 2) • PLANETS (VOLUME 2)
SOLAR SYSTEM (VOLUME 2)

In November 2000 the first three-person crew, an American and two Russians, occupied the still-growing International Space Station.
© NASA

Answer: Since space stations orbit a planet, they are, by definition, satellites.





Going Up in Space

Space is what we call the area that's 100 miles or more above Earth's surface. Below that boundary is Earth's **atmosphere**—the layer of gases including the air we breathe. In space there is no air to breathe. And it is very, very cold.

Russia and the United States were the first countries to send people into space. Russia's space travelers are called "cosmonauts," which means "space sailors." Those from the United States are called "astronauts," meaning "star sailors."

In 1961 cosmonaut Yuri Gagarin became the first man to travel into space. In 1969 U.S. astronaut Neil Armstrong became the first man to walk on the Moon. Sally Ride, in 1983, was the first American woman astronaut.

Today people travel into space inside **space shuttles** that ride piggyback on a rocket into space. After blastoff, the Earth outside the shuttle moves farther and farther away until it looks like a big blue-and-white sea outside the astronauts' window.

In space anything not tied down will float—including the astronauts themselves! Earth's gravity has become too weak to hold things down. In fact, it's hard to tell what "down" means in space.

The shuttle's many special machines help astronauts exist in space. The main computer helps fly and control conditions within the shuttle. A long metal arm lets the astronauts handle things outside their ship. And many other machines are carried along for experiments.

Today most space shuttle trips are to space stations, where astronauts and cosmonauts can live while they work in space.

LEARN MORE! READ THESE ARTICLES…
GRAVITY (VOLUME 2) • MOON (VOLUME 2)
SPACECRAFT (VOLUME 2)

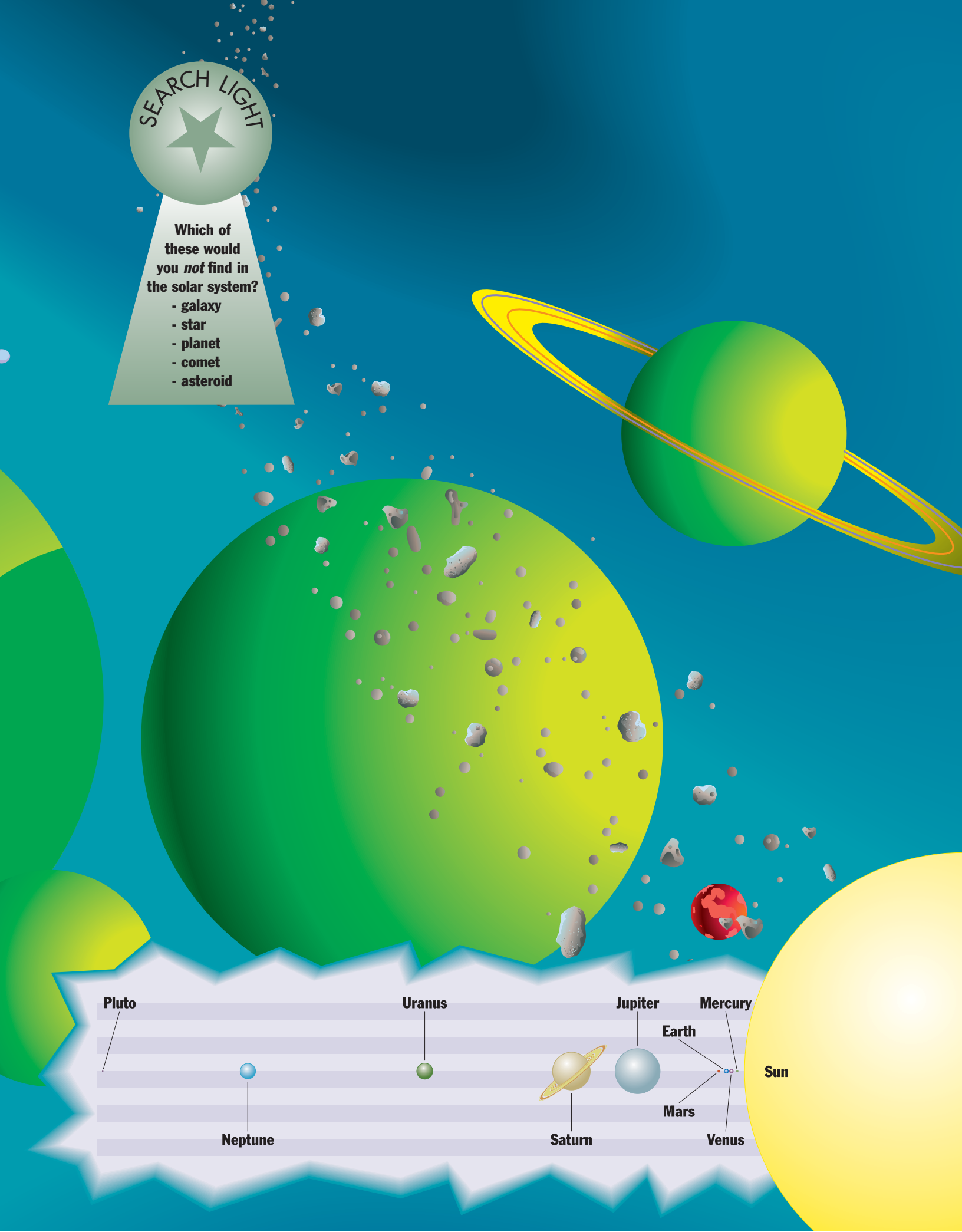
DID YOU KNOW?
Because different planets have different gravities, an astronaut's weight would change from planet to planet. For example, an astronaut weighing 165 pounds on Earth would weigh only 62 pounds on Mars but 390 pounds on Jupiter.

SEARCH LIGHT

Space is the area
a) more than 100 miles out from Earth.
b) more than 10 miles out from Earth.
c) more than 1,000 miles out from Earth.

Imagine you are lying on your back inside a space shuttle. Two long rockets will help your heavy spaceship get off the ground. With five seconds to go, the fuel in your spaceship starts burning. "Five...four...three...two...one."
NASA

Answer: a) more than 100 miles out from Earth.


SEARCH LIGHT
Which of these would you *not* find in the solar system?
- galaxy
- star
- planet
- comet
- asteroid
Pluto
Neptune
Uranus
Saturn
Jupiter
Earth
Mars
Mercury
Venus
Sun

Family of the Sun

Imagine a huge black space. The Sun moves through this vast space, bringing many smaller bodies with it. These bodies include planets, asteroids, comets, meteors, and tiny **molecules** of gases. The Sun and its companions are known as a "solar system." Many solar systems and stars clustered together make up galaxies.

Astronomers do not know how far out our solar system extends. They think that some objects may be as much as 9 trillion miles away from the Sun.

The Sun provides energy for the rest of the solar system. It also provides the heat and light necessary for life on our planet. And its **gravity** keeps the planets, comets, and other bodies in orbit.

The planets are the largest and most **massive** members of the solar system after the Sun. There are eight known planets: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, and Neptune.

Scientists used to think that there were nine planets. They thought that Pluto was a planet because it revolves around the Sun. But in 2006 they decided that Pluto should be called a dwarf planet. Other bodies that also **orbit** the Sun but are even smaller are called asteroids. Most asteroids lie between Mars and Jupiter.

A comet appears in the sky as a fuzzy spot of light with a tail streaming away from it. It is made up of dust and frozen gases. As this giant dirty snowball moves closer to the Sun, the ice melts and makes what looks like a tail. Halley's Comet is probably the most famous of all.

DID YOU KNOW?
The Sun's temperature on the surface is about 10,000°-11,000° F. That's 100 times hotter than a really hot day on Earth!

LEARN MORE! READ THESE ARTICLES…
ASTEROIDS (VOLUME 2) • GALAXIES (VOLUME 2)
PLANETS (VOLUME 2)

Answer: Galaxies are made up of stars and solar systems, not the other way around.

Minor Planets

On January 1, 1801, a man named Giuseppe Piazzi found a new object in the sky. It was circling the Sun out beyond the planet Mars, and Piazzi thought it might be a comet. Some people thought that it was a new planet. Over the next few years many more objects were seen. All of these were much smaller than a planet. Astronomers now call these objects "asteroids," or minor planets.

There are thousands of asteroids in our solar system. They tend to vary in shape, ranging from large **spheres** to smaller slabs and potato-shaped objects. Some asteroids are big. Most are the size of a boulder. Smaller asteroids form when two big asteroids smash into each other and break up. Astronomers think that there are millions of tiny asteroids in the solar system.

Like planets, all asteroids in our solar system circle the Sun. The path that a planet or an asteroid follows when it circles the Sun is called an "orbit." Most asteroids are found farther from the Sun than Earth, between the orbits of Mars and Jupiter. Some, though, come quite close to the Sun.

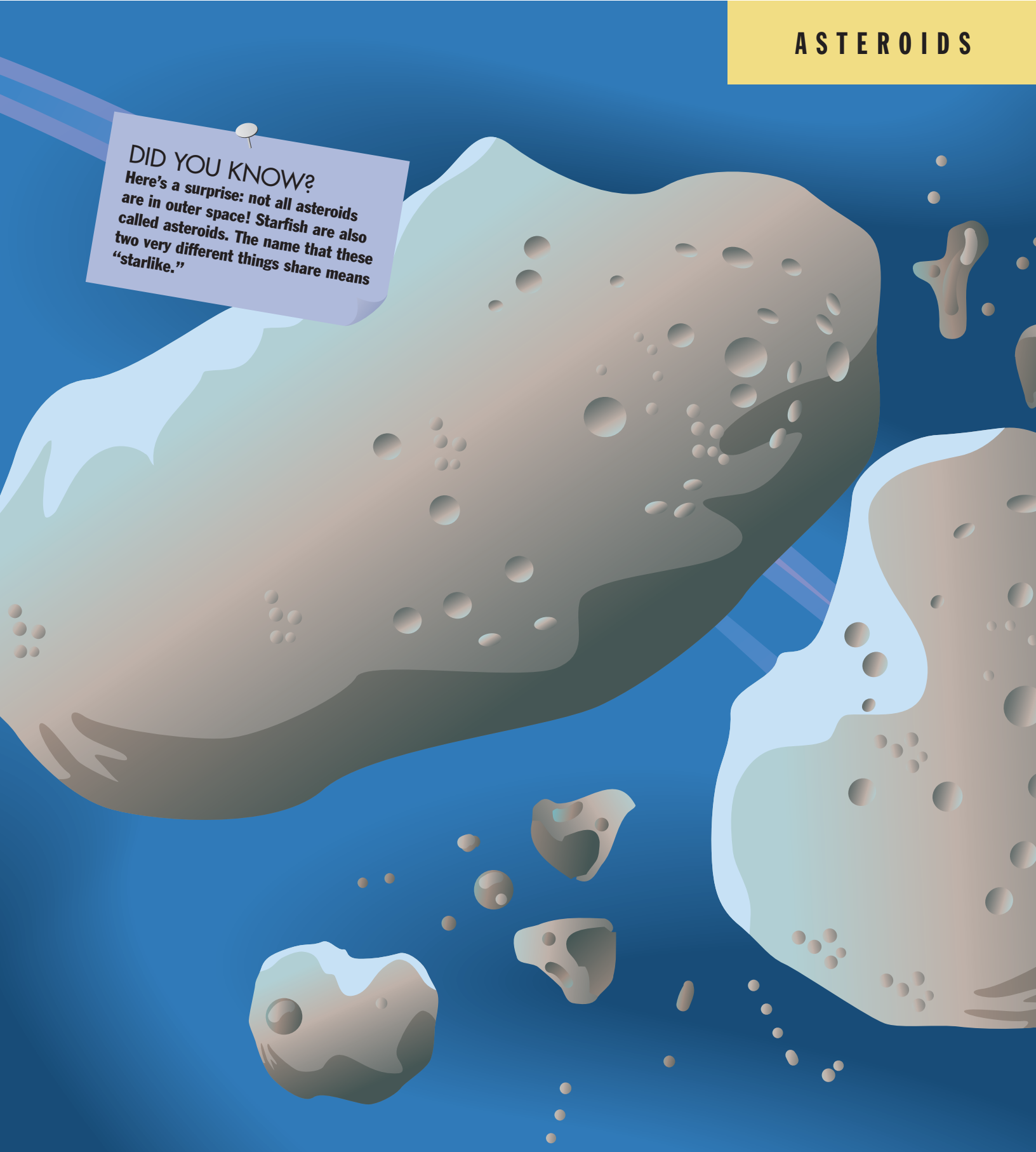
Many people believe that millions of years ago an asteroid hit Earth and led to the dinosaurs' dying out. Some filmmakers in Hollywood have even made popular films, such as *Armageddon*, using the idea of an asteroid hitting Earth.

LEARN MORE! READ THESE ARTICLES…

DINOSAURS:
A MYSTERY DISAPPEARANCE (VOLUME 1)
PLANETS (VOLUME 2)
SOLAR SYSTEM (VOLUME 2)

SEARCH LIGHT

Fill in the blank:
An asteroid might have been involved in the disappearance of the dinosaurs when it crashed into _____.



DID YOU KNOW?

Here's a surprise: not all asteroids are in outer space! Starfish are also called asteroids. The name that these two very different things share means "starlike."

Answer: An asteroid might have been involved in the disappearance of the dinosaurs when it crashed into Earth.


SEARCH LIGHT
If Halley's Comet came around in 1759, 1835, 1910, and 1986, about how many years does it take to appear?
DID YOU KNOW?
American author Mark Twain was born in 1835 on a day when Halley's Comet could be seen in the sky. Just as he predicted, he died when Halley's Comet was again seen in the sky, in 1910.

Rocketing Masses with Fuzzy Tails

The word "comet" comes from a Greek word that means "hairy one." A comet sometimes looks like a star with a hairy tail. But a comet is not a star. Like the Moon, a comet has no light of its own. A comet shines from the sunlight bouncing off it. Like the Earth, a comet goes around the Sun, so it may appear again and again.

But if a comet isn't a star, what is it?

Some scientists think that a large part of a comet is ice. The rest is bits of iron and dust and perhaps a few big chunks of rock. When sunshine melts the ice in a comet, great clouds of gas go streaming behind it. These clouds make the bright fuzzy-looking tail.

Long ago when there were no streetlights and the air was very clean, everyone could see the comets. Unlike the stars that shone every night, comets seemed to appear quite suddenly. So people thought that they would bring bad luck such as floods, hungry times, or sickness.

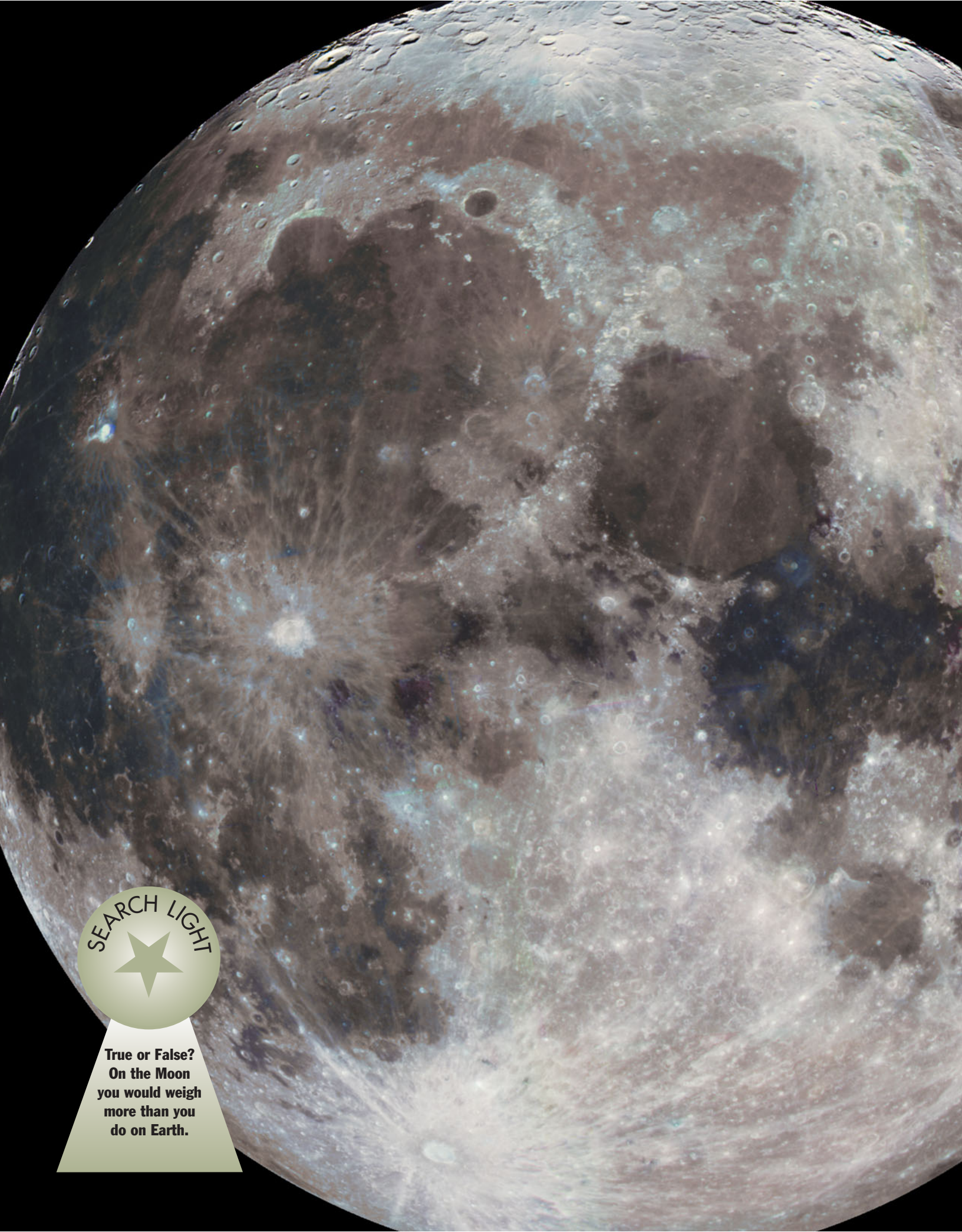
Edmond Halley, who lived over 200 years ago, discovered about 24 different comets. One that keeps coming back was named for him because he figured out when it would return. Halley first saw it in 1759, and it reappeared in 1835, 1910, and 1986. The next time it comes near the Earth will be in the year 2060.

How old will you be then?

Derke/O'Hara/Stone

LEARN MORE! READ THESE ARTICLES…
ASTEROIDS (VOLUME 2) • ASTRONOMY (VOLUME 2) • SOLAR SYSTEM (VOLUME 2)

Answer: Halley's Comet generally comes around every 76 years, though sometimes it takes just 75.



SEARCH LIGHT

True or False? On the Moon you would weigh more than you do on Earth.

A Trip to the Moon

Would you like to go to the Moon? Someday you may be able to.

Astronauts have already visited the Moon. They brought their own food, water, and air. You would have to bring these things along too, because the Moon doesn't have them.



Astronaut Edwin E. ("Buzz") Aldrin on July 20, 1969, one of the first two humans to walk on the Moon.
NASA/JPL/Caltech

Compared with the planets, the Moon is very near to the Earth. It is only 239,000 miles away. Spaceships travel fast enough to cover that distance in a matter of hours.

Someday there may be little towns on the Moon. The first ones will probably be covered over and filled with air. When you're inside the Moon town, you'll be able to breathe normally without a space suit or air tanks. But you will need a space suit and an air tank to go outside.

Once you walk outside the Moon town, you will feel a lot lighter. You will be able to take giant steps of more than ten feet. You'll be able to throw a baseball almost out of sight. This is because the Moon has fairly weak gravity, the force that keeps things from flying off into space.

Gravity is also what gives your body weight. You would not weigh as much on the Moon as you do on the Earth. If you weigh 42 pounds on the Earth, you would weigh only 7 pounds on the Moon!

From the Moon you'll see many more stars than you can see from the Earth. They'll also seem much brighter, because you won't be looking through layers of air and pollution. And you'll be able to enjoy this view for two whole weeks at a time. That's the length of the Moon's night!

DID YOU KNOW?

Since there's no wind or water to wipe them out, the astronauts' footprints on the Moon could still be there in 10 million years.

LEARN MORE! READ THESE ARTICLES…
GRAVITY (VOLUME 2) • SOLAR SYSTEM (VOLUME 2) • SPACECRAFT (VOLUME 2)

NASA/JPL/Caltech

Answer: FALSE. On the Moon you would weigh less than you do on Earth. To find out what you would weigh on the Moon, take your weight and divide by 6.



Wanderers in the Sky

Billions of years ago there was a gigantic swirling cloud of gas and dust. This cloud packed together and became extremely hot. Eventually, the center of the cloud formed our Sun. The rest of the cloud clumped together until it formed the planets.

Eight planets in our solar system revolve (circle) around our Sun. Beginning with the one closest to the Sun, they are Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, and Neptune.

The planets have been divided into two basic groups. There are Earth-like planets and Jupiter-like planets.

Earth-like planets are close to the Sun and made up of rock and metal. These planets are Mercury, Venus, Earth, and Mars. The other planets are larger and farther away from the Sun. These planets are Jupiter, Saturn, Uranus, and Neptune. These four planets have no solid surfaces. They are made up of gases and liquids.

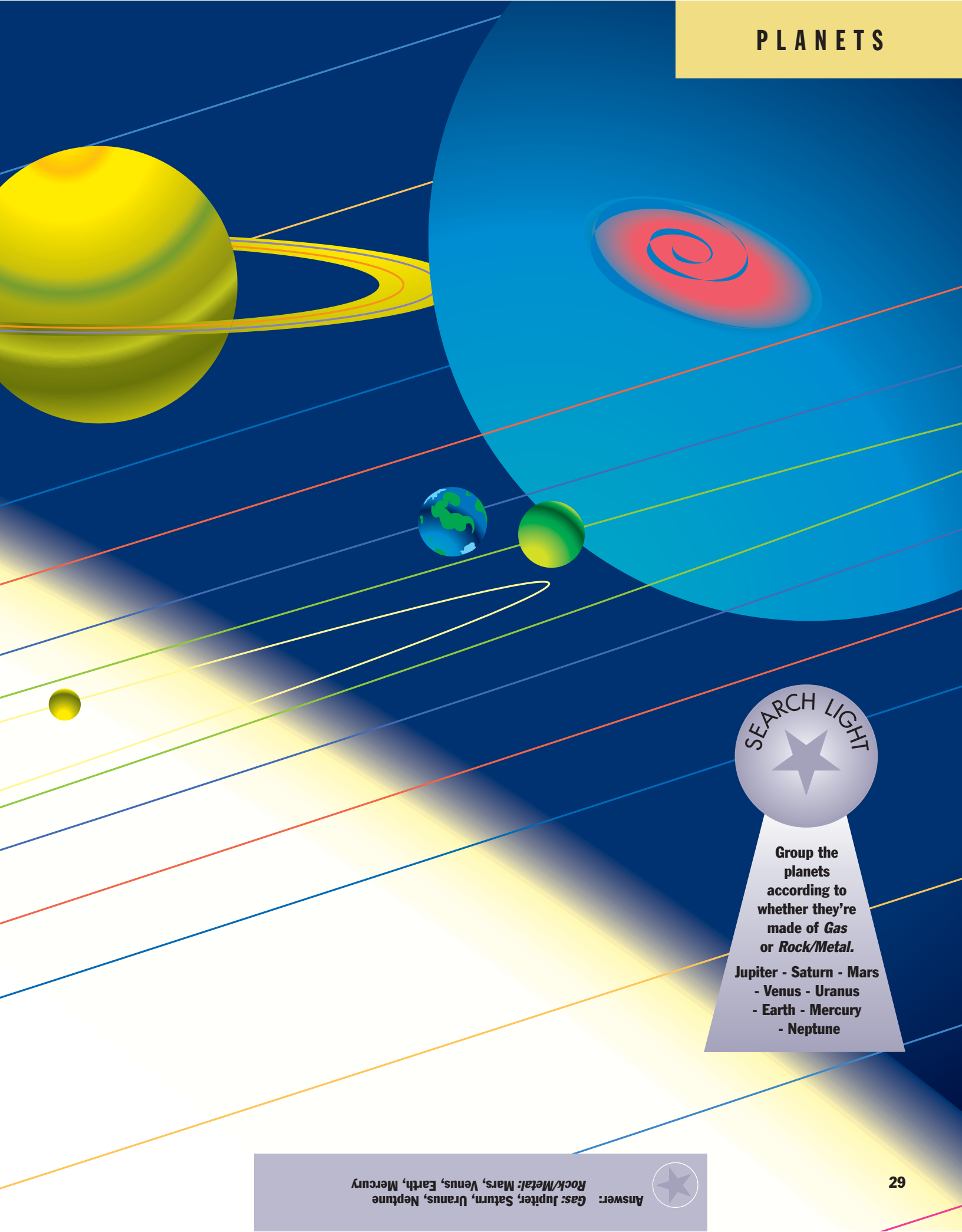
Scientists used to count an object called Pluto as another planet. But Pluto is neither Earth-like nor Jupiter-like. It is very small and frozen. So scientists now call Pluto a dwarf planet.

Each planet **rotates** on its **axis**. An axis is like an imaginary stick going through a planet's center from one end to the other. The planet spins just as if a giant hand had given this stick a mighty twist.

Most planets rotate from west to east. Only Venus and Uranus rotate from east to west. On these planets the Sun seems to rise in the west and set in the east.

LEARN MORE! READ THESE ARTICLES…
ASTEROIDS (VOLUME 2) • SOLAR SYSTEM (VOLUME 2)
STARS (VOLUME 2)

DID YOU KNOW?
Scientists have found three planets orbiting the star Upsilon Andromedae, a star much like our Sun. Some think this means there could be life on one of the planets.



SEARCH LIGHT

Group the planets according to whether they're made of *Gas* or *Rock/Metal.*

Jupiter - Saturn - Mars - Venus - Uranus - Earth - Mercury - Neptune

Answer: *Gas:* Jupiter, Saturn, Uranus, Neptune
Rock/Metal: Mars, Venus, Earth, Mercury

The Planet Nearest to the Sun

Mercury is the first of our eight planets, the closest to the Sun. Because it seems to move so quickly across the night sky, it was named for the wing-footed Roman god. Mercury is visible to the naked eye from Earth, just before dawn and just after sundown.

Mercury is only slightly bigger than Earth's Moon. Its entire surface is airless, though many different gases surround the planet. Mercury is also a place of extreme temperatures. Its hottest temperature is 755° F and its coldest is –280° F.

In 1974 and 1975 the spacecraft Mariner 10 flew close to Mercury, sending back pictures and other information. Scientists found the planet's surface covered with a layer of broken rock called "regolith." Mercury also has large ice patches at its north pole.



Mariner 10 space probe, which sent back to Earth valuable pictures and other data about Mercury.

© Corbis

Some regions of Mercury are covered with heavy **craters**, probably created when the planet ran into other bodies as it was forming. Other regions show gently rolling plains. These may have been smoothed by volcanic lava flow. The planet also features long steep cliffs called "scarps" in some areas.

Mercury takes 88 Earth days to go around the Sun once, which gives it a very short year. But it takes 1,416 hours to complete one **rotation** about its **axis**, so it has a very long day.

Mercury has a sunrise only once in every two of its years. This is because, after one of its very long days, the Sun is in a different place in Mercury's sky. It takes three of Mercury's days (about 176 of our days) for the Sun to once again rise in the morning sky.

SEARCH LIGHT

Why would being closest to the Sun make Mercury hard to study? (Hint: Think of two important things the Sun gives us.)

LEARN MORE! READ THESE ARTICLES…
PLANETS (VOLUME 2) • NEPTUNE (VOLUME 2)
SOLAR SYSTEM (VOLUME 2)

DID YOU KNOW?

It's no wonder that Mercury was named after the speedy messenger of the gods. The planet travels at an incredible 30 miles per second.

NASA/Roger Ressemeyer/Corbis



Answer: Being so close to the intense heat and bright light of the Sun makes Mercury hard to study. It's difficult to look at it and hard to send a probe to it that won't melt.



DID YOU KNOW?

Some scientists think that an unusual positioning of the planets Venus and Jupiter may have been the bright Star of Bethlehem reported at the time of Jesus Christ's birth.

A Morning and Evening Star

Venus is the second planet from the Sun. It is named for the Roman goddess of love and beauty, perhaps because it shines so brightly. It sometimes appears brilliantly in the western sky as the "evening star" and brightly in the predawn eastern sky as the "morning star."



Magellan space probe being launched by the space shuttle *Atlantis* in 1989.
© NASA/Roger Ressmeyer/Corbis

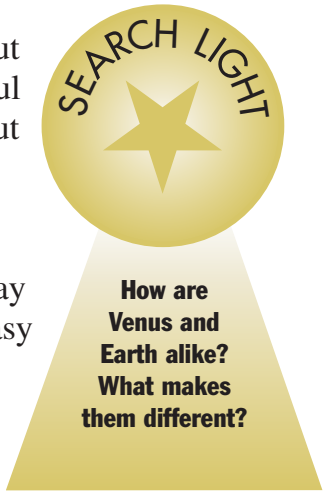
Although Venus is the planet closest to Earth, it is difficult to study because it is completely covered by thick layers of clouds. Venus' dense cloud layers do not allow much sunlight to reach the planet's surface. They do, however, help keep the surface very hot. So do the planet's active volcanoes. The temperature on the Venusian surface reaches about 860° F. The highest clouds, by contrast, have a daily range of 77° to –236° F.

Of all the planets, Venus is closest to Earth in size. In fact, Earth and Venus were once regarded as sister planets. Some scientists have suggested that Venus could support some form of life, perhaps in its clouds. Humans, however, could not breathe the air there.

Several spacecraft have visited and sent back information about Venus, beginning with Mariner 2 in 1962. The immensely powerful Hubble Space Telescope has also provided considerable **data** about the planet.

Scientists have learned that the surface of Venus is marked with hundreds of large meteor **craters**. These craters suggest that since it formed, the surface of Venus has changed in a different way from Earth's surface. Earth has only a few large craters that are easy to recognize.

Venus is different from Earth in another way, too. It hasn't got a moon.



LEARN MORE! READ THESE ARTICLES…
MARS (VOLUME 2) • PLANETS (VOLUME 2) • SOLAR SYSTEM (VOLUME 2)

NASA/JPL/Caltech

Answer: Earth and Venus are about the same size, and both planets have active volcanoes. Venus might also be able to support some form of life, though probably in its clouds. But Earth is different in having a moon, few meteor craters, and breathable air.



DID YOU KNOW?

The reason Mars appears red is that the planet's soil contains a lot of rusted iron.

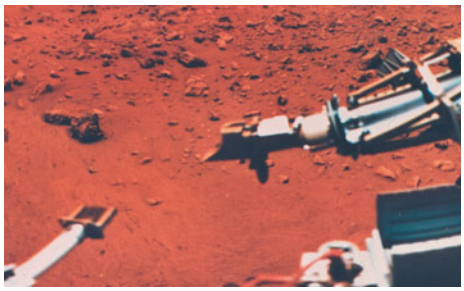
The Red Planet

Mars is the fourth planet from the Sun. It is named after the ancient Roman god of war. Since the planet is red in color, it also called the "red planet."

Mars is half the size of Earth. Its thin air is made up mainly of carbon dioxide and other gases, so we wouldn't be able to breathe it. And the Martian surface is much colder than Earth's is. Two small moons, Phobos and Deimos, **orbit** Mars.

The first spacecraft to fly close to Mars was Mariner 4, in 1965. In the 1970s two Viking spacecraft landed there, and in July 1997 Mars Pathfinder set down. These efforts sent back from Mars soil sample reports, pictures, and other **data**—but no proof of life.

Because of similarities between Mars and Earth, however, scientists think there could be some form of life on Mars.



Martian surface of rocks and fine-grained material, photographed in 1976 by the Viking 1 spacecraft.
NASA

Like Earth, Mars has ice caps at both poles. But its ice caps are composed mostly of solid carbon dioxide, or dry ice. Liquid water has not been seen on the surface of Mars. However, billions of years ago there may have been large lakes or even oceans on Mars.

Also like Earth, Mars has different seasons. Mars takes 687 Earth days to go around the Sun once. This means its year is almost twice as long as ours. But since it spins on its **axis** once every 24 hours and 37 minutes, its day is just about the same.

Despite being small, Mars has the largest volcano in our solar system, Olympus Mons. It stands about three times higher than Earth's highest point, Mount Everest, and covers an area just a bit smaller than the entire country of Poland.

LEARN MORE! READ THESE ARTICLES…
EXTRATERRESTRIAL LIFE (VOLUME 2) • SOLAR SYSTEM (VOLUME 2)
SPACECRAFT (VOLUME 2)

SEARCH LIGHT

What surface feature of Mars holds a record?

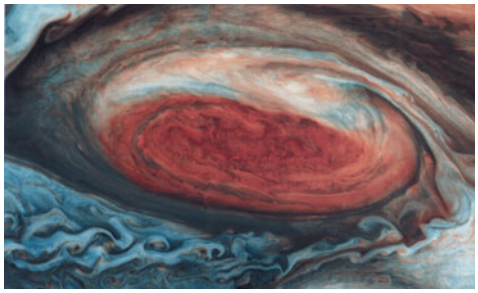
In this image taken by the Hubble Space Telescope in 1997, you can see the north polar ice cap (white area) at the top and some huge volcanoes (the darker red spots) in the left half of the photo.
Phil James (Univ. Toledo), Todd Clancy (Space Science Inst., Boulder, CO), Steve Lee (Univ. Colorado), and NASA

Answer: Mars has the largest volcano in our solar system.

King of the Planets

Jupiter is the biggest planet in our solar system. It is so big that all the other planets could fit inside it at the same time and there would still be room left over. The planet is named after the king of the Roman gods.

Jupiter is a giant ball of gases, mostly the **elements** hydrogen and helium. Helium is the gas that makes balloons float in air, and hydrogen is one part of water. The center of the planet is probably made of a hot liquid, like a thick soup.



Jupiter's Great Red Spot (colors boosted) as seen by Voyager I spacecraft, 1979.
© Jet Propulsion Laboratory/NASA

Jupiter isn't a very welcoming place. It is extremely hot. It is thousands of times hotter than the hottest place on Earth.

Also, storms rage on Jupiter's surface almost all the time. Scientists have seen one storm there that is almost twice as wide as the Earth! It is called the Great Red Spot. It has been raging on Jupiter's surface for at least a few hundred years.

Jupiter has more than 60 moons. Some of them are much bigger than Earth's Moon. One is even bigger than the planet Mercury! Others are tiny, only a few miles across.

Astronomers have found something very exciting on one of Jupiter's moons, called Europa. They believe that it has a huge ocean of water below its surface that may have simple life forms in it.

LEARN MORE! READ THESE ARTICLES…
GALILEO (VOLUME 4) • SATURN (VOLUME 2)
SOLAR SYSTEM (VOLUME 2)

SEARCH LIGHT

Find and correct the error in this sentence:
A storm known as the Big Red Dog has been raging on Jupiter's surface for hundreds of years.

DID YOU KNOW?

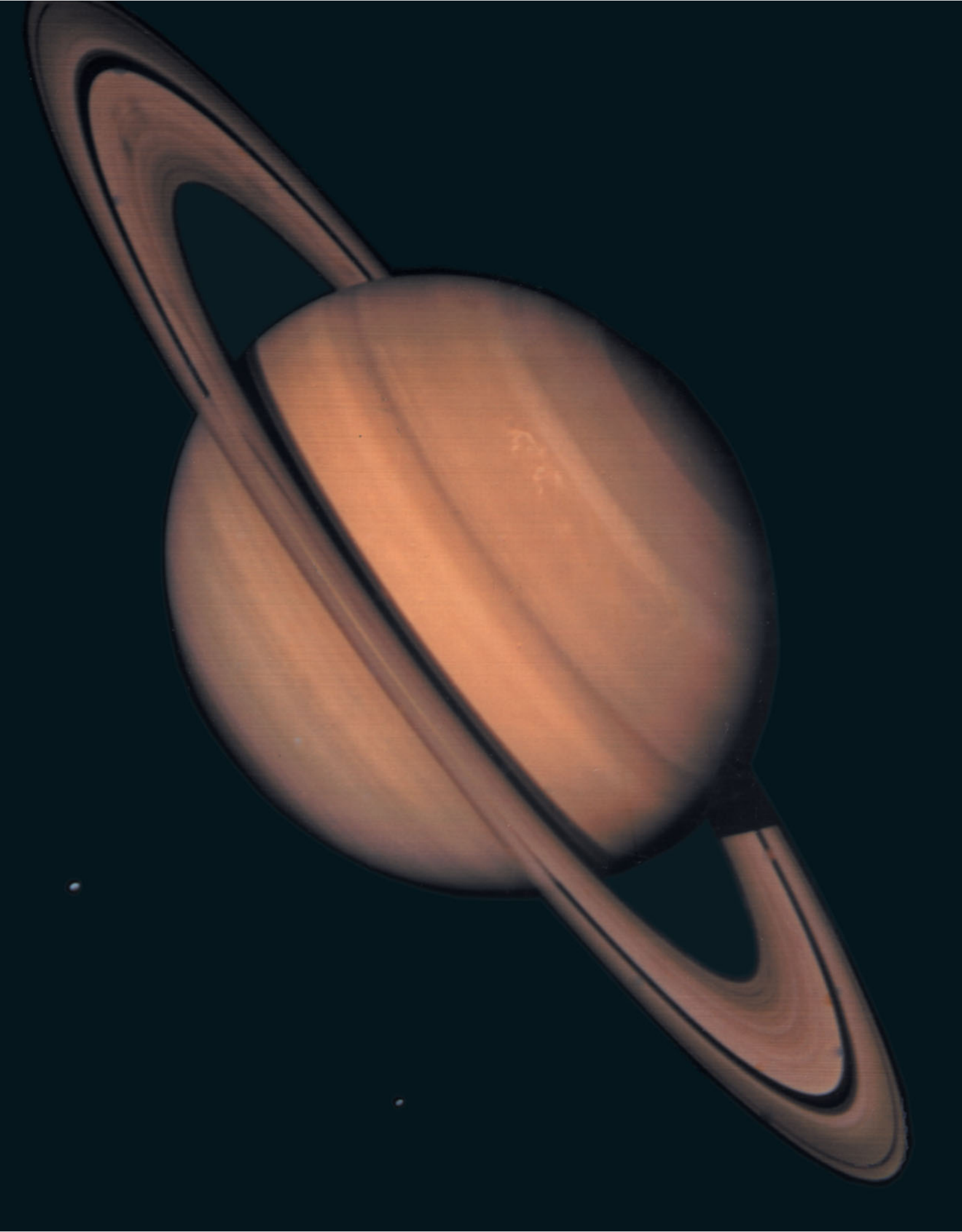
Jupiter has more than 60 known moons, and Earth has only 1. But that seems fair, since Jupiter is more than 1,300 times bigger than Earth!

NASA



Answer: A storm known as the Great Red Spot has been raging on Jupiter's surface for hundreds of years.

JUPITER



The Ringed Planet

Saturn is the sixth planet from the Sun. It is named after the god of **agriculture** in Roman mythology. Saturn is visible without a telescope, but its famous spectacular rings can only be seen through such an instrument. The astronomer Galileo was the first to use a telescope to view the planet.

Saturn is a gas planet, like Jupiter, Neptune, and Uranus. Very little of it is solid. Most of Saturn consists of the **elements** hydrogen and helium. It is covered with bands of colored clouds. The thin rings that surround the planet are made of water ice and ice-covered particles. Instruments on the Voyager 1 and 2 spacecraft showed that these **particles** range in size from that of a grain of sand to that of a large building. Voyager 2 took the picture you see here.



Because Saturn is made of different substances, different parts of the planet **rotate** at different rates. The upper atmosphere swirls around the planet at rates between 10 hours and 10 minutes (Earth time) and about 10 hours and 40 minutes. The inner core, which is probably made of hot rocks, rotates in about 10 hours and 39 minutes.

But Saturn takes 29 years and 5 months in Earth time to go around the Sun just once. The Earth goes around the Sun once every 365 days. Saturn's year is so much longer because the planet is so much farther away from the Sun.

Astronomers have found that at least 30 moons **orbit** Saturn. The largest of these is Titan, which is almost as large as the planets Mercury or Mars. In our photograph, you can see two moons as tiny white spots to the lower left of (Dione) and below (Rhea) the planet. Other satellites include Mimas, Enceladus, and Tethys.

DID YOU KNOW?
Saturn is more than nine times the size of the Earth. But the planet is so light that it could float on an ocean of water.

LEARN MORE! READ THESE ARTICLES…
GALILEO GALILEI (VOLUME 4) • JUPITER (VOLUME 2)
SOLAR SYSTEM (VOLUME 2)

Jet Propulsion Laboratory/NASA

Answer: FALSE. Saturn's many rings are made of ice and ice-covered particles.

King George's Star

Uranus is the seventh planet from the Sun. Its name is that of the god of the heavens in ancient Greek mythology.

When William Herschel discovered this planet in March 1781, he named it Georgium Sidus (George's Star) in honor of his king, George III of England. Others called it Herschel. In about 1850 scientists began to use the name Uranus.

The spacecraft Voyager 2 visited Uranus some 200 years after Herschel discovered it. Findings confirmed that Uranus is a large gas planet. Small amounts of methane gas in its upper atmosphere give the planet a blue-green color.

It takes Uranus 84 of Earth's years to go around the Sun once, so its year is 84 times as long as ours. But the planet takes only about 17 hours to spin on its **axis** once, so its day is shorter.

Unlike other planets, Uranus lies on its side at an odd angle. It points first one pole toward the Sun, then its equator, and then the other pole. So it is not yet clear which is the planet's "north" pole.



Voyager 2, the spacecraft that reported Uranus' makeup.
© Corbis

As with other gas planets, such as Jupiter, Saturn, and Neptune, Uranus has a system of rings. In some places the rings are so thin that they seem to disappear.

The planet has more than 20 known moons that are made mostly of ice and are heavily **cratered**. The five major ones are Miranda, Ariel, Umbriel, Titania, and Oberon. Their names are those of characters from works by William Shakespeare and Alexander Pope.

SEARCH LIGHT

Find and correct the error in the following sentence: When William Herschel discovered Uranus in 1781, he named it Georgium Sidus for his dog.

LEARN MORE! READ THESE ARTICLES…
PLANETS (VOLUME 2) • SATURN (VOLUME 2) • SOLAR SYSTEM (VOLUME 2)

Jet Propulsion Laboratory/NASA

URANUS

DID YOU KNOW?

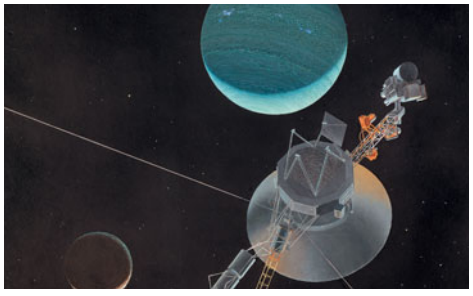
Between Uranus and Saturn lies Chiron, an object first considered an asteroid, then reclassified as a comet. Its name reflects its confused identity: Chiron was a centaur, a half man and half horse in Greek mythology.

Answer: When William Herschel discovered Uranus in 1781, he named it Georgium Sidus for his king.

The Eighth Planet

Neptune is the eighth planet from the Sun. It is named after the Roman god of the sea.

The planet Neptune was discovered in 1846, but little was known about it until the spacecraft Voyager 2 visited it in August 1989.



Artist's idea of Voyager 2 leaving Neptune after it visited that planet (seen in the background).
© Corbis

Neptune is made up mostly of gases. Its bluish color comes from its thick atmosphere of hydrogen, helium, and methane. Like other gas planets, such as Jupiter and Saturn, Neptune has rapid winds and big storms. The winds on Neptune are the fastest known in our solar system, reaching speeds of about 1,250 miles per hour.

The planet rotates quickly, once every 16.1 hours. This means its day is about two-thirds as long as ours. But it has a much longer year. There are about 60,225 days in one Neptune year. That's how many days it takes the planet to **orbit** the Sun. It has been in the same year since its discovery in 1846. Each season on Neptune lasts for 41 Earth years.

Like Saturn, Neptune has rings, but they aren't as noticeable. Neptune also has 13 known moons. Triton is the largest moon. Triton is slowly drawing closer to Neptune. It is believed that it will someday crash into the planet.

DID YOU KNOW?

It's more than just a little chilly on Neptune. Its average temperature is –373° F. By comparison, Antarctica, the coldest place on Earth, has measured a mere –129° F at its coldest.

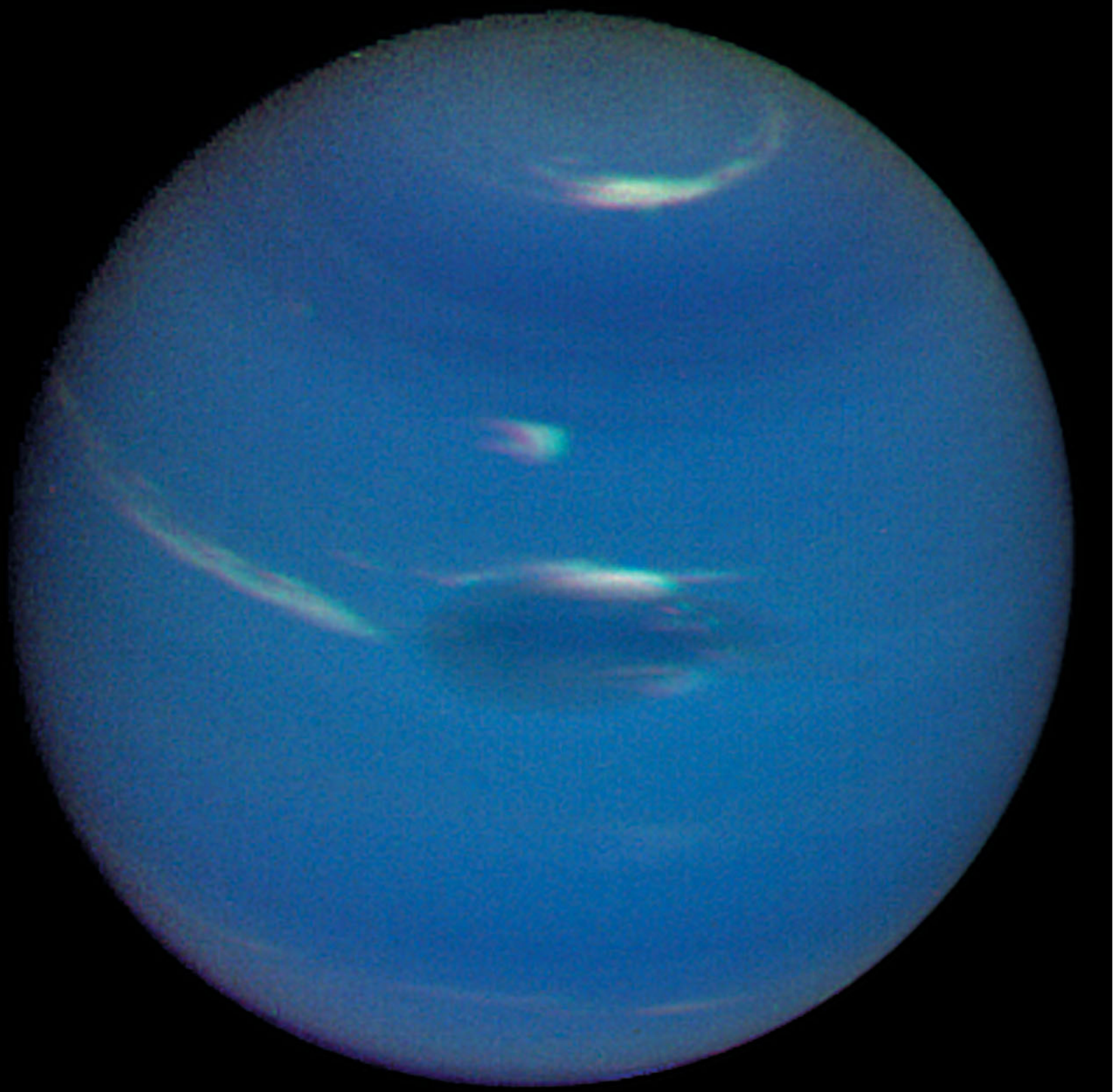
LEARN MORE! READ THESE ARTICLES…
PLANETS (VOLUME 2) • SATURN (VOLUME 2)
SOLAR SYSTEM (VOLUME 2)

SEARCH LIGHT

Neptune has a shorter day than Earth. So why is Neptune's year so much longer than ours? (Hint: Neptune is the eighth planet from the Sun, and Earth is only the third.)

NASA

Answer: Neptune is so much farther from the Sun than Earth that it takes the eighth planet about 165 times as long to orbit the Sun.



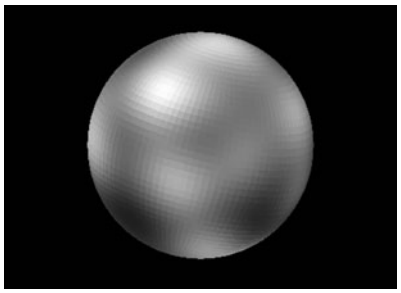
NEPTUNE


SEARCH LIGHT
Fill in the blanks: Pluto is so _____ that it wasn't discovered until _____.

The Dwarf Planet

In Roman mythology Pluto was the god of the underworld. Pluto is the name given to another dark mystery: a body called a dwarf planet in the far reaches of our solar system.

Pluto is so distant and small that it wasn't discovered until 1930. Only recently have very strong instruments like the Hubble Space Telescope given us some details about the mysterious faraway body.



One of the first photos of Pluto's surface, taken with the Hubble Space Telescope.
Alan Stern (Southwestern Research Institute), Marc Bule (Lowell Observatory), NASA, and the European Space Agency

Pluto is so mysterious that scientists have not been sure what kind of body it is. For many years they called it a planet, but it is different from the other planets.

Tiny Pluto is only about 1,485 miles across from pole to pole. It's not entirely clear what it is made of, but scientists think it may be 50 to 75 percent rock and the rest frozen water and gases. So far from the Sun's warmth, all of Pluto is permanently frozen. Because of its small size and icy makeup and because it travels in a part of the solar system where some comets are thought to come from, Pluto seems more like a giant comet than a planet.

Pluto also spins in the opposite direction from most of the planets. If you were on Pluto, you would see the Sun rise in the west and set in the east. A day on Pluto is equal to six days and 25 minutes on Earth. Pluto's **orbit**, or path around the Sun, is very long. Therefore the dwarf planet's year takes more than 90,155 of our days.

Pluto's moon, Charon, wasn't discovered until 1978. As you can see from the large photo, Charon is about half the size of Pluto—quite large for a moon.

Because it is so different from the planets, scientists decided in 2006 that Pluto should be called a dwarf planet instead of a real planet. They placed several other bodies in the same category.

DID YOU KNOW?
Walt Disney's dog character Pluto was named for the dwarf planet. Pluto the dog first appeared in 1930, the same year that Pluto was discovered.

LEARN MORE! READ THESE ARTICLES…
NEPTUNE (VOLUME 2) • SOLAR SYSTEM (VOLUME 2) • TELESCOPES (VOLUME 2)

NASA/European Space Agency

Answer: Pluto is so distant that it wasn't discovered until 1930.

Building Blocks of Matter

Everything in the world is made up of molecules. Our bodies, our clothes, our houses, animals, plants, air, water, sky—everything. Molecules are so small, though, that we can't see them with our naked eyes.

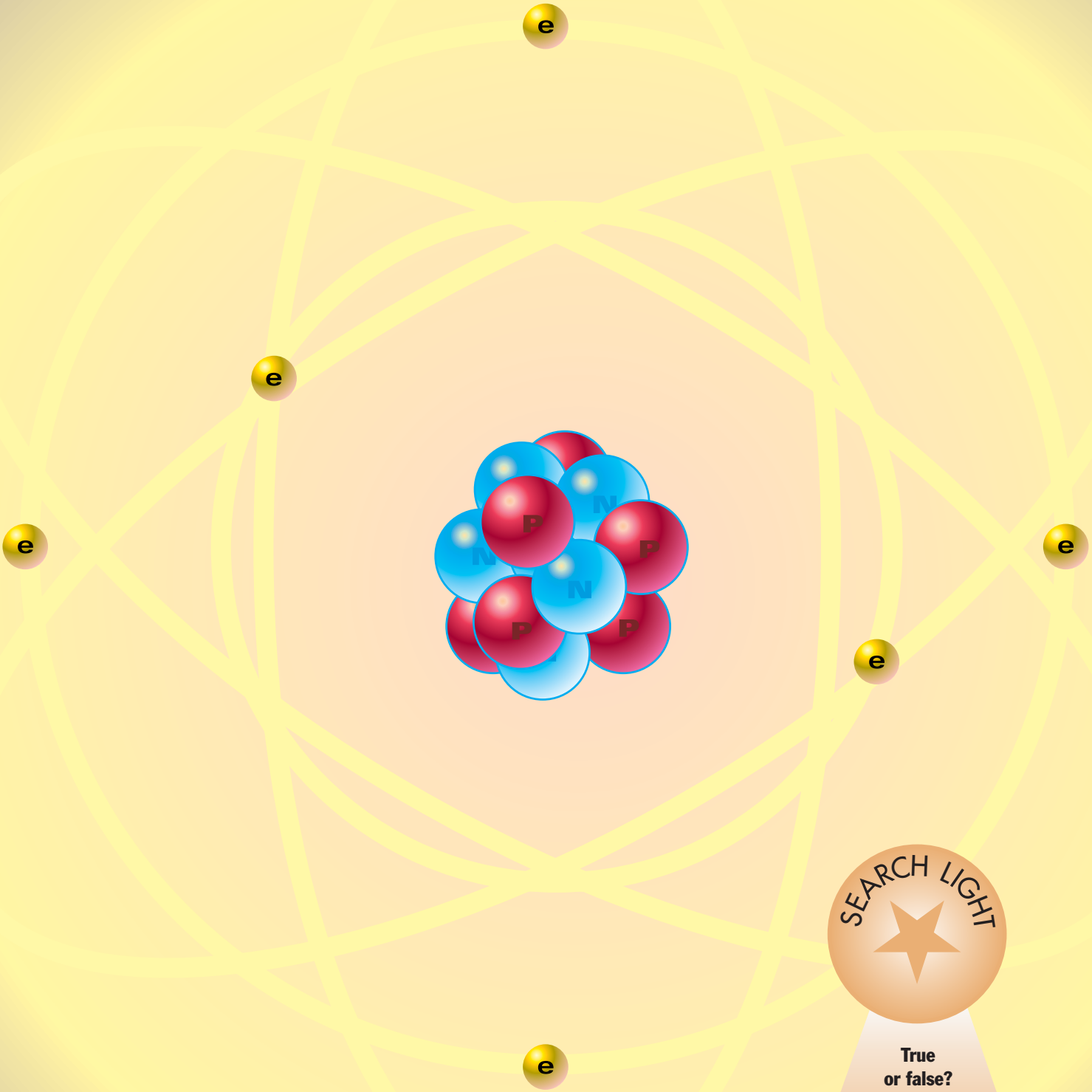
But molecules aren't the smallest things. Molecules are made up of atoms, which are smaller still. Atoms are so small that it takes more than a billion atoms to fill the space taken up by one pea!

The word "atom" comes from the Greek word *atomos*, meaning "**indivisible**." But despite what their name suggests, atoms can indeed be divided into smaller pieces. Each atom has a **core** called a "nucleus." Around the nucleus swarm small **particles** called "electrons." The nucleus itself is made up of other small particles called "protons" and "neutrons." And these protons and neutrons are made up of even smaller things called "quarks." So, for now at least, quarks are among the smallest known things in the universe.

LEARN MORE! READ THESE ARTICLES…
MARIE CURIE (VOLUME 4) • ENERGY (VOLUME 2)
NUCLEAR ENERGY (VOLUME 2)

DID YOU KNOW?

Quarks are so small that scientists have to make up new ways to describe them. They talk about the different "flavors" of quarks—not chocolate or pistachio but "up," "down," "charm," "strange," "top," and "bottom."



SEARCH LIGHT

True or false? Atoms are the smallest things of all.

Answer: FALSE. Atoms can be split into electrons, neutrons, and protons, all of which are smaller than the atom itself. And quarks are even smaller than those.

The Power of Life

Without energy in our bodies, we wouldn't be able to do anything. We couldn't walk, talk, or even play. Energy is usable power. And all energy is related to some kind of motion.

All living things need energy, no matter what they do. Plants get their energy from sunlight. This energy is stored in different **chemicals** inside the plant. This whole process is called "photosynthesis."

Animals that eat plants take the energy stored in the plants. The energy is then stored in chemicals inside the animals as "food energy." The same happens when animals eat other animals.

Plants and animals use energy every day as they grow and do the work of being a plant or an animal. So plants have to keep **absorbing** sunlight, and animals have to keep eating plants or other animals.

It isn't only living things that have energy. A dead tree has hidden energy. When we burn its wood, it gives off warmth, or "heat energy." The Sun too makes heat energy as it constantly burns.

The Sun gives off not just heat but also light, as "light energy." A battery in a flashlight makes it shine, **generating** light energy. But if we put the same battery in a radio, we get music. A battery's energy is known as "electrical energy." And in a toy car that electrical energy produces movement, or "kinetic energy."

If we couldn't use heat, light, or electrical energy, we couldn't drive cars or cook food. We wouldn't have light at nighttime. Basically, we'd have to use the energy of our own bodies. And that would mean eating a lot more and doing a lot less.

LEARN MORE! READ THESE ARTICLES…

LIQUIDS, SOLIDS, AND GASES (VOLUME 2)

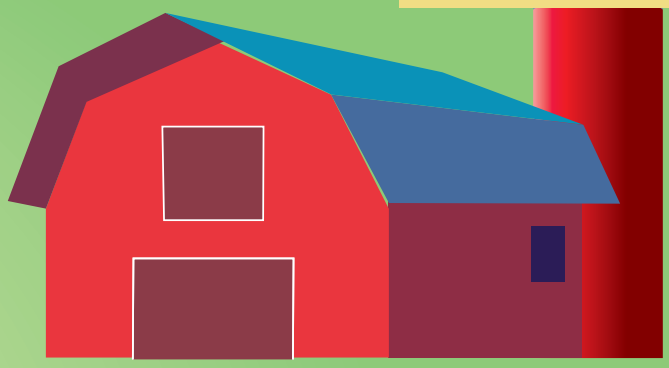
STARS (VOLUME 2)

THERMAL POWER (VOLUME 2)



DID YOU KNOW?

Energy from food is measured in calories. A grownup needs to take in about 2,000-2,500 calories a day. Bicyclists in a major race eat three to five times that much, and they still sometimes run out of energy.





SEARCH LIGHT

These sentences are all mixed up. See if you can fix them.

Heat energy comes from the things people or animals eat.

Food energy comes from things that burn.



Answer: Heat energy comes from things that burn. Food energy comes from things people or animals eat.

The Invisible Magnet

Raise your arm. Keep it in that position for as long as you can. What happens?

After some time, your arm begins to hurt. Something seems to be pulling it down. Soon enough, you have to lower your arm.

It's a force called "gravity" that causes you to lower your arm. Gravity acts something like a magnet, tugging away at your arm as if it were a piece of metal.

We can't see gravity or touch it. We can only feel it. The Earth has gravity that pulls down on everything on or near it. It is this force that keeps us all on Earth.

The Moon and the Sun also have gravity. All bodies in the universe have gravity. In fact, gravity helps hold all of them together. Sir Isaac Newton first introduced the idea of gravity, and Albert Einstein added to Newton's ideas.

Gravity works in a two-way system. This means that all bodies have a pull on each other. For example, Earth's gravity forces the Moon to circle around it all the time. In return, the Moon's gravity attracts the waters of Earth's oceans to cause tides.

The force of gravity becomes weaker and weaker as we move away from its source. That is partly why astronauts can float around in outer space. They are too far away for the Earth to have much pull on them.

What do you think would happen if there were no gravity on Earth?

LEARN MORE! READ THESE ARTICLES…
ALBERT EINSTEIN (VOLUME 4)
SIR ISAAC NEWTON (VOLUME 4) • TIDES (VOLUME 1)

DID YOU KNOW?

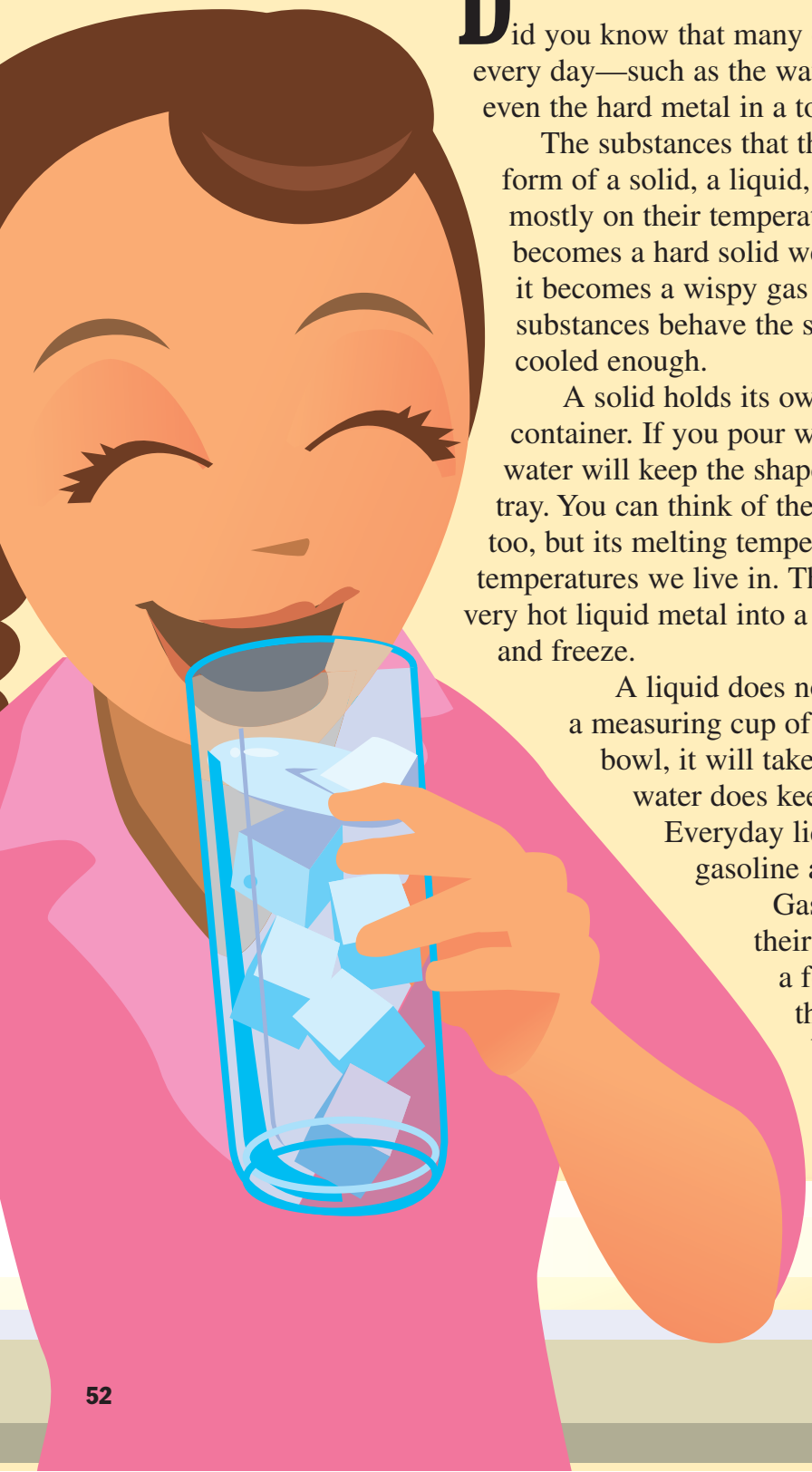
The 1961 Disney movie *The Absent-Minded Professor* introduced one of the most far-fetched and hilariously popular antigravity schemes: flubber, a superbouncy "flying-rubber" formula.

SEARCH LIGHT

Why do you think a ballpoint pen won't work when you try to write with its point facing upward?

Answer: Gravity causes the ink in the ballpoint pen to flow to the wrong end of a pen that's not facing toward the ground. The upside-down pen's point soon runs out of ink.

Same Stuff, Different Forms



Did you know that many of the things you may see or use every day—such as the water in a glass, the air in a football, and even the hard metal in a toy car—are **potential** shape-shifters?

The substances that these things are made of can have the form of a solid, a liquid, or a gas. The form they take depends mostly on their temperature. When water gets cold enough, it becomes a hard solid we call "ice." When it gets hot enough, it becomes a wispy gas we call "steam." Many other substances behave the same way when they are heated or cooled enough.

A solid holds its own size and shape without needing a container. If you pour water into an ice tray and freeze it, the water will keep the shape of the cube-shaped molds in the tray. You can think of the solid metal in a toy car as frozen too, but its melting temperature is much higher than the temperatures we live in. The person who made the car poured very hot liquid metal into a car-shaped mold and let it cool down and freeze.

A liquid does not hold its own shape. If you pour a measuring cup of water into a tall glass or a shallow bowl, it will take the shape of its container. But that water does keep its own size. It measures one cup. Everyday liquids such as milk, paint, and gasoline act this same way.

Gases do not keep their own shape or their own size. When air is pumped into a football, it takes the shape and size of the ball. As more air is pumped in, the ball gets harder but not much bigger. The air changes its size to fit the space inside the ball.

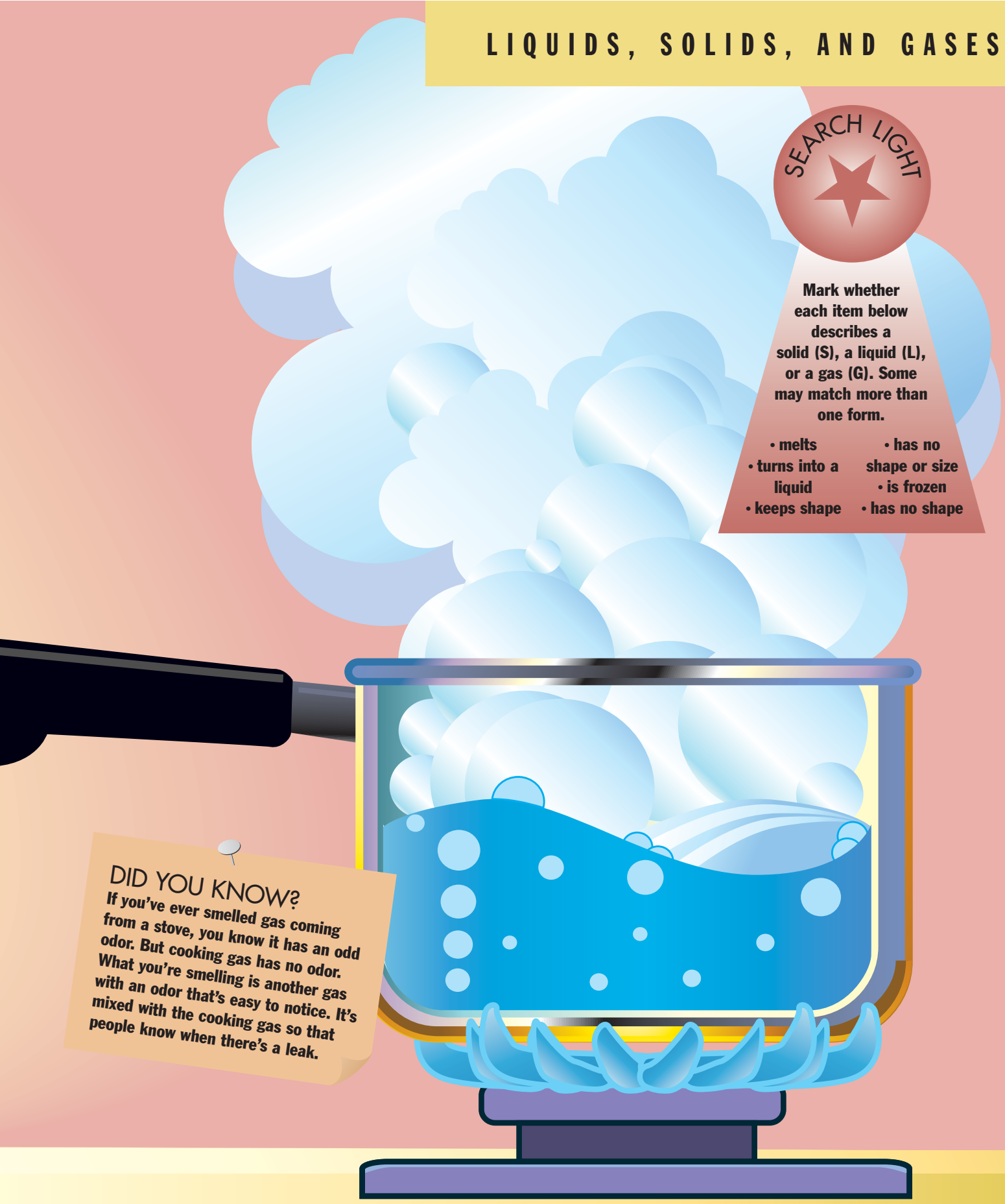
LEARN MORE!

READ THESE ARTICLES…

TEMPERATURES (VOLUME 2)

THERMAL POWER (VOLUME 2)

VOLCANOES (VOLUME 1)



SEARCH LIGHT

Mark whether each item below describes a solid (S), a liquid (L), or a gas (G). Some may match more than one form.

- melts
- turns into a liquid
- keeps shape
- has no shape or size
- is frozen
- has no shape

DID YOU KNOW?

If you've ever smelled gas coming from a stove, you know it has an odd odor. But cooking gas has no odor. What you're smelling is another gas with an odor that's easy to notice. It's mixed with the cooking gas so that people know when there's a leak.

Answer: melts = S; turns into a liquid = S, G; keeps shape = S; has no shape or size = G; is frozen = S; has no shape = L, G



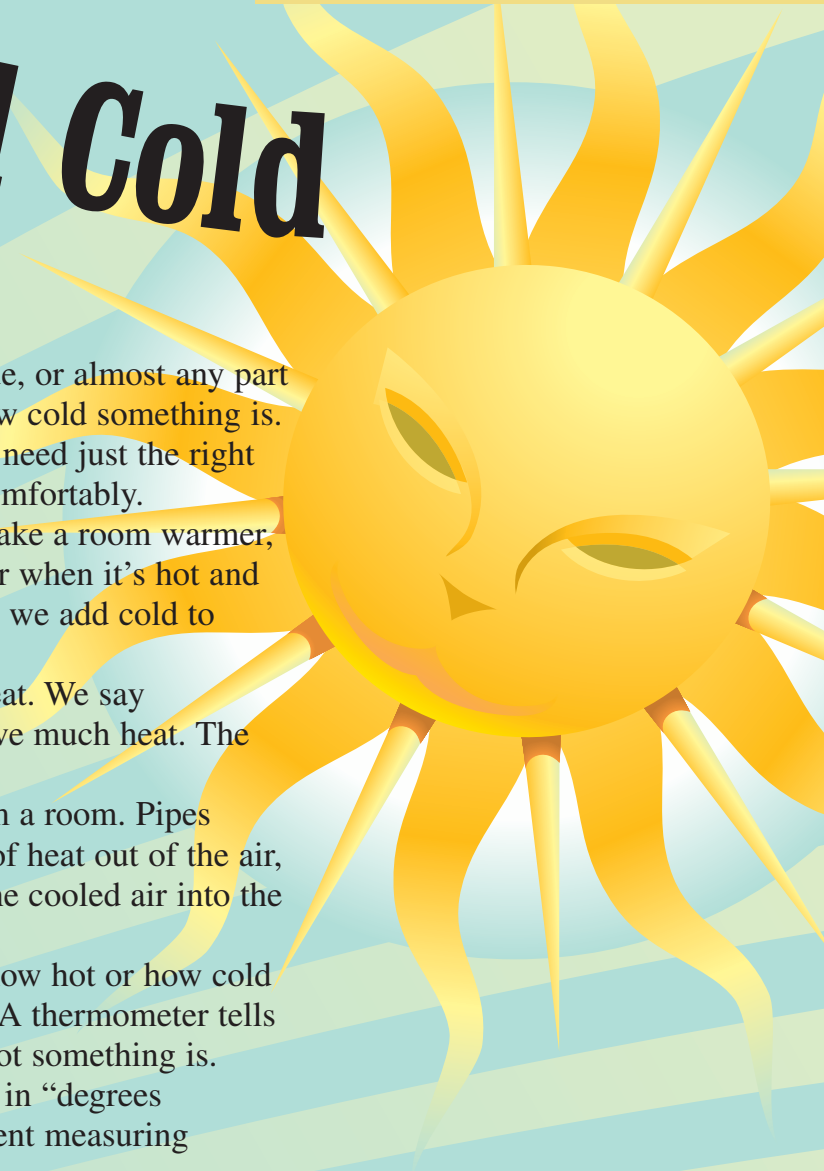
SEARCH LIGHT

Temperature measures how much
a) heat something has.
b) chill something has.
c) pressure something has.

DID YOU KNOW?

It's better to use your hand than your foot to test the temperature of bath water. If you test too-hot bath water with your foot, you're likely to burn that foot. That's because it takes longer for your foot to recognize temperature than it does your hand.

Hot and Cold



We can use our fingers, our tongue, or almost any part of our skin to feel just how hot or how cold something is. This is important because our bodies need just the right amount of heat so that we can live comfortably.

When it's cold and we want to make a room warmer, we turn on the heaters. In the summer when it's hot and we want to make the room cooler, do we add cold to the room?

No. We take away some of the heat. We say something is cold when it doesn't have much heat. The less heat it has, the colder it is.

Air conditioners suck hot air from a room. Pipes inside the air conditioners take a lot of heat out of the air, making it cold. Then a blower fans the cooled air into the room again.

When we want to know exactly how hot or how cold something is, we use a thermometer. A thermometer tells us about temperature—that is, how hot something is. Some countries measure temperature in "degrees Fahrenheit (° F)." Others use a different measuring system of "degrees Celsius (° C)."

We can use thermometers to measure air temperature, oven temperature, even body temperature. And your body temperature tells not only whether you feel hot or cold but whether you're healthy.

LEARN MORE! READ THESE ARTICLES…
LIQUIDS, SOLIDS, AND GASES (VOLUME 2)
MEASUREMENT (VOLUME 2) • THERMAL POWER (VOLUME 2)

Answer: a) heat something has.

Cables, Fuses, Wires, and Energy

You can't see electricity, but you know it's there when you watch an electric light go on, hear the telephone ring, or see the television on.

Electricity comes into your house through thick wires called "cables." The cables join a **fuse** box. From the fuse box run all the electric wires for your house. Each wire connects to an outlet or a switch. From the outlets electricity passes along the plugs and cords that go to a lamp or television.

Electricity moves easily along things that are made of metal, such as silver, copper, or iron. That's why copper wires are used to carry the electricity. Electricity doesn't pass through rubber or plastic. That's why wires carrying electricity are usually coated with rubber or plastic.

This coating is important, because electricity will flow wherever it can. Loose, it can be very dangerous. It can cause shocks, start fires, or even kill.

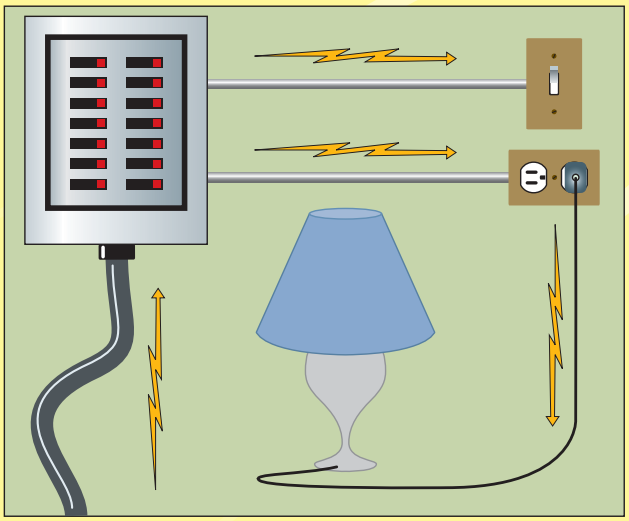
Did you know that electricity can be used to make a magnet? If a wire is wound into a coil and wrapped around a piece of iron, the iron will become a magnet when electricity is sent through the coil. The iron will then attract other things made of iron and steel. Such a magnet is called an "electromagnet."

As soon as the electricity is turned off, the electromagnet isn't a magnet anymore. If the magnet is holding something when the electricity is turned off, that thing will drop.

SEARCH LIGHT

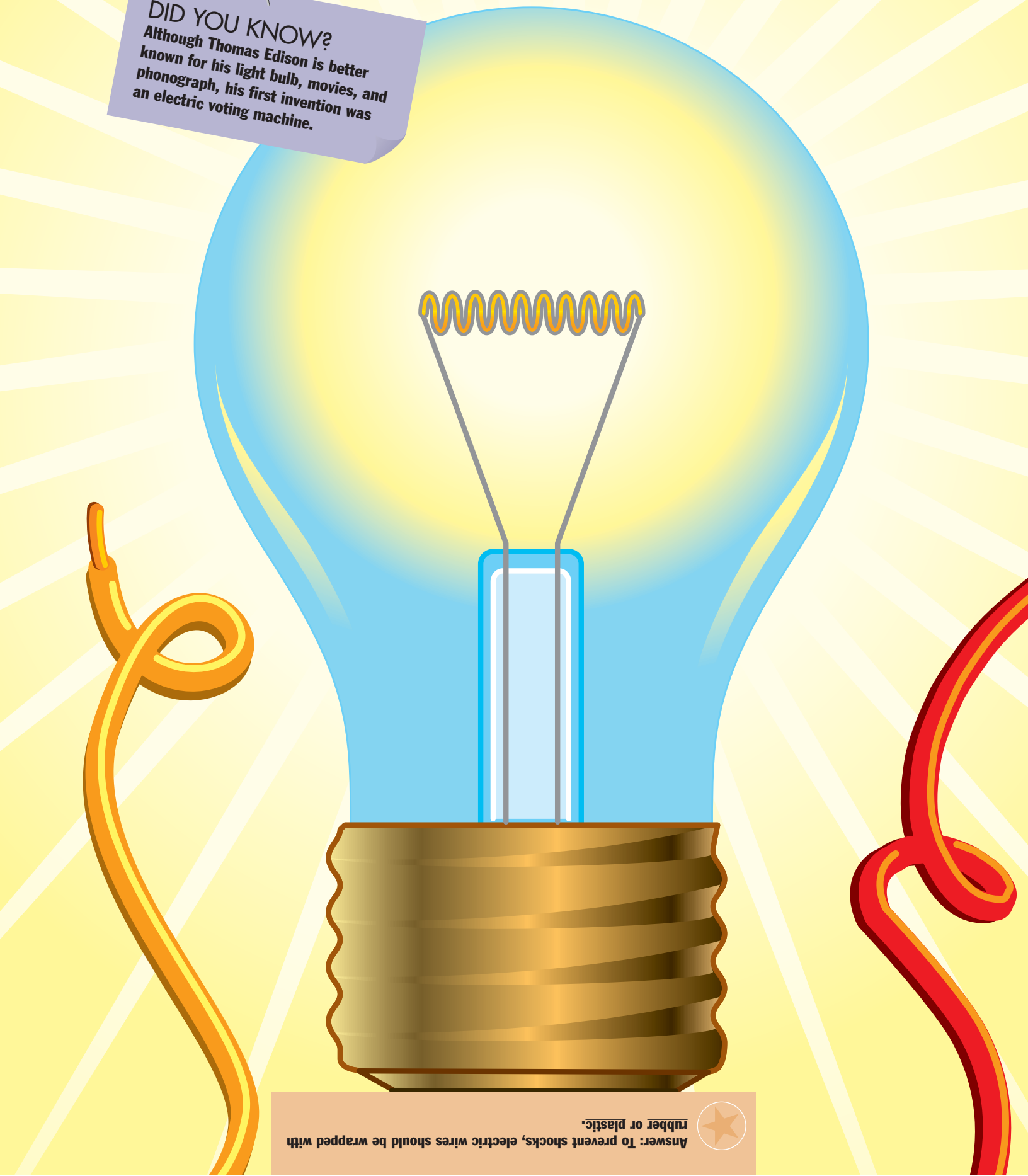
Fill in the blanks: To prevent shocks, electric wires should be wrapped with _____ or _____.

LEARN MORE! READ THESE ARTICLES…
THUNDER AND LIGHTNING (VOLUME 1) • WATER POWER (VOLUME 2)
WIND POWER (VOLUME 2)

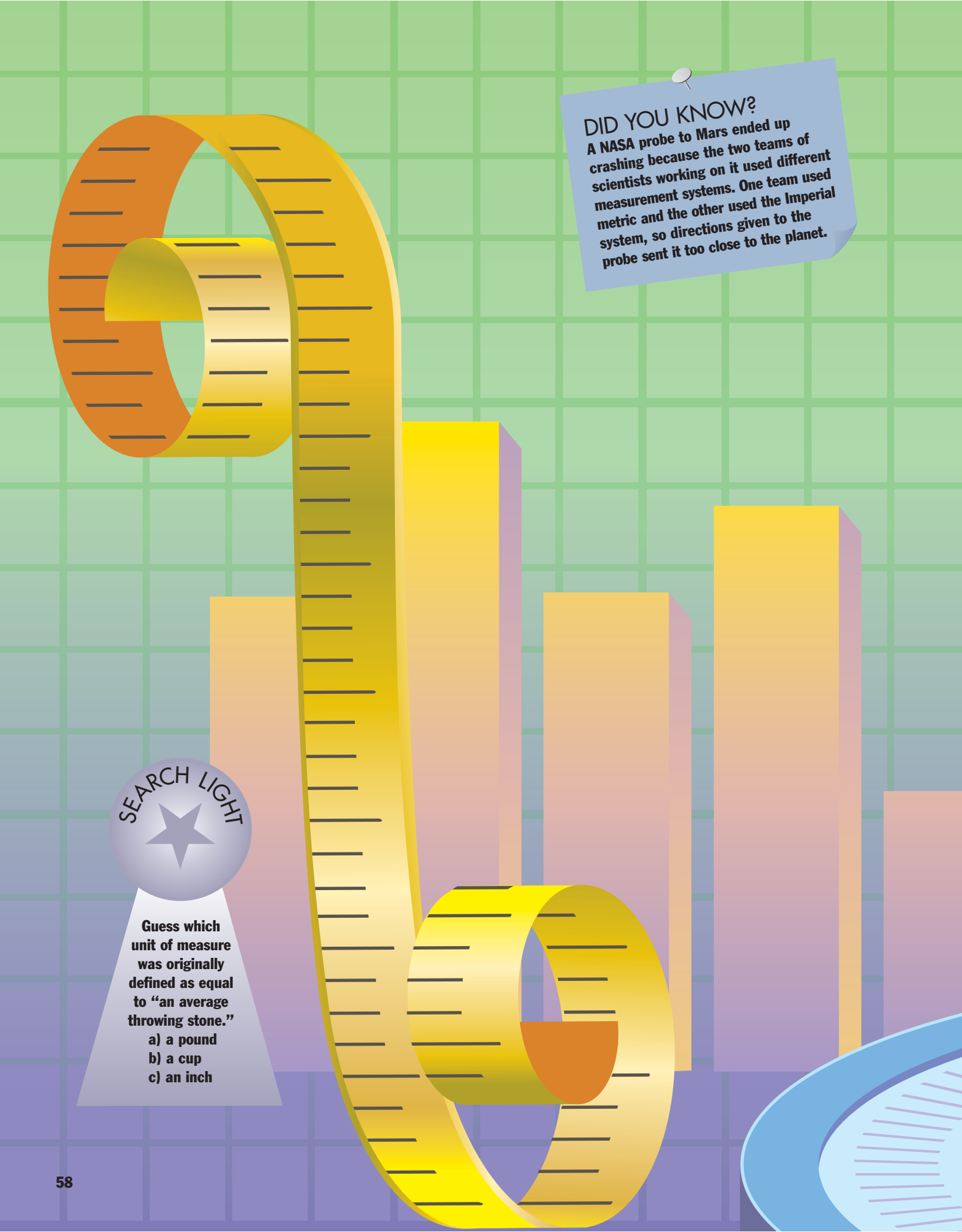


DID YOU KNOW?

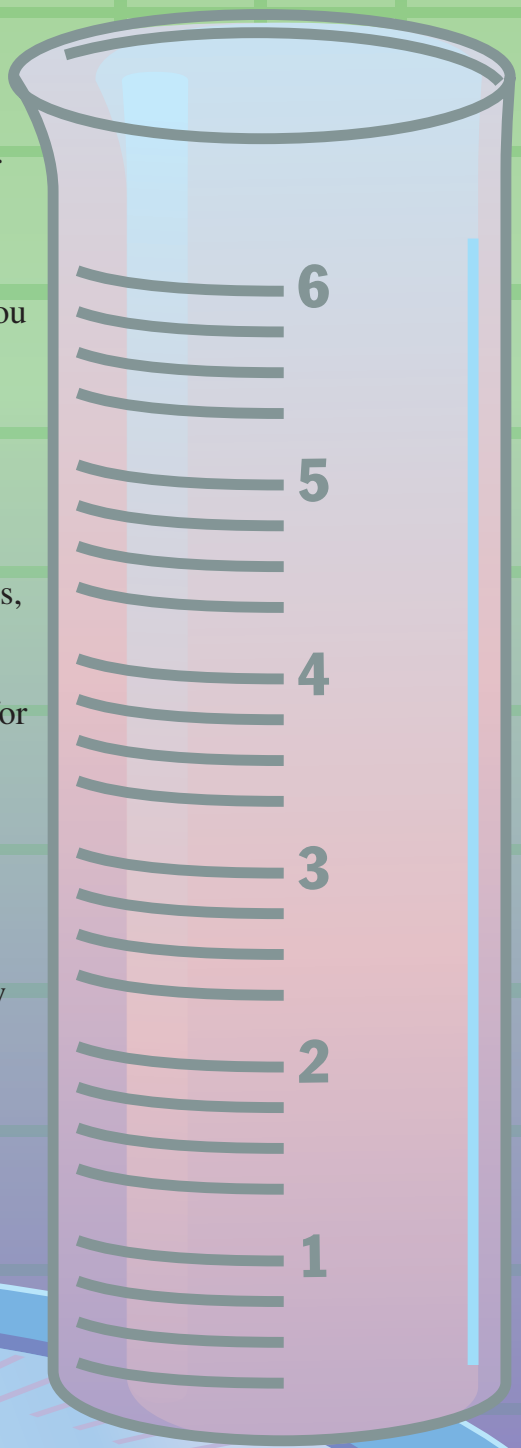
Although Thomas Edison is better known for his light bulb, movies, and phonograph, his first invention was an electric voting machine.



Answer: To prevent shocks, electric wires should be wrapped with rubber or plastic.


DID YOU KNOW?
A NASA probe to Mars ended up crashing because the two teams of scientists working on it used different measurement systems. One team used metric and the other used the Imperial system, so directions given to the probe sent it too close to the planet.
SEARCH LIGHT
Guess which unit of measure was originally defined as equal to "an average throwing stone."
a) a pound
b) a cup
c) an inch

Figuring Out Size and Distance



How far away is the nearest chair? You can make your own measurement to tell how many shoes away that chair is.

Stand up where you are and face the chair. Count "one" for your right shoe. Now place the heel of your left shoe against the toe of your right and count "two." Continue stepping, heel-to-toe, right-left, counting each shoe length you walk, until you get to the chair.

Centuries ago, people did just what you are doing now. They used parts of the body to measure things. An inch was about the width of a man's thumb. A foot was the length of his foot. A yard was the distance from the tip of his nose to the end of his thumb when his arm was stretched out. But since everybody's thumbs, feet, and arms were different sizes, so were everybody's inches, feet, and yards.

Finally, in the 1800s, all these terms were standardized– that is, everyone in England agreed on a specific definition for each one. They became part of the English system of measurement, the British **Imperial** System.

Another system, called the "metric system," measures in centimeters and meters, grams and kilograms, and liters. All these measurements can be multiplied or divided by 10. Fortunately, most of the world accepts the Imperial or the metric system as the **standard** of measurement. So we know today that one measurement will mean the same thing no matter where it is used or who is doing the measuring.

LEARN MORE! READ THESE ARTICLES…
CALENDAR (VOLUME 2) • COMPUTERS (VOLUME 2)
TEMPERATURE (VOLUME 2)

Answer: a) a pound. Though people agreed on a pound as the weight of "an average throwing stone," there were actually as many different "pounds" as there were people!

Looking to Nature for Remedies

Two visitors watched a jaguar fall off its tree limb and lie quietly on the ground. Their guide in this South American forest had brought the cat down with a blowgun dart tipped with curare. Made from certain trees in the jungle, curare **paralyzes** the muscles in the body.

When scientists heard about this remarkable poison, they experimented with it. Although large doses of curare are deadly, they found that tiny doses can help people relax during **surgery**.

Many years ago a doctor might have treated your stomachache with a medicine containing a pinch of gold dust, a spoonful of ashes of a dried lizard, 20 powdered beetles, some burned cat's hair, and two mashed onions!

Not all the old recipes for medicine were as bad as this. Usually medicines were made from tree bark and leaves, berries and seeds, roots, and flowers. Some "folk remedies" have no scientifically proven value, but many modern drugs have been developed from plants, animals, and **minerals**.

The photograph, for example, shows a common flower called "foxglove" whose leaves are used to make "digitalis," which helps people with heart disease. Pods of the opium poppy are used to make painkillers.

Not so long ago a very important medicine was discovered in moldy bread. This medicine, penicillin, and others like it are called "antibiotics." They help fight many diseases by killing **bacteria**.

Today most medicines are synthesized—that is, made from combinations of chemicals rather than from plants or animals. This method is much more **economical** and lets scientists create much larger supplies of important medicines.

SEARCH LIGHT

Find and correct the error in the following sentence: Many medicines today still come from the bark of animals.

DID YOU KNOW?

Deadly nightshade is a highly poisonous plant that was often used in small amounts as a medicine. The tomato is its close relative.

LEARN MORE! READ THESE ARTICLES…
MARIE CURIE (VOLUME 4) • LOUIS PASTEUR (VOLUME 4)
RAINFORESTS (VOLUME 1)

© Eric Crichton/Corbis



Answer: Many medicines today still come from the bark of trees.

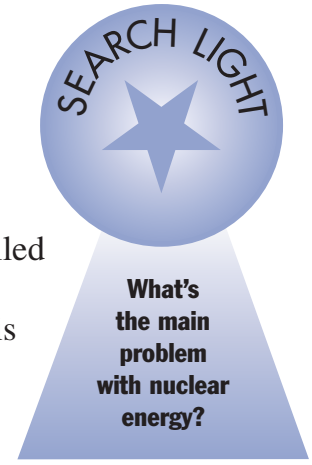
MEDICINE

Big Energy from a Small Source

All **matter** is made up of tiny particles called "molecules." In turn, all molecules are made up of even tinier particles called "atoms."

The central part of an atom is called a "nucleus." When the nucleus splits in two, it produces enormous energy. This breaking apart is called "nuclear fission." If two nuclei join and form a bigger nucleus—a process called "nuclear fusion"—even more energy is produced.

The nuclear energy released from fission and fusion is called "radiation." Radiation—the process of giving off **rays**—is a powerful spreading of heat, light, sound, or even invisible beams.



One of the first uses of nuclear energy was to build deadly weapons. Atomic bombs built during World War II and dropped on Hiroshima and Nagasaki in Japan largely destroyed those cities and killed many thousands of people. People worldwide now try to make sure these things never happen again.

Today, however, nuclear energy has many helpful uses. Nuclear power plants produce low-cost electricity. Nuclear energy also fuels submarines. And it has also allowed doctors to see more details inside the body than ever before.

But nuclear energy has its **drawbacks**. Nuclear energy produces nuclear waste. Living beings exposed to the waste can suffer radiation poisoning. They may experience damaged blood and organs, effects that can be deadly. And the radiation can remain active for thousands of years wherever nuclear waste is thrown away.

Unfortunately, no country has yet discovered the perfect way for storing nuclear waste. But the benefits make it worthwhile to keep trying.

DID YOU KNOW?
We all actually enjoy the benefits of nuclear energy every day. The Sun, like all stars, is simply one giant nuclear power plant. Its heat and light are the product of nuclear energy.

LEARN MORE! READ THESE ARTICLES…
ATOMS (VOLUME 2) • MARIE CURIE (VOLUME 4)
STARS (VOLUME 2)



Nuclear power plant on the coast of California, U.S.
© Galen Rowell/Corbis



Answer: Nuclear energy produces poisonous waste that stays deadly for generations. No one has yet come up with a safe and highly reliable way to get rid of the waste.

Energy from Heat

Energy means power—the power to do work. And thermal, or heat, energy can do a lot of work. When heat is applied to water, for instance, it makes the water boil. Boiling water then changes to vapor, or steam, which can apply great force as it escapes a container. Large quantities of steam powered the earliest train engines.

The most important source of thermal energy for our Earth is the Sun's rays. This "**solar** energy" is used to heat houses, water, and, in some countries, ovens used for cooking. Solar power can even be **converted** to electricity and stored for later use.



© Keren Su/Corbis



© Paul A. Souders/Corbis

(Top) Sun's heat focused and used for cooking on solar oven by Tibetan monk. (Bottom) Locomotive fireman shovels coal to burn, boiling water to produce steam power.

To human beings the second most important source of thermal energy is the store of natural fuels on and in the Earth. When these fuels—mainly coal, oil, gas, and wood—are burned, they produce heat. This heat can be used for warmth, made to power a machine directly, or converted into electricity. For example, a car engine burns gasoline (an oil product) for direct thermal power. In some areas coal is burned to produce the electricity that powers people's homes.

In a very few parts of the world, an interesting third form of heat energy comes from "living" heat inside the Earth itself. This "geothermal energy" comes from such sources as natural hot springs and the heat of active volcanoes ("geo-" means "earth"). Naturally escaping steam and hot water are used to heat and power homes and businesses in Reykjavik, Iceland. And though volcanoes are mostly too hot to tap directly, worldwide experiments continue as other major fuel supplies **dwindle**.

SEARCH LIGHT

Fill in the blank: When steam escapes, it gives a mighty push. This push is so strong that it was used to move the early _____ engines.

LEARN MORE! READ THESE ARTICLES…
OIL (VOLUME 2) • REYKJAVIK (VOLUME 6) • VOLCANOES (VOLUME 1)

© Raymond Gehman/Corbis

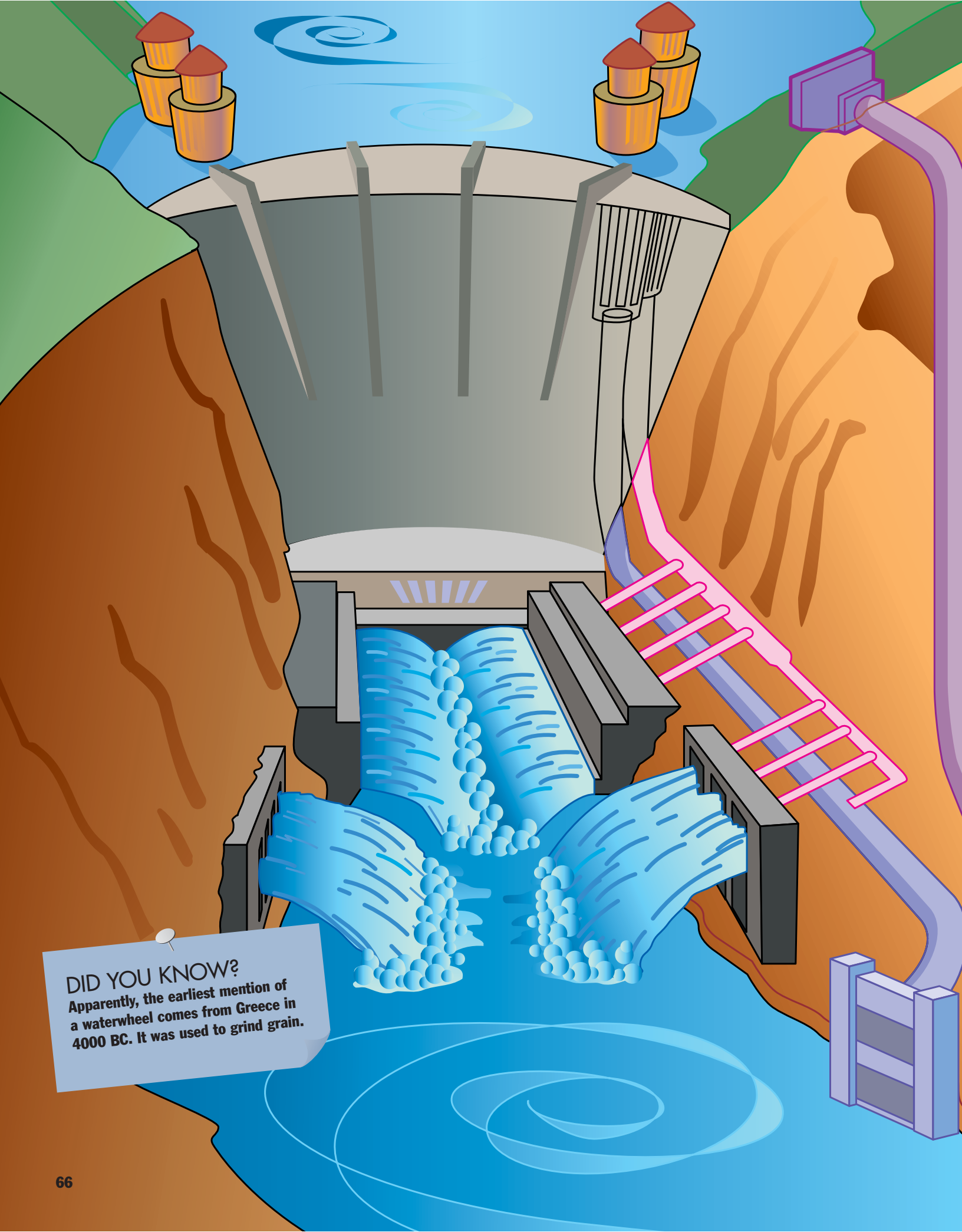


The intense power of the Earth's heat energy sometimes bursts into geysers—hot springs that send roaring columns of steam and boiling water high above the surface. This geyser is the famous Old Faithful in Yellowstone National Park in Wyoming, U.S.

DID YOU KNOW?

Hot-air ballooning, a popular sport in the 1960s, relies on thermal power. A gas burner heats air that is then fed into a large airtight balloon. And because hot air rises, the balloon rises up and away–carrying people or cargo along in its basket or container.

Answer: When steam escapes, it gives a mighty push. This push is so strong that it was used to move the early train engines.



DID YOU KNOW?

Apparently, the earliest mention of a waterwheel comes from Greece in 4000 BC. It was used to grind grain.

Streams of Energy

We have only to hear the roar of a waterfall to guess at the power of water. Its force is also clear anytime we see the damage caused by floods. But the water power can be extremely useful as well as destructive.

One excellent aspect of water power is that the water can be reused. Unlike such fuels as coal and oil, water does not get used up when **harnessed** for power. And it doesn't pollute the air either.

The power of water lies not in the water itself but in the flow of water. The power produced by water depends upon the water's weight and its height of fall, called "head." Generally, the faster that water moves, the more power it can generate. That's why water flowing from a higher place to a lower place, as a waterfall does, can produce so much energy.



© Hubert Stadler/Corbis

Since ancient times humans have used the energy of water for grinding wheat and other grains. They first **devised** the waterwheel, a wheel with paddles around its rim. As the photograph shows, the wheel was mounted on a frame over a river. The flowing water striking the blades turned the wheel.

Later, larger waterwheels were used to run machines in factories. They were not very reliable, however. Floodwaters could create too much power, whereas long rainless periods left the factories without any power at all.

Today streamlined metal waterwheels called "turbines" help produce electricity. The electricity produced by water is called "hydroelectric power" ("hydro-" means "water"). Enormous dams, like the one pictured here, provide this **superior** source of electricity.

SEARCH LIGHT

Fill in the blank: Unlike gas or coal power, water power doesn't cause air _____.

LEARN MORE! READ THESE ARTICLES…
ELECTRICITY (VOLUME 2) • TSUNAMIS (VOLUME 1)
VICTORIA FALLS (VOLUME 8)

Answer: Unlike gas or coal power, water power doesn't cause air pollution.



Hundreds of wind turbines like these in Denmark are set up on "wind farms" in constantly windy areas to produce large amounts of electricity.

© Adam Woolfitt/Corbis

SEARCH LIGHT

Which of the following are advantages of wind power?
It's cheap.
It works everywhere.
It's clean.
It's endless.

DID YOU KNOW?

The total wind power of our atmosphere, at any one time, is estimated to be 3.6 billion kilowatts. That's enough energy to light 36 billion light bulbs all at once.

Energy in the Air

Wind power has been used for many hundreds of years. Its energy has filled the sails of ships and powered machines that grind grain, pump water, drain marshes, saw wood, and make paper. Wind provides a clean and endless source of energy.

In the 1890s windmills in Denmark became the first to use wind power to generate electricity. But it took the major energy crisis of the 1970s to focus people's thoughts seriously again on using wind energy to produce electricity.



Traditional windmills in the Netherlands.
© ML Sinibaldi/Corbis

Windmills provide power to make electricity when their sails are turned by wind blowing against them. Originally the sails were long narrow sheets of canvas stretched over a wooden frame. Later windmills used different materials and designs. Usually there are four sails shaped like large blades.

When the sails turn, the axle they are attached to turns as well, much as car wheels turn on their axles. The axle causes various **gears** to turn, which then causes a large crankshaft to turn. The crankshaft is a long pole running the length of the windmill tower. At its other end the crankshaft is attached to a generator, a motor that can make and store electricity. So when the wind blows, the generator runs, making electricity.

Today modern efficient wind machines called "wind turbines" are used to generate electricity. These machines have from one to four blades and operate at high speeds. The first of these wind turbines appeared in the mid-1990s.

LEARN MORE! READ THESE ARTICLES…
CYCLONES AND TORNADOES (VOLUME 1) • NETHERLANDS (VOLUME 6) • SHIPS (VOLUME 2)



Answer: Wind power is cheap, clean, and endless. Unfortunately, it's not a usable way to generate power in areas with little or no wind.



SEARCH LIGHT

What modern machine's name sounds a lot like "ornithopter," the flapping-wing machine that people tried to fly?

The First Flights

From the earliest times people wanted to fly, but no one knew how. Some people thought it would help if their arms were more like bird wings. So they strapped large feathery wings to their arms. Not one left the ground. A few even tried machines with flapping wings, called "ornithopters." These didn't work either.

DID YOU KNOW?
In 1986 Dick Rutan and Jeana Yeager made the first nonstop round-the-world flight in an airplane. They did the whole trip without refueling.

Then in 1799 a scientist named George Cayley wrote a book and drew pictures explaining how birds use their wings and the speed of the wind to fly. About a hundred years later, two American brothers named Orville and Wilbur Wright read Cayley's book. Although they were bicycle makers, they decided to build a flying machine.

The Wright brothers' machine, *Flyer I*, had the strong light wings of a **glider**, a gasoline-powered engine, and two **propellers**. Then, from a list of places where strong winds blow, they selected the Kill Devil Hills near Kitty Hawk, North Carolina, U.S., as the site of their experiment.

In 1903 Orville, lying flat on the lower wing of *Flyer I*, flew a distance of 120 feet. That first flight lasted only 12 seconds. The next year the Wrights managed to fly their second "aeroplane," *Flyer II*, nearly 3 miles over a period of 5 minutes and 4 seconds.

Soon Glenn Curtiss, another bicycle maker, made a faster airplane called the "1909 type." Not long after that Louis Blériot from France did something no one had tried before. He flew his plane across the English Channel. He was the first man to fly across the sea.

The age of flight had begun.

LEARN MORE! READ THESE ARTICLES…
BIRDS (VOLUME 11) • SHIPS (VOLUME 2) • SPACECRAFT (VOLUME 2)

The Wright brothers had read that wind was very important for flying. That's why they chose the windy hill in North Carolina.
© Bettmann/Corbis

Answer: How about the "helicopter"? The "-opter" part of both words means "wing." A helicopter's name means "whirling wing." An ornithopter's means "bird wing."

How Henry Ford Made the American Car

Henry Ford was born near Dearborn, Michigan, U.S., in July 1863. As a boy, he loved to play with watches, clocks, and machines—good experience for the person who would build the first affordable car.

Cars had already been built in Europe when Ford experimented with his first **vehicle** in 1899. It had wheels like a bicycle's and a gasoline-powered engine that made it move. It was called a Quadricycle and had only two speeds and no reverse.

Within four years Ford had started the Ford Motor Company. His ideas about making automobiles would change history.

Carmakers at the time used parts others had made and put them all together. Ford's company made each and every part that went into its cars. What's more, the company made sure that each kind of part was exactly the same.

In 1908 Ford introduced the Model T. This car worked well and was not costly. It was a big success, but the company couldn't make them quickly enough to satisfy Henry Ford.

In 1913 he started a large factory that made use of his most important idea: the assembly line. Instead of having workers go from car to car, the cars moved slowly down a line while workers stood in place adding parts to them. Each worker added a different part until a whole car was put together.

This meant more autos could be built more quickly at a lower cost. By 1918 half of all cars in the United States were Model Ts. Ford's company had become the largest automobile manufacturer in the world. And Ford had revolutionized the process of **manufacturing**.

SEARCH LIGHT

True or false? Henry Ford built the very first automobile.

DID YOU KNOW?

Henry Ford is reported to have once said that his customers could get a Model T in "any color they like, as long as it's black."

LEARN MORE! READ THESE ARTICLES…
AIRPLANES (VOLUME 2) • OIL (VOLUME 2)
TRANSPORTATION (VOLUME 2)



Henry Ford's first car was the Quadricycle, seen here with Ford driving. It had only two forward speeds and could not back up.
© Underwood & Underwood/Corbis

Answer: FALSE. Henry Ford built the first inexpensive automobile. Gottlieb Daimler, a German, gets credit for building the very first automobile.



Louis Braille completed his raised-dot alphabet for the blind when he was only 15 years old. A person can even learn to read music through the Braille system.
© Will and Deni McIntyre/Photo Researchers, Inc.

SEARCH LIGHT

Louis Braille invented his Braille alphabet when he was 15. At that age, how many years had he been blind?

Books to Touch

More than 175 years ago in France, young Louis Braille thought of a way to help blind people read and write. He himself could not see. He had hurt his eyes when he was just 3 years old, while he was playing with his father's tools.

Fortunately, Louis was a clever child. When he was 10 years old, he won a **scholarship** to the National Institute for Blind Children in Paris.

At the school Louis heard about how Captain Barbier, an army officer, had invented a system of writing that used dots. It was called "night writing," and it helped soldiers read messages in the dark. These messages were of small, bump-like dots pressed on a sheet of paper. The dots were easy to make and could be felt quickly.

Louis decided to use similar dots to make an alphabet for the blind. It was slow to be accepted but was eventually a great success. His alphabet used 63 different dot patterns to represent letters, numbers, punctuation, and several other useful signs. A person could even learn to read music by feeling dots.

Today blind people all over the world can learn the Braille alphabet. Look at these dots:



In an actual Braille book, the tips of your fingers would be able to cover each small group of dots.

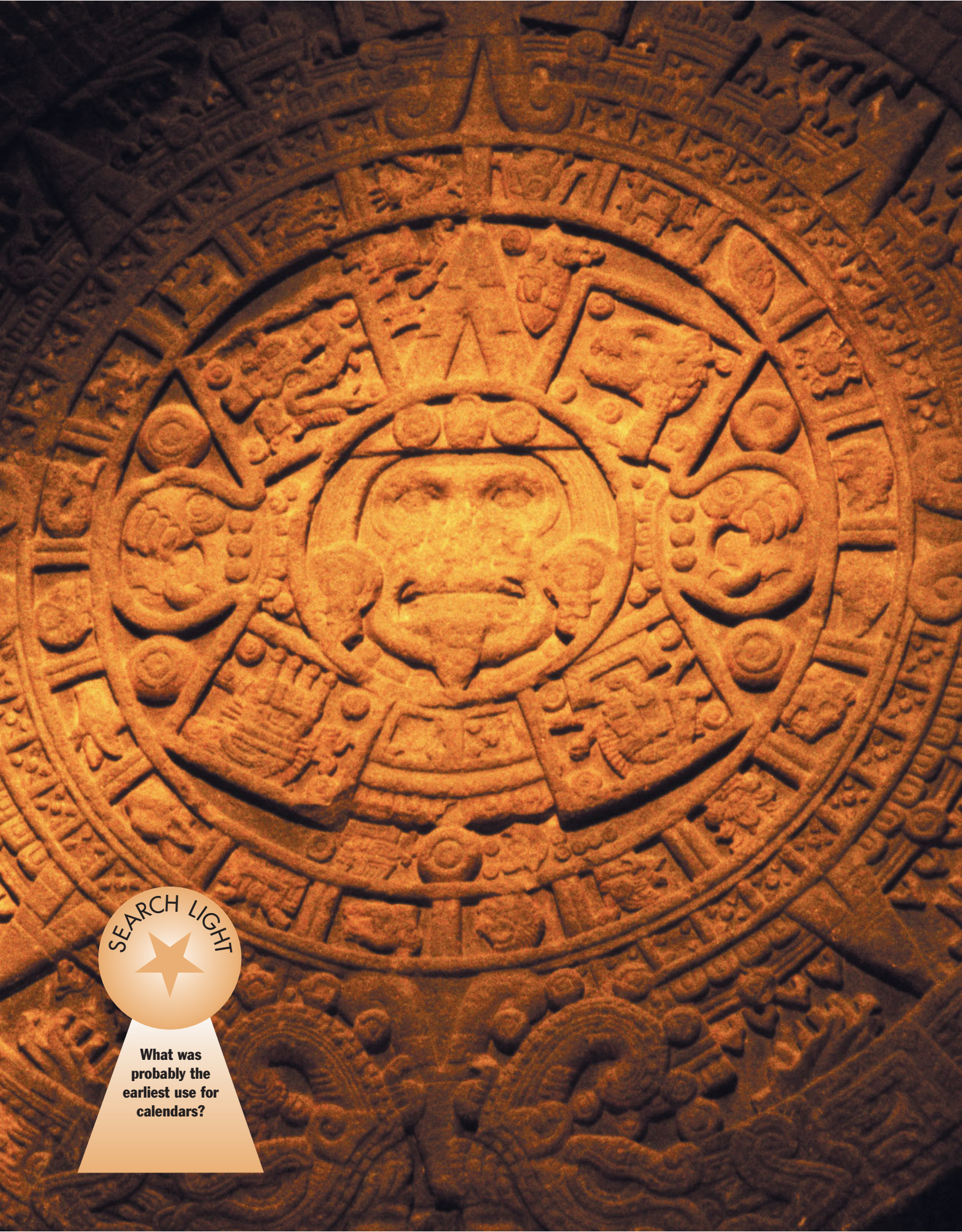
Can you guess what this pattern of dot letters spells?

It spells the words "I can read."

LEARN MORE! READ THESE ARTICLES…
HELEN KELLER (VOLUME 4)
PRINTING (VOLUME 2) • SIGHT AND SOUND (VOLUME 2)

DID YOU KNOW?
On its Web site, the American Foundation for the Blind has a great area where you can learn Braille yourself. Go to http://afb.org and click on "Braille Bug."

Answer: Louis Braille had been blind for 12 years when he invented his alphabet.



SEARCH LIGHT

What was probably the earliest use for calendars?

Charting the Year

A calendar, like a clock, provides a way to count time—though calendars count days and months rather than minutes and hours. The modern calendar has 12 months of 30 or 31 days each (February has 28, sometimes 29). The calendar year has 365 days, which is about how long it takes the Earth to circle the Sun once. That makes it a **solar** calendar.

DID YOU KNOW?
The Chinese calendar names each year for one of 12 animals. In order, these are: rat, ox, tiger, hare, dragon, snake, horse, sheep, monkey, fowl, dog, and pig. The year 2003 is the Year of the Sheep (or Ram), 2004 the Year of the Monkey, and so on.

Today's calendar, with a few changes, has been in use since 1582. Pope Gregory XIII had it designed to correct errors in the previous calendar. For this reason it is called the "Gregorian calendar."

The oldest calendars were used to figure out when to plant, harvest, and store crops. These were often "**lunar** calendars," based on the number of days it took the Moon to appear full and then **dwindle** away again.



Jewish calendar (in Hebrew) from the 1800s.
© Archivo Iconografico, S.A./Corbis

The traditional Chinese calendar is a lunar calendar. It has 354 days, with months of either 29 or 30 days.

Many calendars have religious origins. In Central and South America, the ancient Aztec and Mayan calendars marked **ritual** days and celebrations. Jews, Muslims, and Hindus have religious calendars, each with a different number of days and months.

All these calendars have one thing in common: they're wrong. None of them measures the Earth's year-long journey around the Sun precisely. Extra days must be added to keep the count in step with the actual seasons. We add an extra day to February every four years. (Actually, even our corrections are wrong. Once every 400 years we *don't* add that day.)

But if we didn't make some kind of correction, we'd eventually have New Year's Eve in the middle of the year!

LEARN MORE! READ THESE ARTICLES…
MAYAN CIVILIZATION (VOLUME 4) • MEASUREMENT (VOLUME 2) • MOON (VOLUME 2)

This ancient Aztec calendar stone weighs about 25 tons. Its central image of the Aztec sun god, Tonatiuh, indicates the important role religion plays in how major civilizations measure time.
© Randy Faris/Corbis

Answer: The earliest calendars were likely used to tell the right time to plant and harvest crops.


SEARCH LIGHT
Find and correct the error in the following sentence: A set of instructions that a computer uses to solve problems and do work is called "memory."

The Machines That Solve Problems

The first computers were expensive room-sized machines that only business and government offices could afford. Today most computers are smaller, and many people have one in their own home or school. These "personal computers" (PCs) first appeared in the mid-1970s.



A Palm Pilot, one of the tiny but powerful modern computers.
© RNT Productions/Corbis

Computers can find the answers to many math problems and can simplify work that has many steps and would otherwise take lots of time. They can do this because they can remember, in order, the individual steps of even long and complicated instructions.

The sets of instructions for computers are called "programs" or "software." A computer's brain is its microprocessor—a tiny electronic **device** that reads and carries out the program's instructions.

Because they are programmed in advance, you can use computers to solve math problems, remember facts, and play games. Computers can also help you draw, write papers, and make your own greeting cards.

Computers need two kinds of memory. "Main memory" is what handles the information that the computer is using as it is doing its work. Main memory operates amazingly fast and powerfully to speed up a computer's work. The second kind of computer memory is **storage** for its programs and for the results of its operations. The most important storage space is on the computer's hard drive, or hard disk. CD-ROMs, DVDs, and flash drives are removable storage devices.

Since 1990 very small computers have been developed. Today there are laptop or notebook computers, as well as handheld computers. Handheld computers weigh only a few ounces, but they can handle more **data** more quickly than most of the first giant computers.

DID YOU KNOW?
It was a weaving machine, a loom, that led to the first computers. At one time looms used punched cards to set weaving patterns. Early computers used this system of coding in their programming "languages."

LEARN MORE! READ THESE ARTICLES…
ELECTRICITY (VOLUME 2) • INTERNET (VOLUME 2)
PRINTING (VOLUME 2)

© Ariel Skelley/Corbis

Answer: A set of instructions that a computer uses to solve problems and do work is called a "program" [or "software"].

Network of People

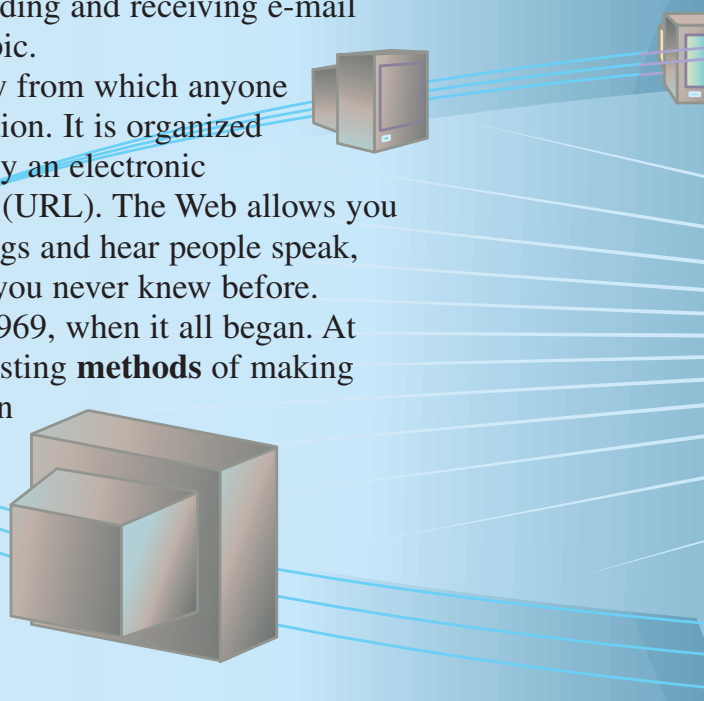
You can do things with your friends and family even when they are thousands of miles away simply by sitting at your computer. The Internet makes this possible.

As the name suggests, the Internet is like a large net whose every strand connects a different computer. It is an international web linking millions of computer users around the world. Together with the World Wide Web (WWW, or Web), it is used for sending and receiving e-mail and for sharing information on almost any topic.

The Web is an enormous electronic library from which anyone connected to the Internet can receive information. It is organized into tens of millions of sites, each identified by an electronic address called the "uniform resource locator" (URL). The Web allows you to view photographs and movies, listen to songs and hear people speak, and find out about **countless** different things you never knew before.

The Internet has come a long way since 1969, when it all began. At that time the U.S. Defense Department was testing **methods** of making their computers survive a military attack. Soon their networks were extended to various research computers around the United States and then to countries around the world.

By early 1990 the Internet and the World Wide Web had entered homes. Today many people wonder how they ever got by without the Internet.



LEARN MORE! READ THESE ARTICLES…

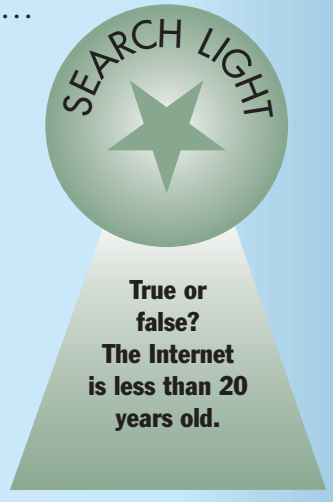
COMPUTERS (VOLUME 2)

RADIO (VOLUME 2)

TELEPHONES (VOLUME 2)

DID YOU KNOW?

Radio took about 38 years to gain 50 million listeners. TV took about 13 years to have 50 million viewers. The Internet took only 4 years to get 50 million users.



INTERNET AND THE WORLD WIDE WEB

Answer: FALSE. The Internet is more than 30 years old.

Photos That Move

Sitting in a darkened movie theater, caught up in the adventures of Frodo Baggins or Batgirl, you might find it difficult to believe that you're watching a series of still photographs. These still photos are projected onto the screen so fast, one after another, that you're tricked into seeing movement.

Motion picture film comes in long wound **spools** or **cartridges**. A camera records pictures on the film at either 18 or 24 shots per second. Sometimes there are three or four cameras that shoot a scene from different angles. Sound is recorded at the same time but with separate equipment.

Later, the film is **edited** by cutting out parts that the director doesn't want. The parts being kept are then put together to tell the story. The sound and the pictures are joined together on a single piece of film to create the finished movie.

DID YOU KNOW?

When a system that added sound to silent movies was invented, the major movie companies thought it would be a big failure. One small company, Warner Brothers, thought it might be interesting and soon produced the first "talking pictures."

SEARCH LIGHT

True or false? Movies are really just a long string of photographs.

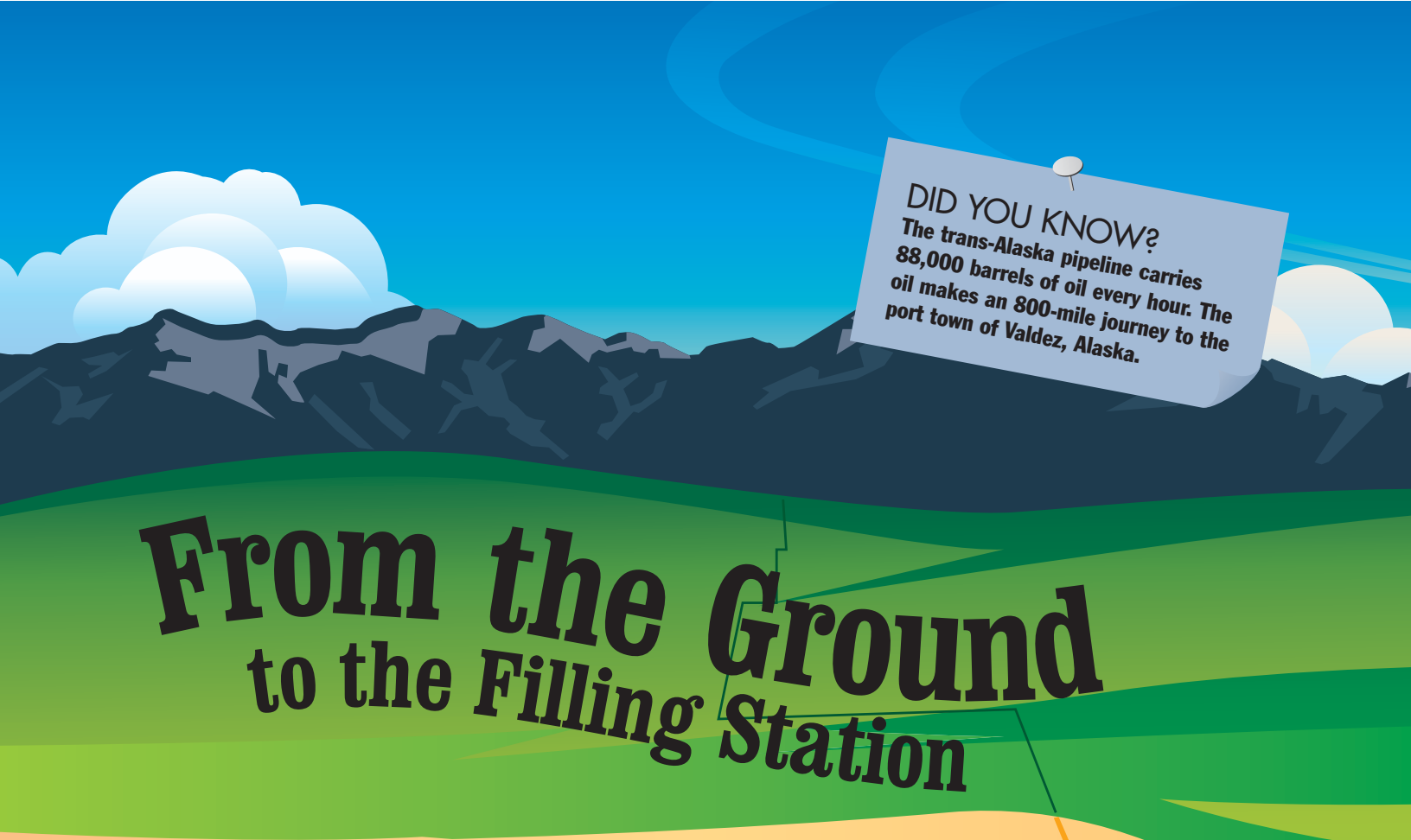
Filmmaking is a long and complicated process, involving many people. The actors are the most visible, but there are many others as well. The director has total control over how the story will be filmed. A whole crew of people help with costumes, choreography, lighting, sound, camera operations, special effects, and the actors' makeup and hairstyles.

After the film has been shot, there are different people to edit it and other people who advertise the movie and get the public talking about it. Finally, the film reaches the movie theaters. There you buy your popcorn or other refreshments and settle into your seat to enjoy the magic world of the finished motion picture.

LEARN MORE! READ THESE ARTICLES…
CINEMA (VOLUME 3) • PHOTOGRAPHY (VOLUME 2) • TELEVISION (VOLUME 2)



Answer: TRUE. When the string of photos is flashed by quickly, the pictures appear to move.



From the Ground to the Filling Station

Up comes the thick black oil from the oil well and...out pours the gasoline into your family's car. But how does the oil become fuel for automobiles?

Petroleum, or crude oil, is oil as it is found deep within the Earth. This raw form has many unwanted substances in it that must eventually be removed in a process called "refining."

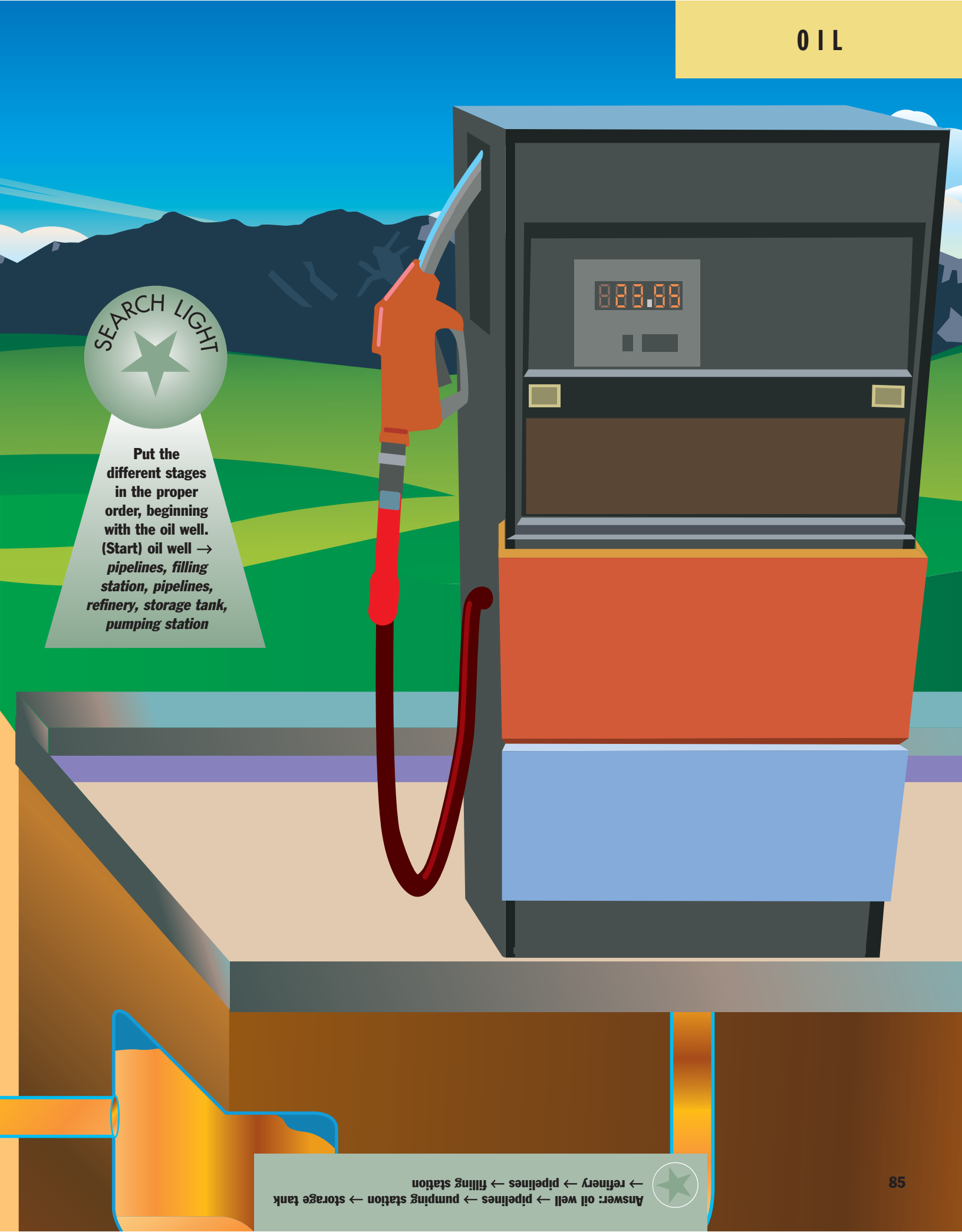
From a well drilled deep into the ground, the oil often goes through long pipelines under the ground. There are pipelines in some very surprising places—under streets, mountains, deserts, frozen lands, and even lakes and rivers.

Pumping stations keep the thick oil moving through the pipes. Each station gives the oil enough of a push to get it to the next station. There are pumping stations built all along the pipelines. Here and there along the pipelines, oil is directed into smaller pipes that take it to huge storage tanks.

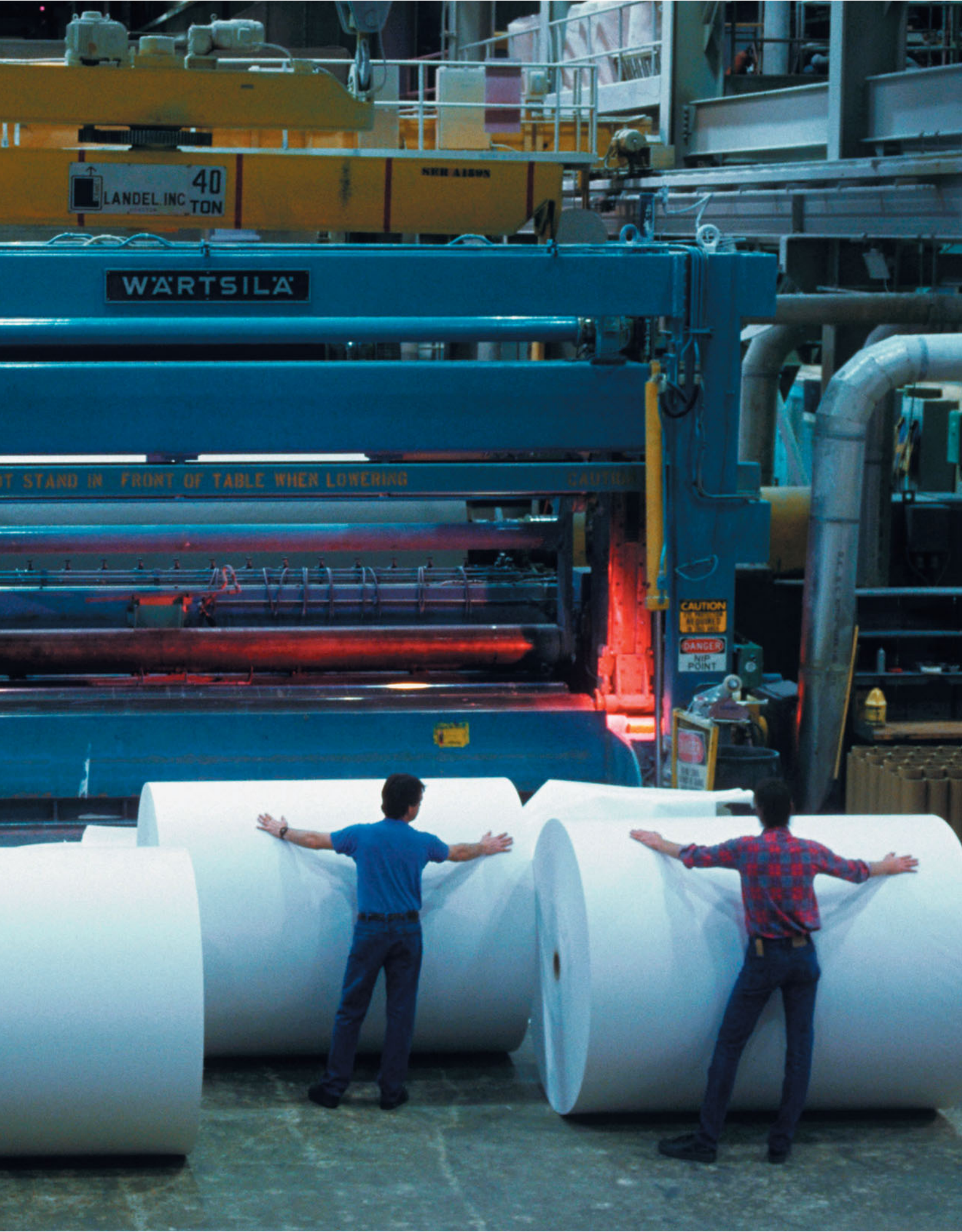
From the storage tanks the oil goes into a **refinery**, where it is heated until it is very hot. The hot oil is separated into many different substances. The heavy part that settles down at the bottom is used for road building. Other parts become machine oils and waxes. **Kerosene** and gasoline also separate as the oil is heated. Finally, the lightest parts of the oil—cooking gas and other kinds of gases—are collected.

From the refineries more pipelines carry oil to round storage tanks in tank farms. Gasoline trucks fill up at the storage tanks and take the gasoline to filling stations, where your car and others can then fill up.

LEARN MORE! READ THESE ARTICLES…
AUTOMOBILES (VOLUME 2) • GEOLOGY (VOLUME 1) • POLLUTION (VOLUME 1)



Answer: oil well → pipelines → pumping station → storage tank → refinery → pipelines → filling station


LANDEL INC
40
TON
WÄRTSILÄ
T STAND IN FRONT OF TABLE WHEN LOWERING
CAUTION
DANGER
NIP
POINT

Turning Trees to Paper

The sheets in your notebook are made of paper that came from a factory. So are the pages of your book.

The factory got the paper from a paper mill. The mill probably made the paper from logs. And the logs were cut from trees that grew in a forest. Pine trees are often used to make paper.

If you visit a **traditional** paper mill, you will see people working at large noisy machines that peel bark off the logs and then cut the wood into smaller pieces. Other machines press and grind this wood into pieces so tiny that they can be mashed together like potatoes. This gooey stuff is called "wood **pulp**."

After it is mixed with water, the pulp flows onto a screen, where the water drains off, leaving a thin wet sheet of pulp.

Big hot rollers press and then dry this wet pulp as it moves along **conveyor belts**. At the end of the line the dried pulp comes out as giant rolls of paper. These giant rolls are what the paper factories make into the products that you use every day, such as newspapers, paper towels, and the pages of books that you read.

Because we use so much paper, we must be careful how many trees are cut down to make it. Fortunately, today a lot of used paper can be remade into new paper by **recycling**. And you can help save trees by recycling the magazines, newspapers, and other paper that you use in school and at home.

SEARCH LIGHT

Starting with the tree in the forest, arrange these mixed-up steps in the order they should happen in papermaking:

(*Start*) tree → *chop tree, dry, peel bark, roll out sheets, cut wood, press flat, grind into pulp*

LEARN MORE! READ THESE ARTICLES…
PINE (VOLUME 10) • PRINTING (VOLUME 2) • RAINFORESTS (VOLUME 1)

DID YOU KNOW?
According to Chinese historical records, the first paper was made from tree bark, hemp (a plant used to make rope), rags, and fishnets.

In a paper mill like this, the rolls of paper are sometimes as big as the trees they are made from.
© Philip Gould/Corbis

Answer: tree → chop tree → peel bark → cut wood → grind into pulp → press flat → dry → roll out sheets

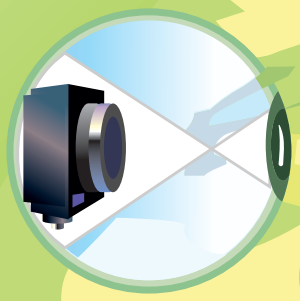
Drawing with Light

The word "photography" comes from two ancient Greek words: *photo*, for "light," and *graph*, for "drawing."

Photography, the process of taking pictures, requires a camera. Cameras work basically as our eyes do. Light enters the front and shines a picture on the back.

A camera may be any dark lightproof box with a small opening at one end that lets in the light. Most cameras have glass **lenses** to help focus the light into the back of the box.

In your eye light enters through an opening called the "pupil." The camera's opening is its aperture. Your iris controls how much light enters your eye. The camera's shutter does the same. In eyes and in most cameras, the light then passes through a lens. In your eye the picture is





Match the parts of the camera to the similar parts of an eye:

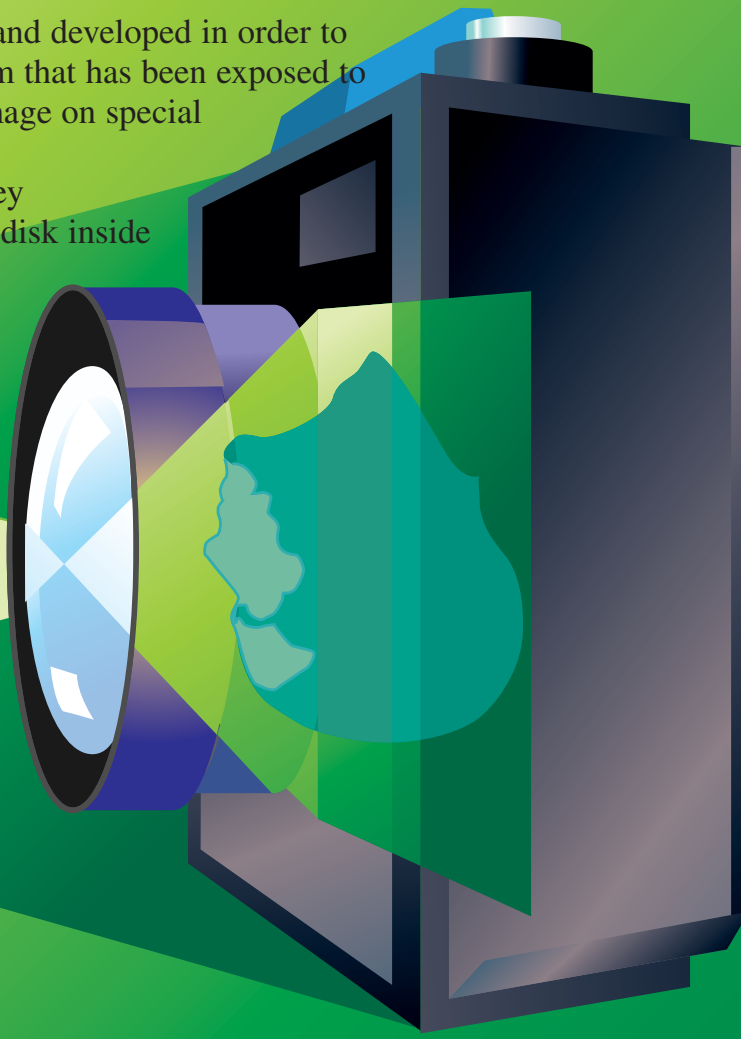
1. lens	**a) lens**
2. retina	**b) film**
3. iris	**c) shutter**
4. pupil	**d) aperture**

produced on the retina, the back lining of the eye. In a traditional camera, film receives and captures the image.

Film is special material that has been treated with chemicals to make it **sensitive** to light. Light shining on film changes the film's chemical makeup. Depending on how much light shines on each part of the film, different shades or colors result.

The film has to be taken out of the camera and developed in order to finish the process of creating a photograph. Film that has been exposed to light is processed with chemicals that **fix** the image on special paper.

Digital cameras do not use film. Instead, they translate the image into numbers recorded on a disk inside the camera. A computer decodes these numbers and displays a picture.



LEARN MORE! READ THESE ARTICLES…
MOTION PICTURES (VOLUME 2) • PAINTING (VOLUME 3)
SIGHT AND SOUND (VOLUME 2)

DID YOU KNOW?

The first photograph—a farmhouse with some fruit trees—was taken in about 1826 by French inventor Joseph Nicéphore Niepce.

Answer: 1a; 2b; 3c; 4d

Gutenberg's Gift

Before about 550 years ago very few people owned books. In fact, there weren't many books to own. Back then most books had to be written out by hand. Some books were printed by using wooden blocks with the letters of an entire page hand-carved into each one. The carved side of the block was dipped in ink and pressed onto paper. Both handwritten and woodblock-printed books took a lot of time, energy, and money. Only rich people could afford to buy them.

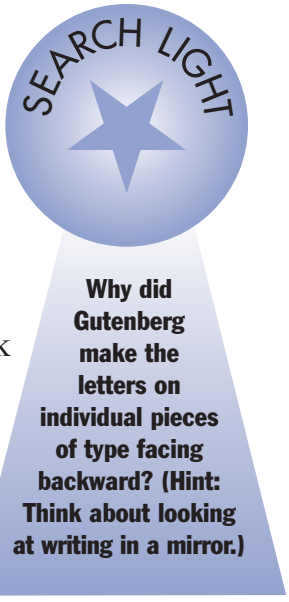
Then, in the 1450s, a man in Germany named Johannes Gutenberg had an idea for printing books faster.

First, he produced small blocks of metal with one raised, backward letter on each block. These blocks with their raised letters were called "type." He then spelled out words and sentences by lining up the individual pieces of type in holders.

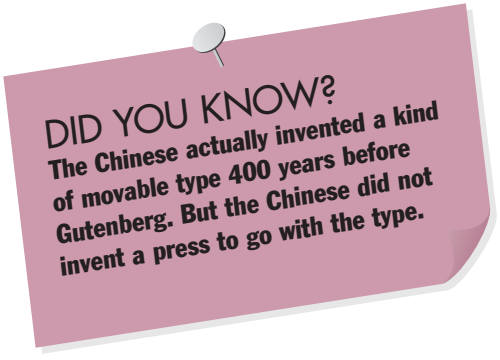
The second part of his invention was the printing press. This was basically a "bed" in which the lines of type could be laid out to create a page. When he inked the type and then used a large plate to press them against a sheet of paper, lines of words were printed on the paper.

Gutenberg's blocks became known as movable type, which means that he could take his lines apart and reuse the letters. Once he had carved enough sets of individual letters, he didn't have to carve new ones to make new pages.

The Bible was one of the earliest books printed by using Gutenberg's movable type. By 1500 the printing presses of Europe had produced some 6 million books!



LEARN MORE! READ THESE ARTICLES…
BIBLE (VOLUME 5) • BRAILLE (VOLUME 2)
PAPER (VOLUME 2)





The artist had to imagine Gutenberg and his first page of print. But the printing press in the background is a fairly accurate image of what the inventor worked with.
© Bettmann/Corbis

Answer: Because the letters were backward on the blocks, they came out facing forward on the paper. Try it yourself!



Guglielmo Marconi, seen here in 1922, received the 1909 Nobel Prize for Physics for his development of a way to send electronic signals without using wires.
© Bettmann/Corbis

SEARCH LIGHT

Fill in the blank: After World War I, radio grew from a two-way communication tool into a popular instrument for _____.

Thank You, Mr. Marconi

Before there was television, people got much of their news and entertainment from the radio. And many still do!

Invention of the radio began in 1896 when Italian scientist Guglielmo Marconi **patented** a wireless **telegraph** process. Marconi knew that energy can travel in invisible waves through the air and that these waves could be captured electronically to send and receive signals. His invention allowed people to send messages to each other over great distances without having to be connected by wires.



A Marconi wireless telegraph set (1912), the "parent" of the voice-transmitting radio.
© Underwood & Underwood/Corbis

Marconi and others added to his invention, figuring out how to add sound to these messages to make the first radios. These were used simply for sending and receiving messages. During World War I the armed forces used radios for this purpose. It was after the war that radio became popular as a means of entertainment.

During the 1920s radio stations were set up all over the world. In the early days most of the radio programs gave news or **broadcast** lectures and some music. As more and more people began to listen to radio programs, more popular entertainment programs were added. These included comedies, dramas, game shows, mysteries, soap operas, and shows for children.

Radio shows remained highly popular until the 1950s. That's when television began to catch on. And as it happens, television actually works in the same basic ways as radio does! It uses special equipment to send and receive pictures and sound in the form of electronic signals.

Today radio **technology** is used in many ways. Cordless telephones, cellular phones, and garage-door openers all use radio technology. And radio entertainment programs are still going strong.

DID YOU KNOW?
On the eve of Halloween (October 30) of 1938, actor-director Orson Welles's realistic radio drama *The War of the Worlds* accidentally convinced millions of listeners that the Earth was being invaded by Martians!

LEARN MORE! READ THESE ARTICLES…
ECHOES (VOLUME 1) • ELECTRICITY (VOLUME 2) • TELEVISION (VOLUME 2)

Answer: After World War I, radio grew from a two-way communication tool into a popular instrument for entertainment.

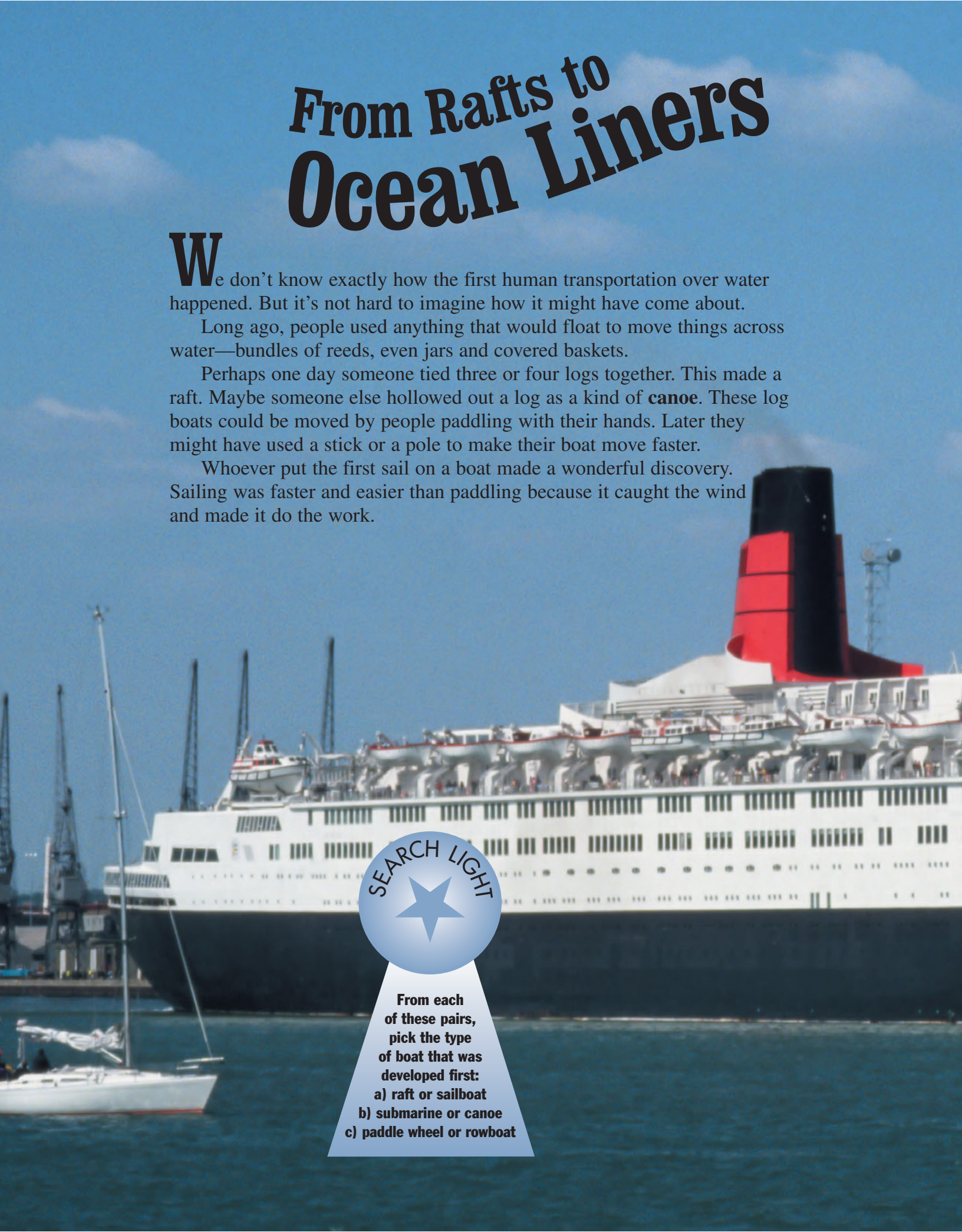
From Rafts to Ocean Liners

We don't know exactly how the first human transportation over water happened. But it's not hard to imagine how it might have come about.

Long ago, people used anything that would float to move things across water—bundles of reeds, even jars and covered baskets.

Perhaps one day someone tied three or four logs together. This made a raft. Maybe someone else hollowed out a log as a kind of **canoe**. These log boats could be moved by people paddling with their hands. Later they might have used a stick or a pole to make their boat move faster.

Whoever put the first sail on a boat made a wonderful discovery. Sailing was faster and easier than paddling because it caught the wind and made it do the work.



SEARCH LIGHT

From each of these pairs, pick the type of boat that was developed first:
a) raft or sailboat
b) submarine or canoe
c) paddle wheel or rowboat

Eventually, someone built a ship that used a sail and long paddles, called "oars." When there was little or no wind, the sailors rowed with the oars. In time, sailors learned to turn, or "set," a sail to make the boat go in almost any direction they wished.

Paddles began to be used again much later in giant wheels that moved large boats through the water. A steam engine powered these paddle wheels, which were too heavy to turn by hand. Steamboats cruised rivers, lakes, and oceans all over the world.

Today ships and boats use many different kinds of engines. Most ships use oil to **generate** power. Some submarines run on nuclear power. But on warm days, many people still enjoy traveling on water by paddling, sailing, and even rafting.

DID YOU KNOW?

In 1947 Norwegian scientist Thor Heyerdahl and a small crew sailed some 5,000 miles of ocean on a balsawood raft called the *Kon-Tiki*. It was an experiment to see if ancient Americans could have settled some Pacific islands.

LEARN MORE! READ THESE ARTICLES…
FERDINAND MAGELLAN (VOLUME 4)
SUBMARINES (VOLUME 2) • VIKINGS (VOLUME 4)

Today's ocean liners provide a popular way for people to get from one place to another and to vacation on the way.

© Melvyn P. Lawes—Papilio/Corbis

Answer: a) raft b) canoe c) rowboat

Eyes That Hear, Speech That's Seen

Mary: "Can you come to the store with me?"

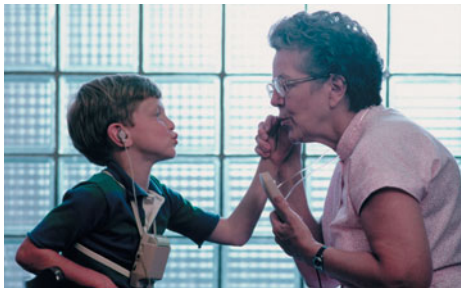
Sara: "I'll ask my mother."

If Mary and Sara were like most girls you know, their conversation would not be unusual. But Mary and Sara are deaf, which means that they cannot hear. Still they understand each other.

How?

Well, one way that people who are deaf communicate is by using sign language. Sign language replaces spoken words with finger and hand movements, **gestures**, and facial expressions. People using sign language can actually talk faster than if they spoke out loud.

Another way people who are deaf may communicate is through lipreading. People who lip-read have learned to recognize spoken words by reading the shapes and movements speakers make with their lips, mouths, and tongues. Lip-readers usually speak out loud themselves even though they can't hear what others say.



Deaf child learning to speak using touch, sight, and imitation.
© Nathan Benn/Corbis

Some people who are deaf use hearing aids or cochlear **implants** to help them hear the sounds and words that others hear. (The cochlea is part of the ear.) Hearing aids usually fit outside the ear and make sounds louder. Cochlear implants are inside the ear and use electrical signals to imitate sounds for the brain. Often, children and adults with hearing aids or implants take lessons to learn to speak as hearing people do.

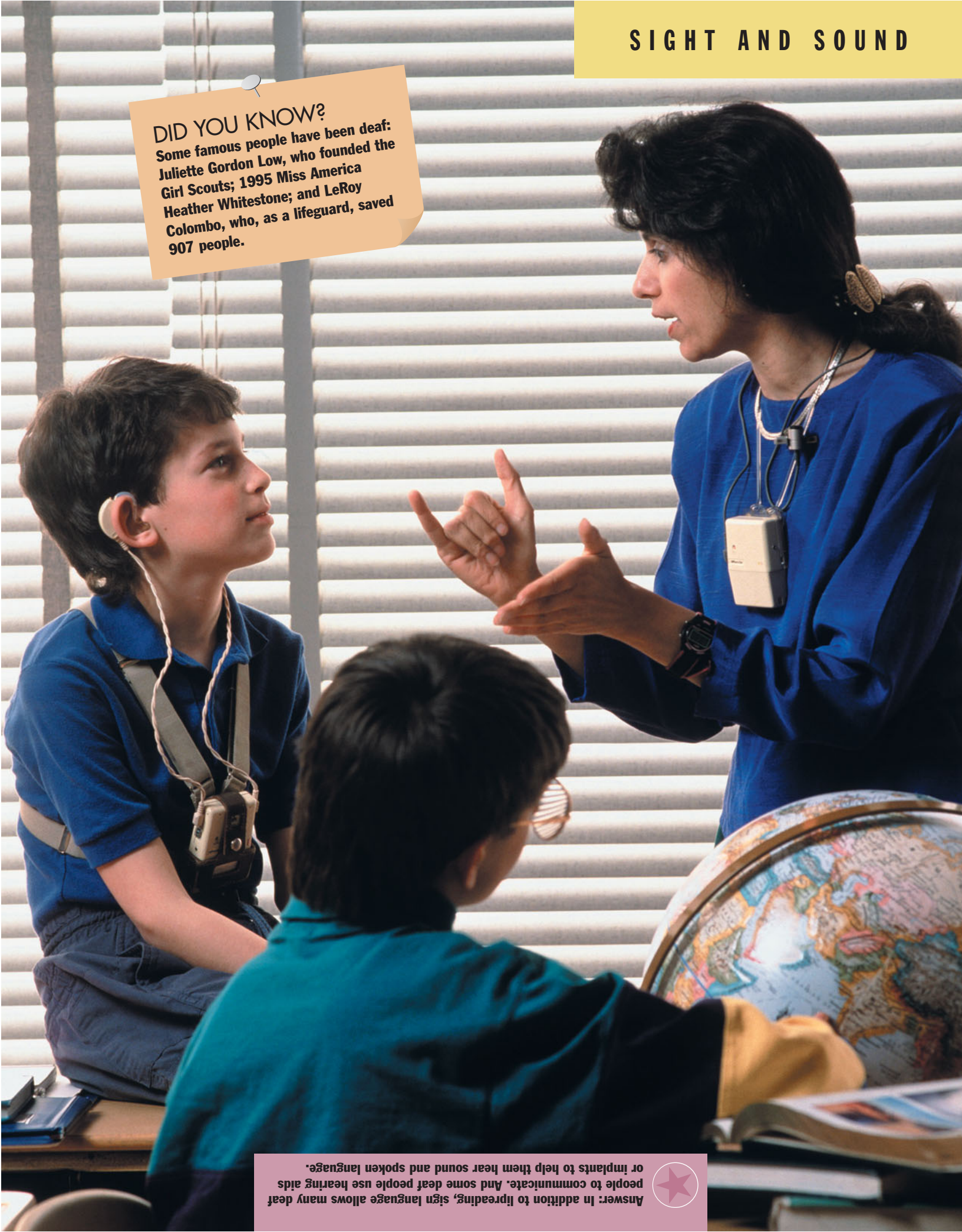
There are many schools for children who are deaf or hearing-**impaired**. There they may learn all or some of the skills of lipreading, sign language, **oral** speech, and the use of hearing aids and implants. Older students may attend Gallaudet University in Washington, D.C., a school of higher education especially for people who are deaf.

SEARCH LIGHT

The article mentions several ways that people who are deaf can know what another person is saying. One is lipreading. What is another?

LEARN MORE! READ THESE ARTICLES…
BRAILLE (VOLUME 2) • HELEN KELLER (VOLUME 4) • TELEPHONES (VOLUME 2)

Many deaf children learn to communicate by using sign language.
© Mug Shots/Corbis



DID YOU KNOW?

Some famous people have been deaf: Juliette Gordon Low, who founded the Girl Scouts; 1995 Miss America Heather Whitestone; and LeRoy Colombo, who, as a lifeguard, saved 907 people.

Answer: In addition to lipreading, sign language allows many deaf people to communicate. And some deaf people use hearing aids or implants to help them hear sound and spoken language.



Silent Stalkers of the Sea

Because they are meant to spend most of their time underwater, submarines are designed and built quite differently from other ships.

Submarines must be airtight so that water won't come in when they **submerge**. They also need strong **hulls** because the pressure of seawater at great depths is strong enough to crush ships. And submarines need special engines that don't use air when they are underwater. Otherwise, they would quickly run out of air and shut down! So most modern subs are powered by electric batteries when they're submerged. Some are powered by nuclear energy.

SEARCH LIGHT

Fill in the blanks: Submarines need _____ that don't use up _____.

Because a submarine is all closed up, it must have special instruments to act as its eyes and ears underwater. A periscope is a viewing **device** that can be raised up out of the water to let the submarine officers see what's around them. Another special system, sonar, "hears" what's under the water by sending out sound waves that bounce off everything in their path. These echoes send a sound picture back to the sub.

But why build submarines in the first place? Well, submarines have proved very useful in times of war. They can hide underwater and take enemy ships by surprise.

Submarines have peaceful uses too. Scientists use smaller submarines, called "submersibles," to explore the huge ocean floors and the creatures that live there. People also use submersibles to search for sunken ships and lost treasures. The luxury liner *Titanic* was discovered and explored with a submersible 73 years after it sank in the Atlantic Ocean.

LEARN MORE! READ THESE ARTICLES…
ECHOES (VOLUME 1) • NUCLEAR ENERGY (VOLUME 2)
JULES VERNE (VOLUME 3)

DID YOU KNOW?

The *Nautilus*, the first nuclear sub, was once caught by a fishing net. The unhappy crew of the fishing boat was towed for several miles before the situation was fixed.

When a submarine runs above the water, officers can stand on top of the conning tower. That's the raised deck of the ship.
© George Hall/Corbis

Answer: Submarines need engines that don't use up air.

Staying in Touch



The telephone is the most popular communication **device** of all time.

Alexander Graham Bell invented the telephone in 1876. In 11 years there were more than 150,000 telephones in the United States. In 2001 there were an estimated 1,400,000,000 telephones worldwide.

Traditional telephones have three main parts: a **transmitter**, a receiver, and a dialer. There is also a switch hook, which hangs up and disconnects the call.

When you speak into the phone, the transmitter changes the sound of your voice into an electrical signal. The transmitter is basically a tiny **microphone** in the mouthpiece. On the other end of the call, the receiver in the listener's earpiece changes that electrical signal back into sound. The receiver is a tiny vibrating disk, and the electrical signal vibrates the disk to make the sounds of the caller's voice.

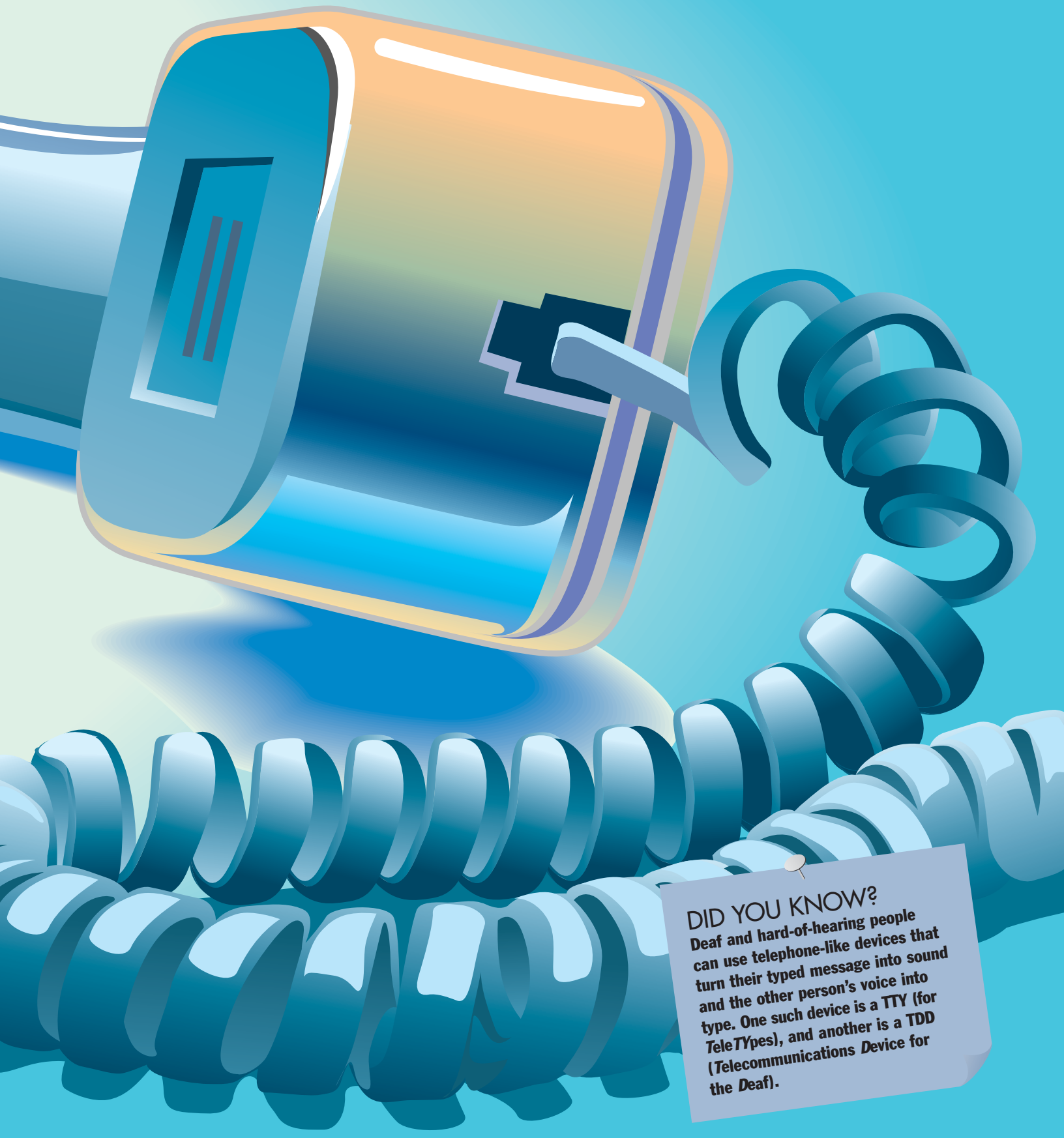
When you make a call, the phone's dialer sends a series of clicks or tones to a switching office. On a rotating dial phone, dialing the number 3 causes three clicks to interrupt the normal sound on the line (the dial tone). On a touchtone phone, a pushed number interrupts the dial tone with a new sound. These interruptions are a form of code. The switching office "reads" the code and sends the call to the right telephone receiver.

Since the 1990s cellular phones have become hugely popular worldwide. Cell phones connect with small transmitter-receivers that each control an area, or "cell." As a person moves from one cell to the next, the cell phone system switches the signal to the new cell.

SEARCH LIGHT

A telephone receiver is a
a) vibrating disk.
b) dial tone.
c) tiny microphone.

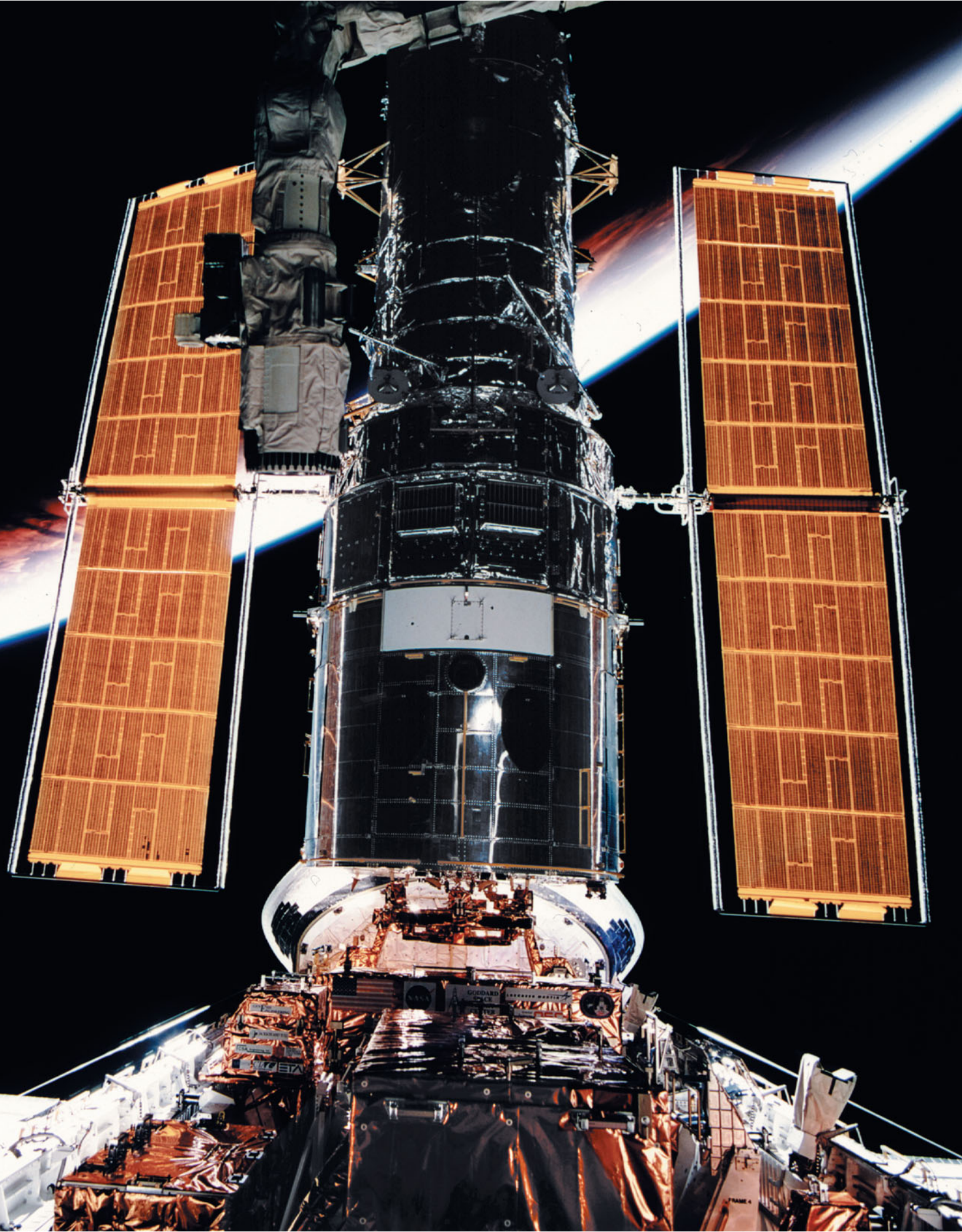
LEARN MORE! READ THESE ARTICLES…
ECHOES (VOLUME 1) • ELECTRICITY (VOLUME 2) • RADIO (VOLUME 2)



DID YOU KNOW?

Deaf and hard-of-hearing people can use telephone-like devices that turn their typed message into sound and the other person's voice into type. One such device is a TTY (for *TeleTY**pes*), and another is a TDD (*T*elecommunications *D*evice for the *D*eaf).**

Answer: a) vibrating disk.



Exploring the Sky

The stars we see in the night sky look like little points of light. But they are vastly larger than they look. Almost all of them are much bigger than our Earth. The stars look tiny because they're so far away. If you rode in the fastest rocket for your entire life, you wouldn't make it even halfway to the nearest star.

Fortunately, telescopes let us explore the stars without leaving the Earth.

DID YOU KNOW?
Special radio telescopes "listen" to the radio signals produced by stars, galaxies, and other objects. One group of radio telescopes in New Mexico, U.S., includes 27 "dish" antennas spread over 24 miles.

A simple telescope is tube-shaped and has a special kind of **magnifying** glass, called a "**lens**," at each end. Other telescopes use mirrors or both lenses and mirrors to enlarge the faraway view. Lenses and mirrors gather the light from an object, making it seem brighter and easier to see.

Telescopes make stars and planets seem closer. And telescopes let us see much farther than we normally can. Through a simple telescope you can see the rings of Saturn, as well as galaxies outside our own Milky Way. Giant telescopes on mountaintops can view objects much farther away and see with much greater detail. Their lenses and mirrors are often enormous and therefore enormously powerful.

Some modern telescopes don't even look like the ones most of us might look through. These devices, which must travel into space beyond the Earth's atmosphere, can sense light and other **radiation** that's invisible to unaided human eyes. These sensitive instruments, such as the Infrared Space Observatory and the Hubble Space Telescope (pictured here), have shown scientists such wonders as the dust in space between galaxies and the birth and death of stars.

SEARCH LIGHT

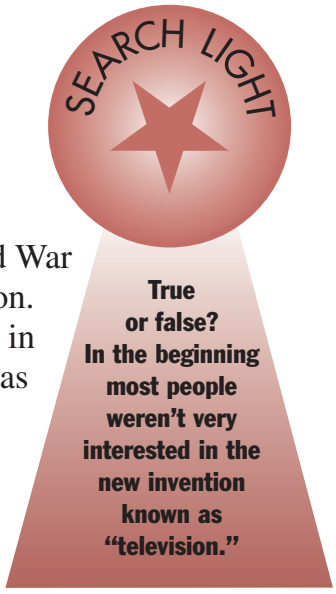
Find and correct the error in the following sentence: Telescopes make faraway objects seem faster than they look with the unaided eye.

LEARN MORE! READ THESE ARTICLES…
ASTRONOMY (VOLUME 2) • GALILEO (VOLUME 4) • SATURN (VOLUME 2)

Behind the Hubble Space Telescope, you can see the Earth's atmosphere outlined.
NASA

Answer: Telescopes make faraway objects seem closer than they look with the unaided eye.

The World in a Box



The British Broadcasting Corporation (BBC) offered the first public television (TV) programming in 1936. But World War II stalled the development and popularity of the new invention.

In the United States TV didn't find much of an audience in the beginning. People preferred radio programs. Early TV was black and white, the pictures were small and fuzzy, and the sound wasn't great. But when the 1947 World Series of baseball was shown on TV, many Americans watched and afterward decided to buy TV sets.

The first TV programs—mostly comedies, variety shows, soap operas, and dramas—were based on popular radio shows. Gradually, detective programs, game shows, sports programs, newscasts, movies, and children's shows joined the lineup.

TV networks—groups of stations linked together as a business—made money from TV programs by selling advertising time to various companies. Most networks still make their money from commercials.

Broadcast TV works much as radio does. Special equipment changes images and sound into electrical signals. These signals are sent through the air and received by individual **antennas**, which pass the signals on to the TV sets. There they are read and changed back into images and sound.

Color TV became popular about the mid-1960s, cable TV in the '70s, videocassette recorders (VCRs) in the '80s, and digital videodiscs (DVDs) in the '90s. That **decade** also saw the arrival of digital high-definition TV, with sharper, clearer images and better sound.

Earth-orbiting satellites have improved TV broadcasting. In fact, the only things that haven't changed much are the kinds of shows people watch and enjoy!

LEARN MORE! READ THESE ARTICLES…
JIM HENSON (VOLUME 3) • RADIO (VOLUME 2) • THEATER (VOLUME 3)



Big-screen TV and video recording have made the viewing experience very different from TV's early days. Now we can watch ourselves on TV!
© Jose Luis Pelaez, Inc./Corbis

DID YOU KNOW?

All the first television shows were live—that is, you saw everything as it was happening. And if people made mistakes, you saw those too.

Answer: TRUE. Early TV had poor picture and sound quality, and people preferred to listen to radio and use their imaginations.

Before There Were Automobiles

Long ago most people had to walk wherever they wanted to go on land. Later, when large animals began to be **domesticated**, some people rode camels, horses, donkeys, oxen, and even elephants.

Then came the discovery of wheels. The people of Mesopotamia (now in Iraq) built wheeled carts nearly 5,000 years ago. But so far the earliest cart that has actually been found is one made later than those in Mesopotamia, by people in ancient Rome. It was simply a flat board. At first, people themselves pulled carts. Later, they trained animals to do this.

As people used more and more carts, they had to make roads on which the carts could travel easily. In Europe and North America carts developed into great covered wagons and then into stagecoaches. Pulled by four or six fast horses, stagecoaches first bounced and rolled along the roads in the mid-1600s. They became important public transportation during the 19th century.

It wasn't until the steam engine was invented that a better means of transportation developed—and that was the train. Steam **locomotives** used steam pressure from boiling water to turn their wheels.



DID YOU KNOW?
In the days of stagecoaches a 350-mile journey could take 36 hours and 24 changes of horses. Today it would take less than six hours and one tank of gas.

The first passenger train service began in England in 1825. Soon trains were rushing hundreds of thousands of people wherever iron tracks had been laid.

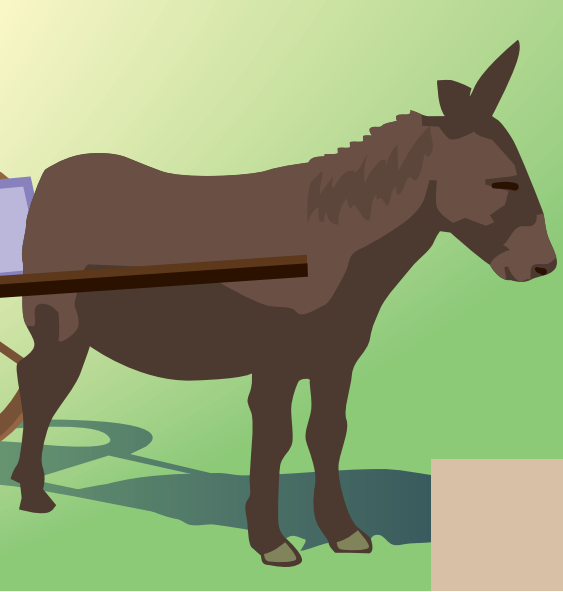
The first automobiles were not built until the late 1890s. Some of the earliest were made in the United States and England, though they were slow and broke down a lot. They looked much like carts with fancy wheels. What most of us recognize as a car wouldn't come along for several more years.

LEARN MORE! READ THESE ARTICLES…
AUTOMOBILES (VOLUME 2) • CAMELS (VOLUME 12) • SPACECRAFT (VOLUME 2)



SEARCH LIGHT

What were the first things people used to get around?
a) their own feet
b) carts
c) donkeys





Answer: a) their own feet

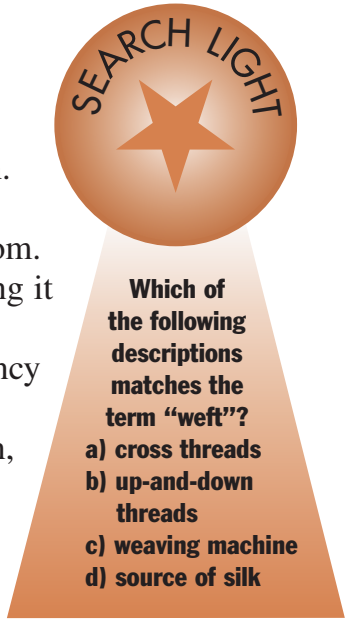
Making Cloth

"Shu-dul-ig! Shu-dul-og!"

The shuttle in this weaver's left hand flies back and forth, carrying its thread.

A shuttle is part of a loom, a machine that makes cloth. Cloth is composed of threads crisscrossing each other.

"Warp" threads run up and down lengthwise on the loom. The shuttle carries the "weft" thread back and forth, passing it over and under the sets of warp thread. This is how simple cloth like muslin is woven. Making patterned and other fancy cloth is a more complex weaving process.



The threads for weaving cloth are made of fibers—thin, wispy strands often tangled together. Some fibers come from animals, some from plants, and some from synthetic (artificial) sources. Fine silk fibers come from the cocoon of a silkworm—actually the caterpillar stage of a moth. People learned to spin fibers into threads a very long time ago.

The most commonly used animal fiber is wool. Most wool is the hair of sheep, but some comes from goats, camels, llamas, and several other animals. Woolen cloth keeps you nice and warm when it's cold outside.

Cotton is a plant fiber. Some cotton fibers are so thin that just one pound of them can be spun into a thread 100 miles long! Work clothing and summer clothes are often made of cotton.

Fine silk cloth is shiny and smooth. It costs more than cotton because silkworms need a lot of care. And each silkworm makes only a small amount of silk.

Today weaving by hand has become mostly a specialized **craft**. As with much other manufacturing, modern cloth is usually produced by machines.

LEARN MORE! READ THESE ARTICLES…
COMPUTERS (VOLUME 2) • COTTON (VOLUME 10) • SHEEP (VOLUME 12)

© Dave Bartruff/Corbis



DID YOU KNOW?

The strongest piece of weaving anywhere is a spiderweb. One strand of spider silk is thought to be stronger than an equal-sized piece of steel.

Answer: a) cross threads

GLOSSARY

absorb to soak up

agriculture farming

antenna dish, rod, or wire for sending or receiving radio waves or other energy

artificial made by human beings rather than occurring in nature

atmosphere the envelope of gases that surrounds a planet

axis imaginary pole going through the center of the Earth or other heavenly body

bacterium (plural: bacteria) tiny one-celled organism too small to see with the unaided eye

broadcast to send out a program or message to a public group, usually by radio, television, or the Internet

canoe a small, light, and narrow boat having sharp front and back ends and moved by paddling

cartridge sealed container

chemical one of the combined substances making up living and nonliving things

comet chunk of frozen space debris that has a shiny tail and orbits the Sun

convert to change

conveyor belt a loop of material that can move objects from one worker or workstation to the next for the steps needed to make a product

core central part

countless too many to count

craft (noun) a skill or trade; (verb) to make skillfully, usually by hand

crater bowl-shaped dent in a surface

cratered marked with bowl-shaped dents

data factual information or details

debris trash or fragments

decade ten-year period

device tool or piece of equipment

devise to figure out, invent, or plan

diameter the length of a straight line through the center of an object

domesticate to tame

drawback problem or bad side

dwindle to become smaller or less

economical cheap and efficient

edit to cut down to a different or shorter version

element in science, one of the simplest substances that make up all matter

expanse large area

fix in photography, to make an image lasting

fuse an electrical safety device

gear a toothed wheel that works as part of a machine

generate to create or be the cause of

gesture movement of the body, arms, hands, or legs to express feelings or thoughts

glider a soaring aircraft similar to an airplane but without an engine

gravity force that attracts objects to each other and keeps planets circling the Sun

harness to control, much as an animal may be hitched up and controlled by its harness

hull hard outer shell of a seed or a boat or ship

impaired damaged or limited

imperial having to do with an emperor or empire

implant (noun) object inserted within living tissue; (verb) to insert securely or deeply

indivisible unable to be divided

investigate to look into or study

kerosene fuel for lanterns

laboratory place where science tests and experiments are done

lens (plural: lenses) curved piece of glass that concentrates rays of light

locomotive railway vehicle that carries the engine that moves train cars along

lunar having to do with the Moon

magnify to make something appear larger

manufacture to make from raw materials, by hand or by machine

massive heavy or large

matter physical substance or material from which something is made

meteorite a mass of material from space that reaches the Earth's surface

method way or system

microphone a device that changes sound to electrical signals, usually in order to record or send sound

mineral naturally occurring nonliving substance

module independent unit made to be part of a larger structure

molecules the smallest possible pieces of a particular substance

oral having to do with the mouth

orbit (verb) to travel around an object; (noun) an object's path around another object

paralyze to make someone or something unable to move

particle tiny bit

patent (verb) to legally protect the rights to make, use, or sell an invention; (noun) document that legally protects the ownership and use of an invention

potential possible

propeller a device that uses blades that fan outward from a central hub to propel (move) a vehicle, such as a boat or an airplane

pulp mashed-up pasty glop; fleshy material of a soft fruit

radiation energy sent out in the form of rays, waves, or particles

ray beam

recycle to pass used or useless material through various changes in order to create new useful products from it

refinery factory that treats crude petroleum and separates it into different parts

ritual a formal custom or ceremony, often religious

rotate to spin or turn

rotation spinning or turning

satellite natural or man-made object that circles another object, usually a planet

scholarship an award of money to help pay for a person's education

sensitive easily affected

solar having to do with the Sun

space shuttle rocket-launched airplane-like vehicle that transports people to and from space

sphere ball or globe

spool reel for winding lengths of materials such as tape, thread, or wire

standard commonly accepted amount or number

storage space to keep or hold onto things

submerge to put under water

superior better than

surgery a medical procedure or operation for treating a disease or condition

technology the theories and discoveries of science put into practice in actual actions, machines, and processes

telegraph a device for sending coded messages over long distances by using electrical signals

traditional usual; well known because of custom or longtime use

transmitter a device that sends messages or code

vehicle a device or machine used to carry something



I N D E X

airplanes, *also called* aeroplanes *page* **71**

antibiotics (medicines)
medicine *page* **60**

assembly line (industry)
automobiles *page* **72**

asteroids, *also called* minor planets *page* **22**

astronauts, *also called* cosmonauts (space explorers) *page* **19**
gravity *page* **50**
Moon *page* **27,** photograph *page* **27**

astronomy (science) *page* **7**
LEARN MORE *look under* telescopes

atomic bombs (weapons)
nuclear energy *page* **62**

atoms (matter) *page* **46**
nuclear energy *page* **62**

automobiles, *also called* cars, *or* motorcars *page* **72**
transportation *page* **107**

battery (electricity)
energy *page* **48**

big bang theory (science)
universe *page* **8**

black holes (objects in space)
stars *page* **10**

books
printing *page* **90**

Braille (writing) *page* **75**

calendars *page* **77**

cars: *look under* automobiles

comets *page* **25**
solar system *page* **21**

computers *page* **79**
LEARN MORE *look under* Internet and the World Wide Web

constellations (groups of stars)
galaxies *page* **13**

cosmonauts (space explorers): *look under* astronauts

deafness, *also called* hearing impairment *page* **96**
Did you know? *page* **101**

Earth (planet)
calendars *page* **77**
Did you know? *page* **16**
solar system illustration *page* **20**

electricity *page* **56**
energy *page* **48**
nuclear energy *page* **62**
thermal power *page* **64**
water power *page* **67**
wind power *page* **69,** photograph *page* **68**

electrons (atoms)
atoms *page* **46,** illustration *page* **46**

energy *page* **48**
radio *page* **93**
LEARN MORE *look under* electricity; nuclear energy; oil; temperatures; thermal power; water power; wind power

extraterrestrial life *page* **14**
Did you know? *page* **28**

films: *look under* cinema; motion pictures

flight
airplanes *page* **71**

galaxies *page* **13**
universe *page* **9**
LEARN MORE *look under* solar system; stars

gases (state of matter): *look under* liquids, solids, and gases

gasoline (fuel)
oil *page* **84**

geothermal energy
thermal power *page* **64**

gravity *page* **50**
Did you know? *page* **16**
Moon *page* **27**
solar system *page* **21**

hearing aids
deafness *page* **96**

Hubble Space Telescope
Pluto photograph *page* **45**
telescopes *page* **103,** photograph *page* **102**
Venus *page* **33**

hydroelectric power
water power *page* **67**

International Space Station
spacecraft *page* **16,** photograph *page* **17**

Internet and the World Wide Web (computer networks) *page* **80**

Jupiter (planet) *page* **36**
Did you know? *page* **19**
solar system illustration *page* **20**

kinetic energy (physics)
energy *page* **48**

lipreading
deafness *page* **96**

liquids, solids, and gases (states of matter) *page* **52**
LEARN MORE *look under* atoms

looms (weaving machines)
Did you know? *page* **79**
weaving *page* **108,** photograph *page* **109**

magnets
electricity *page* **56**

Mars (planet) *page* **35**
Did you know? *page* **19**
solar system illustration *page* **20**

matter (science)
atoms *page* **46**
liquids, solids, and gases *page* **52**

measurement *page* **59**
LEARN MORE *look under* calendars

medicine (science) *page* **60**
nuclear energy *page* **62**

Mercury (planet) *page* **30**
solar system illustration *page* **20**

metric system (measurement system)
measurement *page* **59**

Milky Way Galaxy
galaxies *page* **13**

minor planets: *look under* asteroids

molecules
atoms *page* **46**

Moon (moon of Earth) *page* **27**
astronauts *page* **19**

calendars *page* **77**
gravity *page* **50**

motion pictures *page* **82**
LEARN MORE *look under* photography

motorcars: *look under* automobiles

Neptune (planet) *page* **42**
solar system illustration *page* **20**

neutrons (science)
atoms *page* **46,** illustration *page* **46**

nuclear energy *page* **62**
LEARN MORE *look under* atoms; energy; thermal power; water power; wind power

nucleus (atoms)
atoms *page* **46,** illustration *page* **46**
nuclear energy *page* **62**

oil, *also called* petroleum *page* **84**

outer space: *look under* space

paper *page* **87**

penicillin (drug)
medicine *page* **60**

personal computers, *also called* PC
computers *page* **79**

petroleum: *look under* oil

photography *page* **88**
motion pictures *page* **82**

planets *page* **28**
solar system *page* **21**
LEARN MORE *look under* asteroids; Earth; Jupiter; Mars; Mercury; Neptune; Pluto; Saturn; Uranus; Venus

Pluto (dwarf planet) *page* **45**
Did you know? *page* **7**
planets *page* **28**
solar system *page* **21,** illustration *page* **20**

printing *page* **90**

programs (computer science)
computers *page* **79**

protons (atoms)
atoms *page* **46,** illustration *page* **46**

radiation (physics)
nuclear energy *page* **62**

radio *page* **93**
Did you know? *page* **80**
television *page* **104**

red planet: *look under* Mars

rockets
astronauts *page* **19,** photograph *page* **18**

satellites (objects in space)
spacecraft *page* **16**
television *page* **104**

Saturn (planet) *page* **39**
solar system illustration *page* **20**

ships *page* **94**
LEARN MORE *look under* submarines

sign language
deafness *page* **96,** photograph *page* **97**

software (computer science)
computers *page* **79**

solar energy
thermal power *page* **64**

solar system *page* **21**
LEARN MORE *look under* asteroids; comets; Earth; Jupiter; Mars; Mercury; Neptune; planets; Pluto; Saturn; Uranus; Venus

solids (state of matter): *look under* liquids, solids, and gases

space, *also called* outer space
astronauts *page* **19**
gravity *page* **50**
universe *page* **8**

space shuttles
astronauts *page* **19,** photograph *page* **18**

spacecraft *page* **16**
Mars *page* **35**
Mercury *page* **30,** photograph *page* **30**
Moon *page* **27**
Neptune *page* **42**
space shuttle launch photograph *page* **18**
Uranus *page* **40,** photograph *page* **40**
Venus *page* **33,** photograph *page* **33**

stars *page* **10**
Did you know? *page* **28**
telescopes *page* **103**
LEARN MORE *look under* galaxies

steam
ships *page* **95**
thermal power *page* **64**
transportation *page* **106**

submarines (ships) *page* **99**
nuclear energy *page* **62**
LEARN MORE *look under* ships

Sun
Did you know? *page* **62**
planets *page* **28**
solar system *page* **21**
stars *page* **10**
thermal power *page* **64**

supernova (star phase)
stars *page* **10**

telephones *page* **100**
radio *page* **93**

telescopes *page* **103**
astronomy *page* **7**

television, *also called* TV *page* **104**
Did you know? *page* **80**
radio *page* **93**

temperatures *page* **54**
energy *page* **48**
liquids, solids, and gases *page* **52**
LEARN MORE *look under* thermal power

thermal power *page* **64**
energy *page* **48**
LEARN MORE *look under* nuclear energy; temperatures; water power; wind power

thermometers (measuring instruments)
temperatures *page* **55**

transportation *page* **106**
LEARN MORE *look under* airplanes; automobiles; ships; spacecraft

TV (broadcasting): *look under* television

UFOs, *also called* unidentified flying objects
extraterrestrial life *page* **15**

universe *page* **8**
LEARN MORE *look under* astronomy

Uranus, *also called* Georgium Sidus (planet) *page* **40**
solar system illustration *page* **20**

Venus (planet) *page* **33**
solar system illustration *page* **20**

water power *page* **67**
LEARN MORE *look under* nuclear energy; thermal power; wind power

weaving (cloth production) *page* **108**
Did you know? *page* **79**

wind power *page* **69**
LEARN MORE *look under* nuclear energy; thermal power; water power

World Wide Web: *look under* Internet and the World Wide Web

Learn about the universe and the world's greatest inventions in PHYSICAL SCIENCES AND TECHNOLOGY


Volume 1: **The Earth and Earth Sciences**


Volume 2: **Physical Sciences and Technology**


Volume 3: **The Arts**


Volume 4: **People in History**


Volume 5: **Folklore and Religions**


Volume 6: **Europe**


Volume 7: **Asia, Australia, and New Zealand**


Volume 8: **Africa**


Volume 9: **The Americas**


Volume 10: **Plants**


Volume 11: **Birds, Insects, Reptiles, and Aquatic Life**


Volume 12: **Mammals**


Volume 13: **Reference Guide and Index**

ENCYCLOPÆDIA
Britannica®

My First Britannica



The Arts

3

My First Britannica

The Arts

3



Chicago London New Delhi Paris Seoul Sydney Taipei Tokyo

© 2008 by Encyclopædia Britannica, Inc.

International Standard Book Number: 978-1-59339-476-9 (set)

No part of this work may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, recording, or by any information storage and retrieval system, without permission in writing from the publisher.

My First Britannica:
Volume 3: The Arts 2008

Britannica.com may be accessed on the Internet at http://www.britannica.com.

Encyclopædia Britannica, Britannica, and the Thistle logo are registered trademarks of Encyclopædia Britannica, Inc.

The Arts

TABLE OF CONTENTS

INTRODUCTION 5

Visual Arts

Folk Arts and Crafts: Traditions of Creativity 6
Painting: Art of the Mind's Eye 8
Sculpture: The 3-D Art 10
Architecture: The Art of Building 12

ARTISTS

Hassan Fathy: Culture-Conscious Architect 14
Hiroshige: Artist of the Floating World 16
Frida Kahlo: The Brilliant Colors of Mexico 18
Michelangelo: Genius of European Art 20
Diego Rivera: Murals of Mexico 22
Auguste Rodin: The Modern Michelangelo 24
Vincent van Gogh: Sunflowers and Starry Nights 26
Xia Gui: Lonely Landscapes 28

Music

Folk Music: Music of Everyday Life 30
Popular Music: Music of an Era 32
Jazz: The Music of Change 34
Classical Music: A Very Formal Music 36

MUSICIANS

Louis Armstrong: Satchmo—Jazz Superstar 38
Ludwig van Beethoven: Living for Music 40
Nusrat Fateh Ali Khan: Center Stage of *Qawwali* 42
Ladysmith Black Mambazo: The South African Sound . . . 44
Carlos Santana: Rock Guitarist 46
Ravi Shankar: Music at His Fingertips 48

Literature

Literature: Writing for the Ages 50

WRITERS

Basho: *Haiku* Master 52
Jorge Luis Borges: Creator of Fantastical Fictions 54
Gwendolyn Brooks: Prized Poet of Illinois 56
Lewis Carroll: The Man Who Created Wonderland 58
Emily Dickinson: A Life of Letters and Literature 60
Wole Soyinka: The Nobel Laureate 62
Rabindranath Tagore: Poet Laureate of India 64
Jules Verne: Journey to Everywhere 66
Kath Walker: Aboriginal Poet 68

Performing Arts

Dance: Moving to Rhythms 70
Theater: Life Re-created on a Stage 72
Cinema: Dreams on the Big Screen 74
Opera: A Grand Musical Play 76

PERFORMERS AND DIRECTORS

Alvin Ailey: Enriching American Dance 78
Sarah Bernhardt: "The Divine Sarah" 80
Judi Dench: A Commanding Actress 82
Jim Henson: Muppet Master 84
Akira Kurosawa: A Vision in Motion 86
Satyajit Ray: Indian Cinema for the World 88
Maria Tallchief: America's Prima Ballerina 90
Kiri Te Kanawa: New Zealand's Opera Star 92

GLOSSARY 94

INDEX 95



Kermit the Frog

© & TM 2003 The Jim Henson Company. THE MUPPET SHOW mark & logo, MUPPET, MUPPETS, KERMIT, characters and elements are trademarks of The Jim Henson Company. All Rights Reserved.

Cover photos (top): "The Sunflower," by Vincent Van Gogh, © Christie's Images/Corbis; (center): traditional Peking opera performance, © Marc Garanger/Corbis; (bottom): Kermit the Frog, © & TM 2003 The Jim Henson Company. THE MUPPET SHOW mark & logo, MUPPET, MUPPETS, KERMIT, characters and elements are trademarks of The Jim Henson Company. All Rights Reserved.

The Arts

INTRODUCTION

Where did jazz come from? When did films begin to talk?
What do you call a musical play?
Who was Basho and what's a *haiku*?

In Volume 3, ***The Arts,*** you'll discover answers to these questions and many more. Through pictures, articles, and fun facts, you'll learn about the many kinds of art and meet some of the greatest artists of yesterday and today.

To help you on your journey, we've provided the following guideposts in *The Arts*:

■ **Subject Tabs—**The colored box in the upper corner of each right-hand page will quickly tell you the article subject.

■ **Search Lights—**Try these mini-quizzes before and after you read the article and see how much—*and how quickly*—you can learn. You can even make this a game with a reading partner. (Answers are upside down at the bottom of one of the pages.)

■ **Did You Know?—**Check out these fun facts about the article subject. With these surprising "factoids," you can entertain your friends, impress your teachers, and amaze your parents.

■ **Picture Captions—**Read the captions that go with the photos. They provide useful information about the article subject.

■ **Vocabulary—**New or difficult words are in **bold type**. You'll find them explained in the Glossary at the back of this volume. And there's a complete listing of all Glossary terms in the set in the ***Reference Guide and Index***, Volume 13.

■ **Learn More!—**Follow these pointers to related articles throughout the set.

And don't forget: If you're not sure where to start, where you saw something before, or where to go next, the Index at the back of this volume and the ***Reference Guide and Index*** (Volume 13) will point the way.

Have a great trip!

Traditions of Creativity

Most of us have been to museums that display art by famous painters and sculptors. But another sort of artwork is common to almost every culture—the arts and crafts of nonfamous but skilled people who carry on the traditions of their ancestors.

Folk art has its name because it's made by the "folk," or common people, rather than by professional artists. Farmers, shepherds, fisherfolk, and tradespeople who live away from cities are often the creators of folk art. Some are very skilled. European sailors used to carve beautiful scrimshaw, or delicately engraved pieces of whalebone or **ivory**. Today people in India, Ghana, Indonesia, and other places make beautiful fabrics in patterns unique to their regions.



Hand-painted eggs from Ukraine, in eastern Europe.
© Craig Aurness/Corbis

In less-**industrialized** countries in Asia, Africa, and Latin America, so many folk arts and crafts are exported that craftspeople can often make a living at their art. Many of these countries support their craftspeople, usually by helping them to sell their work.

Folk artists typically produce useful things such as furniture, toys, jewelry, clothing, musical instruments, weapons, religious symbols, and household tools. They craft these objects from easy-to-find or **recycled** materials such as wire, wood, and natural **fibers**. Some people even make food into art.

Every region of the world has produced folk art in unique styles. Folk art frequently reflects the traditional wisdom, religious beliefs, and **superstitions** of a society. The art often focuses on important yet common events—births, marriages, funerals, and holidays.

SEARCH LIGHT

What material is used to make scrimshaw?

LEARN MORE! READ THESE ARTICLES…
FOLK MUSIC (VOLUME 3) • MYTHS AND LEGENDS, FOLKTALES AND FABLES (VOLUME 5) • SCULPTURE (VOLUME 3)

DID YOU KNOW?

As part of the Mexican festival called the Day of the Dead—el Día de los Muertos—sugar is formed into skeletons, coffins, and angels. These tasty pieces of folk art often serve as toys before they are eaten!



Native American Hopi artists carve kachina dolls, representing spirits of ancestors. Children learn about the kachina spirits while they play with the dolls.
© Tom Bean/Corbis

Answer: Scrimshaw uses whalebone or ivory as a surface for carvings.

Art of the Mind's Eye

A painting is a two-dimensional, or flat, work of visual art. It is created by applying some form of color or paint to a surface.

Some artists paint what they see around them. Others paint pictures that they see in their imagination. The idea on which a painting is based is called its "theme."

Some paintings have a religious theme. For example, one of the most famous paintings in the world, Leonardo da Vinci's "Last Supper," shows Jesus Christ sharing his final meal with his disciples.

Other paintings show famous legends and events in history. Or they show **landscapes**, animals, or even scenes from daily life. Many Chinese scroll paintings take landscapes and nature as their themes.

Artists also paint portraits, or pictures of people. Sometimes they paint pictures of themselves. Such paintings are called "self-portraits."

© Danny Lehman/Corbis





© Ariel Skelley/Corbis

(Left) Navajo man making a sand painting. (Right) Classroom artist-in-training.

Some painters express ideas and feelings through lines, shapes, colors, and textures that don't look like anything you could recognize. Such paintings are called "**abstract** paintings."

Painters use many materials in their works. These include oil paints, **acrylics,** watercolors, **pastels**, inks, dyes, and enamel paints. Painters use different tools to apply these colors, like brushes of various sizes and flexible tools called "palette knives."

You probably know that many paintings are made on canvas or paper. But paintings can also be applied to different surfaces. Murals are paintings on walls, both indoors and outdoors. Frescoes are wall paintings made on wet plaster. And some Native Americans paint without paint in an art known as "sand painting."

In Islamic countries and in East Asia, especially Japan, Korea, and China, calligraphy—the art of beautiful writing—is a skill equal to painting. Calligraphy is usually done in ink, using a brush.

LEARN MORE! READ THESE ARTICLES…
VINCENT VAN GOGH (VOLUME 3) • PABLO PICASSO (VOLUME 4)
XIA GUI (VOLUME 3)

DID YOU KNOW?

Early humans made paintings on the walls of caves some 15,000 years ago. Some of those paintings can still be seen in France, Spain, and other parts of Europe.



A young artist works on a painting in a public exhibit at the Palace of Fine Arts in Santiago, Chile.
© Pablo Corral V/Corbis

SEARCH LIGHT

Find and correct the error in the following sentence: Calligraphy is a self-portrait done in ink.

Answer: Calligraphy is beautiful writing done in ink.



DID YOU KNOW?

Mount Rushmore National Memorial, in South Dakota, is a huge hillside carving by Gutzon Borglum of the faces of four U.S. presidents. If those presidents' whole bodies were carved too, they'd stand over 450 feet tall. Abraham Lincoln's nose by itself is 21 feet long.

The 3-D Art

SEARCH LIGHT

Fill in the blanks: Sculpture is different from painting because while a painting is _____, a sculpture is _____-_____.

Sculpture is a **three-dimensional** visual art. Paintings, drawings, and photographs are all two-dimensional, or flat. Sculptures are most often shaped by carving, molding, or **welding** materials. Some are formed by making a cast—that is, by pouring a liquid in a mold and letting it harden.



Classical bronze sculpture by Donatello of Italian military figure Gattamelata.
© Elio Ciol/Corbis

Sculpture, like other arts, is often made to express thoughts or feelings. People who look at it might respond with thoughts or feelings of their own. Because it can have shape and **texture**, sculpture may appeal to our sense of touch.

Some sculptures are realistic. Until the middle of the 20th century, most sculpture was meant to look like some person or thing. The giant stone faces on Easter Island, like much traditional sculpture, may have been meant to honor gods or heroes. Other famous realistic sculptures include Michelangelo's "David" and Auguste Rodin's "The Thinker."

Some modern sculptures may be **abstract**. This means they only hint at an object or an idea. They may not look like people or things you would recognize. These sculptures try to communicate a pure feeling or idea.

Sculptures come in all sizes, shapes, textures, and materials. Sculptors may use soft materials such as clay, wax, or wood or harder materials such as stone or metal. Sometimes the materials aren't even meant to last. One artist makes sculptures out of milk!

The modern sculptor Alexander Calder made sculptures that hang in the air. He called these "mobiles," which means "moving things." Another modern sculptor, named Christo, makes sculptures by wrapping such things as bridges, buildings, and even small islands in fabric and plastic.

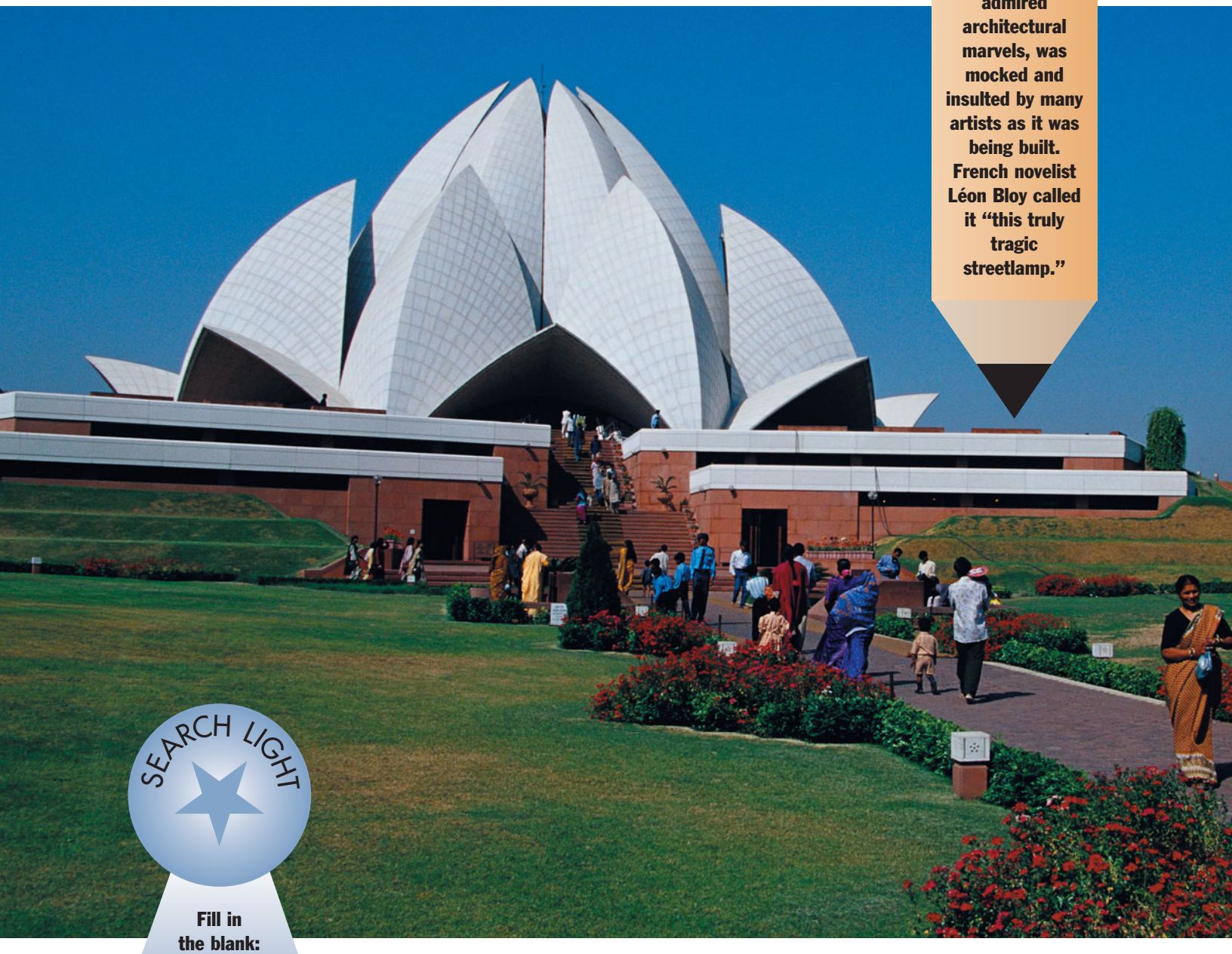
LEARN MORE! READ THESE ARTICLES…
FOLK ARTS AND CRAFTS (VOLUME 3) • MICHELANGELO (VOLUME 3)
AUGUSTE RODIN (VOLUME 3)

Modern sculpture, such as Claes Oldenburg's "Clothespin" (in Philadelphia, Pennsylvania, U.S.), often places common objects in unusual situations to make us see and think about them differently.
© Robert Holmes/Corbis

Answer: Sculpture is different from painting because while a painting is flat, a sculpture is three-dimensional.

DID YOU KNOW?

The Eiffel Tower in Paris, one of the world's most admired architectural marvels, was mocked and insulted by many artists as it was being built. French novelist Léon Bloy called it "this truly tragic streetlamp."



The architect of the Baha'i House of Worship in India designed it to look like India's national flower. It has thus come to be called the Lotus Temple. Fine architecture is in tune with its cultural environment.
© Dallas and John Heaton/Corbis

SEARCH LIGHT

Fill in the blank: Architecture is the art of _____.

The Art of Building

Thousands of years ago, early human beings lived in caves or other natural formations. As time passed, people learned new skills, developed new tools, and were able to build simple shelters.

As societies developed, they needed more kinds of buildings. Soon forts, barns, schools, bridges, tombs, and temples were being built, using a variety of materials. Gradually, creating buildings became an activity for experts—an art and occupation that came to be known as "architecture."



The Cathedral of Notre-Dame de Paris (begun in 1163), an example of Gothic architecture.
© Bill Ross/Corbis

Today architecture is a **refined** art requiring a lot of training, years of practice, and plenty of talent. An architect's work is to imagine and plan a building and then to supervise its construction.

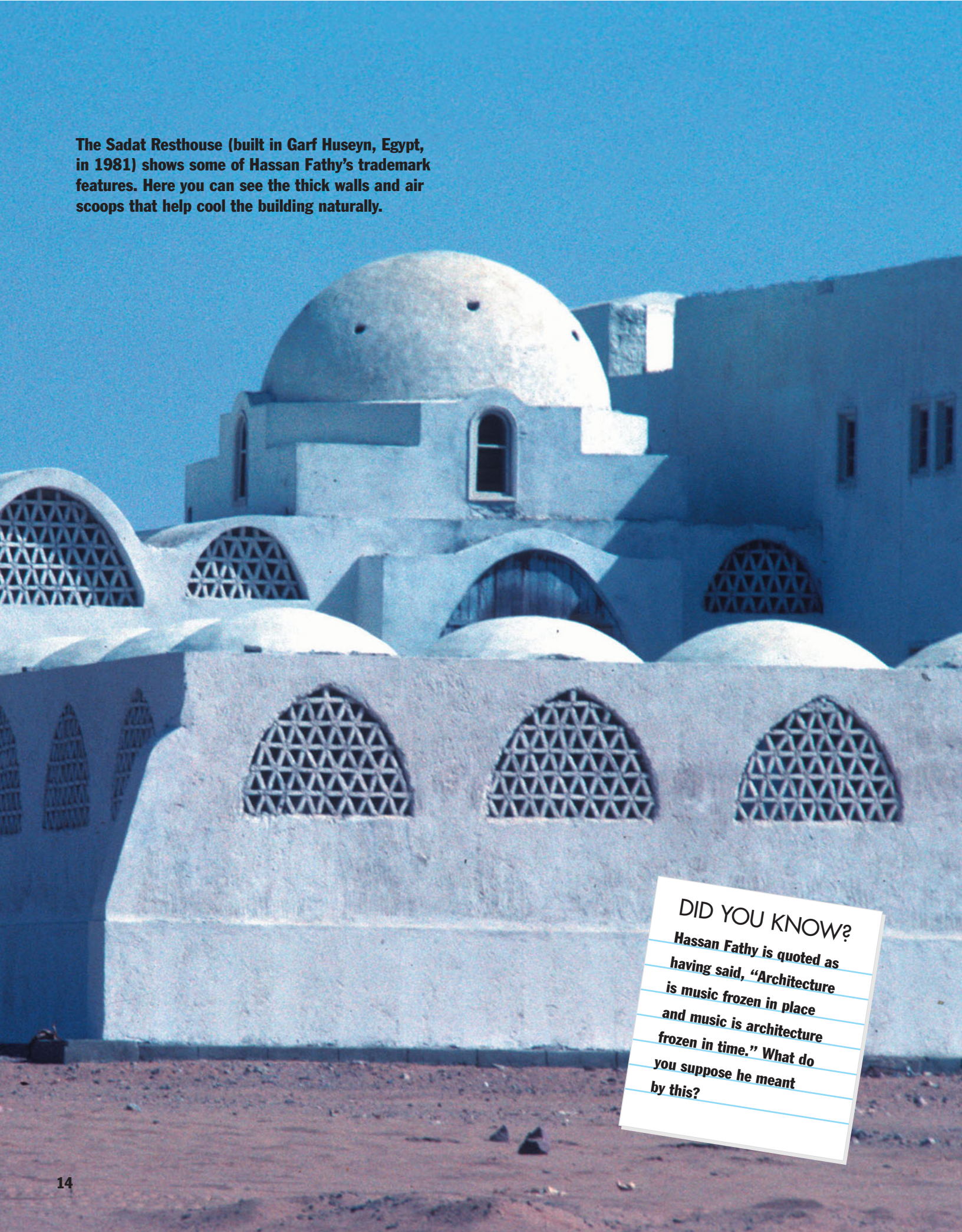
The architect must keep many things in mind. For example, what is the building going to be used for and by whom? Where will it be located? What would be the best materials to use? How much money will construction cost?

Architects also try to create buildings that people like to look at as well as to live, work, and play in. And changing styles affect architecture just as happens in other arts. The next time you see or walk around a city, notice the various styles of buildings. You'll find many differences between those designed recently and those of even 50 or 100 years ago. Different countries and cultures also produce different styles of architecture.

People today are still amazed at the buildings created by long-ago architects. The **majestic** pyramids in Egypt, the Great Wall of China, the temple at Angkor Wat in Cambodia, and the Taj Mahal in India are some of the architectural wonders you can study and visit.

LEARN MORE! READ THESE ARTICLES…
HASSAN FATHY (VOLUME 3) • I.M. PEI (VOLUME 4) • TAJ MAHAL (VOLUME 7)

Answer: Architecture is the art of building.



The Sadat Resthouse (built in Garf Huseyn, Egypt, in 1981) shows some of Hassan Fathy's trademark features. Here you can see the thick walls and air scoops that help cool the building naturally.

DID YOU KNOW?

Hassan Fathy is quoted as having said, "Architecture is music frozen in place and music is architecture frozen in time." What do you suppose he meant by this?

Culture-Conscious Architect

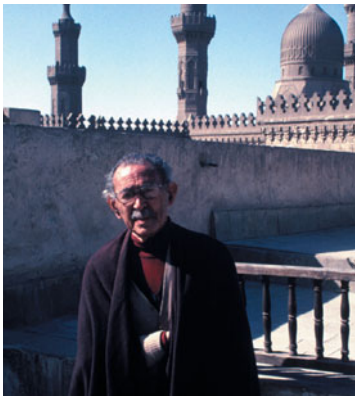
Hassan Fathy is famous as a **humanitarian** architect. He built homes and buildings that put people's needs first. Fathy was born in 1900 in Alexandria, Egypt. He studied there and began his career in Egypt.

Fathy's goal was to build **affordable** housing for local Egyptian people. He felt that many European building methods and designs that had come into his country weren't right for it. He thought houses should be built from local materials, according to local designs, and with traditional methods. By building this way, he lowered the cost of his houses and respected the culture of the area as well. In addition, traditional methods and materials tended to suit the local climate best.

SEARCH LIGHT

The New Gourna Village was built of
a) sticks.
b) straw.
c) mud.

Because Egypt is a very hot country, it is important to make houses as cool as possible. Fathy's buildings often had thick walls (to keep out heat) surrounding interior courtyards. Air scoops on the roofs caught winds from the desert and funneled them down through the buildings. By these natural methods, Fathy managed to keep the houses cool inside.



Hassan Fathy.
Courtesy of the Aga Khan Trust for Culture

One of Fathy's most famous creations was the New Gourna Village near Luxor, Egypt. The original village was near the **archaeological** digs of ancient Luxor and had to be relocated. Fathy trained the local people in the ancient tradition of mud-brick construction. The people then built themselves new homes that were almost entirely of mud bricks and that kept all the good features of their former homes.

Fathy died in 1989, but his work has inspired many young architects in the Middle East. He promoted ideas that adapted traditional styles and methods to the needs of the present day.

LEARN MORE! READ THESE ARTICLES…
ARCHITECTURE (VOLUME 3) • EGYPT (VOLUME 8) • I.M. PEI (VOLUME 4)

Answer: c) mud.

Courtesy of the Aga Khan Trust for Culture



This painting, called "Festival Day," is from Hiroshige's Tokaido Road series. In it, travelers climb to a restaurant perched on a scenic overlook.

© Asian Art & Archaeology, Inc./Corbis

Artist of the Floating World

Ando Hiroshige was a Japanese painter and printmaker who was especially famous for his pictures of landscapes. Hiroshige was one of the *ukiyo-e* painters. "*Ukiyo-e*" is a Japanese term that means "pictures of the floating world."

Hiroshige was born in 1797. When he was 14, Hiroshige joined the school of the *ukiyo-e* master Utagawa Toyohiro. He graduated as an artist from the school at only 15. His first work was published six years later, in 1818.

Hiroshige probably created more than 5,000 **prints** during his lifetime. His life as an artist was divided into three stages. The first stage was when he was a student. He followed the style of his teachers in making prints of people. He drew girls, actors, and **samurai**, or warriors.

SEARCH LIGHT

What important road was the subject of many of Hiroshige's paintings?

During the second stage, Hiroshige made **landscape** designs and prints of birds and flowers. His best works during this time were 55 landscape prints called the "Fifty-three Stations of the Tokaido." Tokaido was a road that connected the Japanese cities of Osaka, Kyoto, and Edo (now called Tokyo). Along the road were 53 towns. Inns in each town provided lodging, food, and gifts for travelers. Hiroshige made one print for each town, as well as one each for the beginning of the highway and the arrival in Kyoto. Many people bought copies of the prints. Hiroshige was soon one of the most popular *ukiyo-e* artists of all time.

In the last stage of his work, Hiroshige illustrated more landscapes, some empty and some with people in them. But he did far too much work, and his later work wasn't his best.

It has been estimated that Hiroshige created more than 5,000 prints. He knew how to create very simply and beautifully what he saw.

DID YOU KNOW?
The Tokaido Road had been in use for over 700 years when Hiroshige began to make pictures of it.

LEARN MORE! READ THESE ARTICLES…
BASHO (VOLUME 3) • JAPAN: MODERN NATION OF ANCIENT TRADITIONS (VOLUME 7) • XIA GUI (VOLUME 3)

Answer: Hiroshige was famous for his pictures of stops along the Tokaido Road.



SEARCH LIGHT

Frida Kahlo's most famous paintings were
a) murals.
b) self-portraits.
c) buses.

The Brilliant Colors of Mexico

Mexican painter Frida Kahlo's life was filled with struggles. But her dazzlingly colorful **self-portraits** reflect Kahlo's power and confidence in the face of her hardships.

When Kahlo was a child, she had polio, and the disease kept her right leg from growing properly. Then, when she was 18, Kahlo was in a terrible bus accident. For the rest of her life, she had many operations to try to correct both of these problems.

Kahlo began to paint while she was recovering from the bus accident. Her paintings were often dramatic self-portraits that showed Kahlo's powerful feelings about herself and the world she lived in. Their brilliant colors reflect Kahlo's strong attitude toward life.

Before the bus accident, Kahlo had met the famous Mexican painter Diego Rivera while he was painting a **mural** at her school. Later she showed Rivera some of her paintings, and he encouraged her to keep working at her art.

Kahlo and Rivera were married in 1929. They traveled to the United States, where Diego had received **commissions** for murals. Kahlo kept painting and met many important people of the time. The artist Pablo Picasso admired her work. And many of her well-known friends helped her show her paintings in Europe and America.

Kahlo's work was called "surrealistic" by some. Surrealism is a style of art that has a strange dreamlike quality. Kahlo, however, said that her paintings were the reality that she felt and that they spanned reality and dreams.

In the spring of 1953, Kahlo had the only exhibition of her work in Mexico. She died one year later. Today her house in Coyoacán is the Frida Kahlo Museum.

LEARN MORE! READ THESE ARTICLES…
MEXICO (VOLUME 9) • PAINTING (VOLUME 3)
DIEGO RIVERA (VOLUME 3)

DID YOU KNOW?
Kahlo was very proudly Mexican. She often wore very decorative Mexican jewelry and native clothing. Her hairstyle, piled high on her head, was also in the style of the people of the Mexican state of Oaxaca.

Frida Kahlo was the first Hispanic woman to be featured on a U.S. postage stamp. The stamp, seen here being unveiled, featured one of her famous self-portraits.
© AFP/Corbis

Answer: b) self-portraits.



Michelangelo's "David" is being cleaned and repaired. It is often considered the finest example of the Renaissance ideal. During the Renaissance ("Rebirth"), art and literature blossomed richly.

© AFP/Corbis

SEARCH LIGHT

David was the name of Michelangelo's
a) teacher.
b) student.
c) statue.

Genius of European Art

Once there was a small boy in Florence who loved to watch painters and sculptors at work. He wanted to be an artist, but his father did not like the idea. Little did the man know that his son Michelangelo would become one of the world's most famous artists.



© Stefano Bianchetti/Corbis

Michelangelo began training as an artist at age 13. He was so interested in his art that he often forgot to eat and slept on the floor beside his unfinished artwork. He refused help, even on big projects, so some works took years to complete. Many were never finished.

Michelangelo worked in Rome and Florence. In Rome he was **commissioned** to carve a Pietà. This is a marble statue showing the Virgin Mary supporting the dead Christ on her knees. The finished work, known as the "Madonna della Pietà," made him famous. And in Florence, Michelangelo spent two years working on a huge block of marble. From it he carved "David," one of the world's finest and best-known sculptures.



© Pizzoli Alberto—Corbis/Sygma

(Top) Portrait of Michelangelo. (Bottom) Michelangelo's frescoes on the Sistine Chapel ceiling and west wall (behind the altar).

Between 1508 and 1512 Michelangelo created his most famous work, the paintings on the ceiling of the Sistine Chapel in Rome's Vatican. He painted much of the ceiling while lying on his back in a tight cramped position. The **fresco** paintings of figures and events from the Bible are huge and splendid. The wall behind the altar **depicts** the Last Judgment of humanity by God.

Michelangelo was so admired that he became the first European artist whose life story was written during his own lifetime.

DID YOU KNOW?

Despite all the time that went into his artwork, Michelangelo found time to design buildings, write poems, and even create defensive structures for Florence.

LEARN MORE! READ THESE ARTICLES…
BIBLE (VOLUME 5) • SCULPTURE (VOLUME 3)
VATICAN CITY (VOLUME 6)

Answer: c) statue.



Murals of Mexico

When he was only 10 years old, Diego Rivera received a government scholarship to study art at the Academy of San Carlos in Mexico City. This would be the beginning of a brilliant art career.

Later, Rivera studied in Spain, and in 1909 he moved to Paris. There he became friends with important painters such as Pablo Picasso and Georges Braque. While in France, Rivera began using simple forms and bold colors in his painting.

DID YOU KNOW?
The owners of Rockefeller Center in New York City destroyed Rivera's mural there because it featured communist leader Vladimir I. Lenin. That mural would now be worth millions. Rivera later painted a copy in Mexico City.

Rivera returned to Mexico in 1921 after meeting fellow Mexican painter David Alfaro Siqueiros. The two shared a goal. They decided to create a new, uniquely Mexican kind of art based on **revolutionary** themes. They wanted this art to decorate public buildings, so they decided to paint murals. Murals are paintings done on walls, either inside or outside of buildings. Rivera painted his first important mural, "Creation," for the National Preparatory School in Mexico City.



Like many of Rivera's murals, this one focuses on the life of the common people. The mural, called "Pan American Unity," is painted on a wall at City College of San Francisco.

All rights reserved. Unauthorized public performance, broadcasting, transmission, or copying, mechanical or electronic, is a violation of applicable laws. © City College San Francisco.

SEARCH LIGHT

Which of the following qualities applies to Rivera's work?
a) bold colors
b) quiet pictures
c) pale colors

Rivera's many murals in his home country celebrated Mexican history and life. His paintings featured native Indians, Spanish **conquistadores**, Mexican peasants, factory workers, and famous philosophers, politicians, and other public figures. He liked to show how farming, industry, and culture were all connected in people's lives. His human figures had a flattened appearance and were outlined to emphasize their shape. His works were brightly colored and crowded with figures, which made his huge murals seem even larger.

Rivera was in the United States from 1930 to 1934. There he painted murals for the California School of Fine Arts in San Francisco, the Detroit Institute of Arts, and Rockefeller Center in New York City.

Rivera's wife, Frida Kahlo, was also an important painter.

LEARN MORE! READ THESE ARTICLES…
FRIDA KAHLO (VOLUME 3) • MEXICO (VOLUME 9) • PABLO PICASSO (VOLUME 4)

Answer: a) bold colors

The Modern Michelangelo

DID YOU KNOW?
One of Rodin's most important sculptures, "The Gates of Hell," was actually used as the doors of an art museum. Within it are many smaller sculptures. Many of them were early versions of what became some of Rodin's finest works.

The French sculptor Auguste Rodin was interested in art even as a boy. At age 10, he started drawing. By the time he was 15, Rodin had discovered the art of **sculpture**.

Rodin started out working for building decorators. He made decorative designs for the outsides of buildings. Later, Rodin became a sculptor's assistant. He worked with the sculptor A.-E. Carrier-Belleuse.

In 1864, at age 24, Rodin publically showed his first major sculpture, "The Man with the Broken Nose." The official art **critics** of the time did not like it. They believed art should be about beauty. To them, Rodin's sculpture was about something "ugly" and ordinary.

At age 35, Rodin went to Italy to study the work of the famous painter Michelangelo. He learned a great deal about the human form. His work began to look even more realistic. It seemed to be full of movement and drama.

When he was 37 years old, Rodin sculpted "The Age of Bronze." It was so unusual and realistic that people said he must have molded it on a real person! After years of struggle, Rodin finally had become known as a great sculptor.

Rodin's sculptures were usually **cast** in bronze or carved from marble. The bronze pieces could be duplicated many times, using an original piece that was molded in clay.

The piece that Rodin is probably best known for is his statue "The Thinker," shown in the photo here. Like almost all of his sculptures, it shows a person in a natural, everyday pose. But Rodin's work seems to show a reality and truth that people may not have noticed before. Many people still find that his work **symbolizes** the things that we all experience and feel.

SEARCH LIGHT

Fill in the blanks: The officials who studied and judged art felt that Rodin's first major work was _____ and _____.

LEARN MORE! READ THESE ARTICLES…
FRANCE (VOLUME 6) • MICHELANGELO (VOLUME 3)
SCULPTURE (VOLUME 3)

© Owen Franken/Corbis



Answer: The officials who studied and judged art felt that Rodin's first major work was ugly and ordinary.

AUGUSTE RODIN

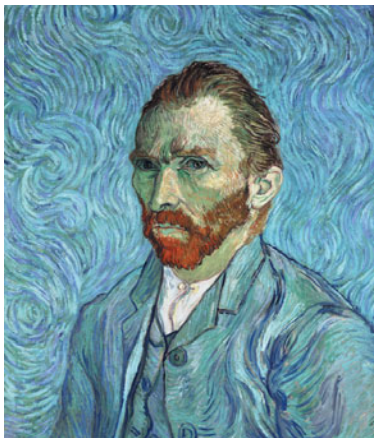


DID YOU KNOW?

In 1990 van Gogh's "Portrait of Dr. Gachet" sold for $82.5 million—at that time the most ever paid for a single painting.

Sunflowers and Starry Nights

Vincent van Gogh was a Dutch artist of the 19th century and is now considered one of the greatest painters in the world. Van Gogh painted what he saw around him—trees, flowers, people, and buildings. He visited museums and met with other painters. But van Gogh had his own way of painting. He said he "wanted to look at nature under a brighter sky."



Self-portrait of van Gogh, painted in 1889.
© Archivo Iconografico, S.A./Corbis

In van Gogh's paintings, the southern French town of Arles is like no other place in the world. The skies are bluer and the sun is brighter. The orchards in bloom are pinker and greener. The cobblestone roads are more cobbled and stony. His pictures seem to be flooded with a golden light.

Van Gogh wanted wonderful color in his pictures. His paintings called "Sunflowers," "Irises," and "Starry Night" are among the most famous pictures he painted and are filled with brilliant colors. He tried to keep to the outward appearance of his subjects, yet his feelings about them exploded in strong color and bold lines.

Van Gogh's style was direct, forceful, and natural. He worked with great speed and excitement, set on capturing an effect or a mood while it possessed him. He told his brother that if anyone said a painting was done too quickly, "you can reply that they have looked at it too fast."

Van Gogh painted for just ten years. But during this time he did more than 800 paintings in oil colors and 700 drawings. Surprisingly, he sold only one painting while he lived. People did not understand the way he painted. His work was too unusual and alive with energy.

Now the whole world knows he was a great artist.

SEARCH LIGHT

How many paintings did van Gogh sell in his lifetime?
a) 80
b) 700
c) 1

Answer: c) 1

LEARN MORE! READ THESE ARTICLES…
THE NETHERLANDS (VOLUME 6) • PAINTING (VOLUME 3) • SUNFLOWERS (VOLUME 10)

Van Gogh's paintings of sunflowers are probably some of the most famous paintings in the world. You may even have seen them on T-shirts and coffee mugs. This is a photo of an original, painted in 1889.
© Christie's Images/Corbis

Lonely Landscapes

Xia Gui is known today as one of China's greatest masters of **landscape** painting. He painted rapidly, using short, sharp strokes of the brush. Most of his landscapes were done in shades of black, but a few had light washes of color added to them.

Xia was probably official court painter to either the emperor Ningzong or the emperor Lizong (or maybe both). That means he would have lived about the end of the 12th century to the beginning of the 13th century.

Together with his friend and fellow artist Ma Yuan, Xia founded the Ma-Xia school of painting. This group followed a tradition of very simple landscape painting, with little happening in the landscape and few details. By showing only selected features, such as mountain peaks and twisted trees, they aimed to create a feeling of unlimited space and quiet drama. The Ma-Xia school had a great influence on later artists.

Most of Xia's surviving works are album leaves. These were usually square-shaped. They were occasionally glued onto fans. The paintings were done on silk, mainly in shades of black ink. Each landscape showed distant hills in the upper left corner and a closer view of land in the lower right corner. In the center, groups of trees reach into the empty space all around. The empty space was always an important feature of Xia's work.

Xia was also a master at **composing** works on the hand scroll. These are rolls of paper that are viewed by unrolling the scroll from one end to the other, then rerolling the scroll as you view it. The effect is like a continuous imaginary journey through the scenery of nature.

DID YOU KNOW?

Xia Gui and his fellow artists used a dramatic kind of brushwork called "ax stroke." It was named this because it looked like the chop mark of an ax on wood.

SEARCH LIGHT

Fill in the blanks: Xia Gui made his paintings on album leaves and _____ _____.

LEARN MORE! READ THESE ARTICLES…
CHINA (VOLUME 7) • EMPRESS OF CHINA (VOLUME 4)
PAINTING (VOLUME 3)

The painting here, known as "Swinging Gibbon," is said to be by Xia Gui. The next generation of painters did not value Xia's work. But about 50 years after that, one critic wrote, "His works have an exciting [stimulating] quality,…a remarkable achievement."

© The Cleveland Museum of Art 2003. John L. Severance Fund, 1978.1

XIA GUI

Answer: Xia Gui made his paintings on album leaves and hand scrolls.



DID YOU KNOW?

Rap and hip-hop grew out of the "street music" of major urban areas, making it a modern folk music tradition.

Music of Everyday Life

Have you played or sung "London Bridge Is Falling Down," "Ring Around the Rosie," or "Frère Jacques"? If you have, then you're part of the folk music tradition. In the case of nursery rhymes and musical games, that tradition can date back for hundreds of years!

Folk music is the shared music of a group or community of people. It's everyday music that was often created as part of children's games or as a way to make work easier. Some songs were sung at parties or weddings. Some were used to celebrate births or **mourn** deaths. And some were used as part of religious services.

SEARCH LIGHT

True or false? True folk music is played only by highly trained musicians.



Pete Seeger, musician of the folk movement of the 1950s and '60s.
© Neal Preston/Corbis

Folk music is learned and passed on by everyone, not just musicians. Many folk performers haven't studied music in school, but they learned songs by listening to others play and sing.

Because it usually isn't written down, folk music changes as it travels between people and countries. Songs are created or lost, and some change because of people's poor memory. Other songs are rewritten to match new times, situations, and ideas. In the United States, some jazz, blues, and **gospel** tunes have their roots in folk songs brought over hundreds of years ago by African slaves.

In the 1960s in North America, musicians such as Pete Seeger, Bob Dylan, and Joan Baez performed folk music accompanied by guitars. Today this type of "folk" and "folk-rock" music remains very popular. And through it the Western folk tradition continues to excite and inspire new generations.

LEARN MORE! READ THESE ARTICLES…
FOLK ARTS AND CRAFTS (VOLUME 3) • LADYSMITH BLACK MAMBAZO (VOLUME 3)
MYTHS AND LEGENDS, FOLKTALES AND FABLES (VOLUME 5)

Folk music is passed from generation to generation at family gatherings like this one and other social occasions.
© Joseph Sohm–ChromoSohm Inc./Corbis

Answer: FALSE. Anyone anywhere can sing or play folk music.

Music of an Era

SEARCH LIGHT

True or false? Popular music is a form of rock music.

Popular music is basically what its name says it is—music that is enjoyed by a very large number of people. But the modern term "popular music" refers more particularly to music that's made by a musical entertainment business specifically in order to be sold.

Popular music (or "pop" music) has roots in the music halls and **vaudeville** theaters of England and the United States. However, the modern popular music **industry** was truly launched with radio programming in the 20th century. Jazz music began to be heard widely in the 1920s. Country and western music's audience grew in the '20s as well. In the 1930s and '40s big-band music was popular, and singers such as Frank Sinatra and Ella Fitzgerald found international fame.







(From left) Famed reggae musician Bob Marley of Jamaica; Celtic-New Age singer Enya of Ireland; and pop singer-songwriter Phil Collins of England.
(Left) © Jeff Albertson/Corbis; (center and right) © Reuters NewMedia Inc./Corbis

In the mid-1950s American rock and roll performers such as Elvis Presley and Chuck Berry commanded worldwide attention. By the 1960s English bands such as the Beatles and the Rolling Stones were taking popular music in new directions. Rock strongly influenced disco, reggae, punk, rap, hip-hop, and other styles in the late 20th century.

Radio and the recording industry introduced non-Western cultures to these new forms of popular music. Traditional songs were performed in new styles, and at the same time, traditional instruments gave the new music an entirely different sound. This mixing of styles and sounds became "world music" and "worldbeat."

Today worldbeat blends a wide range of sounds and **rhythms**. Shubha Mudgal combines India's folk and classical traditions with rock music. The Gipsy Kings mingle pop music with Spain's traditional flamenco. And popular music continues to evolve.

LEARN MORE! READ THESE ARTICLES…
COUNT BASIE (VOLUME 4) • JAZZ (VOLUME 3)
LADYSMITH BLACK MAMBAZO (VOLUME 3)

DID YOU KNOW?

The most-recorded song is "Yesterday" by John Lennon and Paul McCartney of the Beatles. But before the tune had any words put to it, the writers referred to it as "Scrambled Eggs."



Popular music includes many different styles from many different places. The multiracial South African group Johnny Clegg and Savuka gave a strong European pop flavor to traditional Zulu music and added Zulu Inhlangwini dancing.
© Henry Diltz/Corbis

Answer: FALSE. Rock music is one of a number of kinds of popular music.

SEARCH LIGHT

Who were the people most responsible for creating jazz?



Dixieland is a jazz style that grew up in New Orleans, Louisiana. Groups such as the Preservation Hall Jazz Band continue to play in this musical tradition.
© Robert Holmes/Corbis

DID YOU KNOW?

"Cool," "bad," "fly," "the bomb" (later "da bomb"), and "DJ" are all slang words that came from jazz.

The Music of Change

Jazz music is very hard to define because it changes all the time. It has its roots in America's folk traditions, especially in the music of slaves taken from Africa. But today musicians from many countries play jazz and make their own contributions to it.



Jazz funeral in New Orleans, Louisiana.
© Philip Gould/Corbis

Early jazz borrowed from slaves' field hollers (a kind of musical calling-out) and work songs and from African American **hymns** and spirituals. Soon it adopted music from funeral processions and popular dance music.

The first jazz recording was made in 1917 by the Original Dixieland Jazz Band. Dixieland grew up in New Orleans, Louisiana, and has a big brassy sound. It features trumpets, saxophones, trombones, and other wind instruments.

Chicago and New York City emerged as major jazz centers. Talented musicians such as Bix Beiderbecke and Louis Armstrong formed bands. And jazz spread to Europe. France especially welcomed jazz music and musicians—many not valued in the United States simply because they were black.

Jazz has also been richly influenced by women, especially as singers. Billie Holiday, Sarah Vaughan, and Ella Fitzgerald are just a few of the classics.

In the 1930s and '40s, jazz focused on **rhythm**, melody, and a smoother sound. Glenn Miller, Benny Goodman, Duke Ellington, and Count Basie earned fame for their "big band" jazz orchestra styles.

In the mid-20th century, jazz changed again as mood, feeling, and complex musical imaginings dominated. Miles Davis, Charlie Parker, and John Coltrane led this "cool" style of jazz. Davis later helped introduce "jazz **fusion**," blending rock and other popular music with his jazz.

Jazz today is more varied than ever before. And jazz keeps growing in many directions.

LEARN MORE! READ THESE ARTICLES…
LOUIS ARMSTRONG (VOLUME 3) • COUNT BASIE (VOLUME 4)
POPULAR MUSIC (VOLUME 3)

Answer: Jazz began with the songs, chants, and music of African slaves in America.

A Very Formal Music

In the West the term "classical music" usually refers to sonatas, chamber music, operas, and symphonies from the late 1700s through the 1800s.

Classical music is a very **formal** kind of music. This makes classical different from forms such as jazz or folk music. Classical music has set fairly complex patterns that all classical composers (writers of music) and musicians understand and follow.

SEARCH LIGHT

Fill in the blank: A symphony is a long piece of music played by an _____.

A sonata is made up of three parts that focus, in different ways, on a main musical theme, or special tune. The first part presents the theme. In the second part the theme is developed and played in different ways. The third part repeats the theme.

A symphony is a longer **composition** created to be played by an **orchestra**. A symphony has several sections called "movements." One movement is usually in the form of a sonata.

Chamber music was originally created for a smaller private audience. This kind of music uses fewer musicians and features delicate musical patterns.



String quartet playing chamber music.
© Charles O'Rear/Corbis

An opera is basically a play acted to music. The **dialogue** is sung, not spoken, and is accompanied by an orchestra.

The music of the great classical composers is still popular today. You may know the names or music of such composers as Beethoven, Mozart, and Bach.

Non-Western cultures have different forms of classical music. In China classical music refers to ancient music that existed before the influence of Western art forms. India's two forms of classical music, Hindustani music and Karnatic music, are hundreds of years old. In Central Asia classical music comes from the medieval court music of such centers as Bukhara and Samarkand, two cities in Uzbekistan.

LEARN MORE! READ THESE ARTICLES…
LUDWIG VAN BEETHOVEN (VOLUME 3) • RAVI SHANKAR (VOLUME 3)
VIENNA (VOLUME 6)



© Kevin Fleming/Corbis

DID YOU KNOW?

Before the classical period in Western music, most formal music was either religious chanting or the music of the courts of kings and queens. Court music frequently accompanied complex dances.

Answer: A symphony is a long piece of music played by an orchestra.

DID YOU KNOW?

Louis Armstrong was known for his musical quotations. That is, he honored other musicians by slipping pieces of their music into his performances.



Louis Armstrong (center) also performed in a number of movies. This picture is from *High Society,* a 1956 film starring singer Bing Crosby (seated, far left), Frank Sinatra, and Grace Kelly.
The Kobal Collection/MGM

SEARCH LIGHT

What's unusual about scat? (Hint: Bee dee wa scabba doo.)

Satchmo—Jazz Superstar

A young African American boy sang and danced on a street in New Orleans, Louisiana, in the early 20th century. He hoped to earn some money, as his family was very poor. That boy, Louis Daniel Armstrong, would become one of the world's most famous jazz trumpet players.

Armstrong loved music and tried various instruments before finally choosing the cornet. The cornet looks like a trumpet but is shaped like a cone. Armstrong became the leader of his school band. Jazz was just beginning to be popular. As a teenager he learned music by listening to pieces played by famous jazz musicians. Later he learned to read music.



Armstrong warming up on his trumpet in 1956.
© Ted Streshinsky/Corbis

Armstrong played with jazz bands in Chicago and New York City. He recorded his first solo pieces, "Chimes Blues" and "Tears," in Chicago. In New York he changed from the cornet to the trumpet. He felt the trumpet had a brighter sound and a flashier look. By the time Armstrong was 28 years old, he had become very famous. He toured worldwide as a trumpet soloist with big bands.

Louis Armstrong was nicknamed "Satchmo" by his fellow musicians. Short for "Satchel Mouth," the name suggested that his mouth was as wide as a satchel (a large book bag). But the friendly teasing was a sign of the great respect jazz musicians felt for Armstrong's talent. His creativity, ability to express emotion, and superior **technical** skill were universally admired.

Armstrong is also remembered as one of the inventors of what is called "scat." Sometimes while singing a **lyric** he would sing without using words. He would sing a string of sounds instead. His scat singing and gravelly voice became as well known as his face and trumpet.

LEARN MORE! READ THESE ARTICLES…
COUNT BASIE (VOLUME 4) • JAZZ (VOLUME 3) • CARLOS SANTANA (VOLUME 3)

Answer: Scat is singing that uses sounds rather than real words.

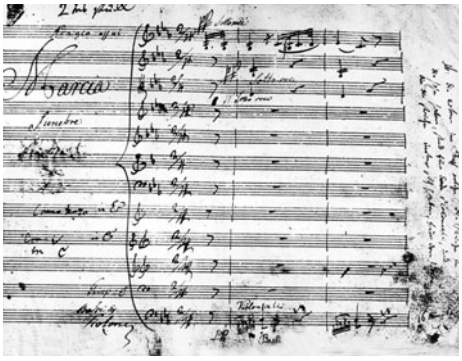
Living for Music

SEARCH LIGHT

Beethoven was Mozart's
a) teacher.
b) student.
c) father.

Can you imagine composing music without being able to hear it? Beethoven, one of the greatest music composers ever born, created much of his best music late in life, after he had become totally deaf.

Ludwig van Beethoven was born in 1770 in Bonn, Germany. Music was very important in his family. His grandfather and his father were professional singers in the choir of the **archbishop** at Bonn. Young Beethoven got the chance to play the organ at court as soon as he was old enough to work. The archbishop liked his music so much that he sent him to Vienna to learn from Wolfgang Amadeus Mozart. After hearing Beethoven play, Mozart told friends, "This young man will make a great name for himself in the world."



Beethoven's own handwritten music for his *Eroica* symphony.
Mansell/Timepix

At that time people thought of the piano mostly as an instrument for playing music for singers. But Beethoven composed such beautiful piano music that it stood easily on its own as a work of art. Beethoven's music was a bridge between a stricter musical tradition and a freer, more deeply emotional music. He also brought new ideas and life to such classical music forms as the sonata, symphony, concerto, and quartet. Some of his best-known works include the *Moonlight Sonata*, the *Pastoral* and *Eroica* symphonies, and the *Emperor Concerto*.

After some years Beethoven realized that he could not hear things clearly anymore—not even what he himself was playing. Doctors told him he could never be cured. Beethoven stopped playing in public and kept away from people. But he still heard music in his mind, and he wrote down his musical ideas in his sketchbooks. These sketchbooks contained some of his finest music.

LEARN MORE! READ THESE ARTICLES…
CLASSICAL MUSIC (VOLUME 3) • SIGHT AND SOUND (VOLUME 2) • VIENNA (VOLUME 6)

© Archivo Iconográfico, S.A./Corbis

LUDWIG VAN BEETHOVEN



DID YOU KNOW?

Beethoven's musical works marked the beginnings of Romantic music. That sounds like music about love. But "romantic" more broadly describes art that tries to express emotions, the dramatic in life, and the individual person's experience.

Answer: b) student.



Here, Nusrat Fateh Ali Khan and Party perform in a 1993 concert. The term "party" is a general term for the group of musicians who play for the *qawwal*.
© BALDEV/Corbis Sygma

DID YOU KNOW?

Sufism is the Islamic belief and practice from which *qawwali* music arises. Sufi Muslims seek to find the truth of divine love and knowledge through direct personal experience of God.

Center Stage of *Qawwali*

Nusrat Fateh Ali Khan was considered one of the greatest singers of the music known as *qawwali*. Begun in Persia (present-day Iran) hundreds of years ago, *qawwali* music is based on Sufi Muslim poems about deep religious faith expressed through love. It has simple melodies and forceful rhythms.

*Qawwal*s (singers of *qawwali*) traditionally perform their songs at **shrines**. A *qawwal* must learn all the Sufi poems. He often makes up more *qawwali*s by using phrases and passages from different poems to create a new expression or idea. The singing includes much shouting and dancing.



Nusrat Fateh Ali Khan in concert.
Michael Harder Photography

Nusrat Fateh Ali Khan was born in 1948 in Pakistan. His father and two of his uncles were also famous *qawwal*s who sang in the classical style. Khan received music lessons from his father. When his father died in 1964, Khan sang in the *qawwali* style for the first time at his father's funeral. Two years later Khan gave his first public performance, singing with his uncles.

Khan sang in a very high range (a family trademark) and had a powerfully expressive voice. Known for his melodic creativity, he would sometimes perform for 10 hours at a time. By the early 1970s Khan was recognized throughout Pakistan as the outstanding *qawwal* of his time. He sang at a world music concert in the United Kingdom in 1985. Soon he was also performing regularly throughout Europe.

In 1996 Khan recorded songs for some American movies. He also appeared on music television shows and performed songs that appealed specifically to Western audiences. Some felt he had betrayed the music's Islamic heritage. But Khan said he had given up nothing to share his musical heritage with broader audiences.

SEARCH LIGHT

Fill in the blanks: *Qawwali* music is based on _____ _____.

LEARN MORE! READ THESE ARTICLES…
FOLK MUSIC (VOLUME 3) • ISLAM (VOLUME 5)
PAKISTAN: A YOUNG COUNTRY WITH AN ANCIENT HISTORY (VOLUME 7)

Answer: *Qawwali* music is based on Sufi poetry.

The South African Sound

In the past 20 years the music of South Africa has spread all over the world. In part that's thanks to Ladysmith Black Mambazo, the country's most popular singing group. But to find out what Ladysmith is and what "mambazo" means, we have to go back to South African mining towns in the 1960s.

DID YOU KNOW?
Ladysmith Black Mambazo has recorded songs for many films, including *The Lion King II*, and has performed for both the queen of England and the pope.

Working in the mines kept black workers far from their homes and their families. So on Saturday nights they entertained themselves by holding singing contests featuring traditional Zulu harmonies.

That was how a young man named Joseph Shabalala discovered his singing talent. In 1964 Shabalala kept having a dream in which he heard a special harmony. To create that sound, he formed a music group with his brothers, Headman and Jockey, and some cousins and friends.

They called themselves Ladysmith Black Mambazo because Ladysmith is Shabalala's hometown, and the black oxen is the strongest animal on a farm. The group "chopped down" their competition in every singing contest, so they added the name Mambazo, which is a kind of ax.

Years later American musician Paul Simon heard the group's singing and later met the members in South Africa. They performed on Simon's 1986 album *Graceland* and toured with him, sharing their music with people everywhere. A year later Ladysmith Black Mambazo won a Grammy, and today it's Africa's top-selling music group.

Shabalala also keeps the folk music of South Africa alive by teaching the traditional songs to young children.

SEARCH LIGHT

What does "Mambazo" mean in the name Ladysmith Black Mambazo?

LEARN MORE! READ THESE ARTICLES…
FOLK MUSIC (VOLUME 3) • POPULAR MUSIC (VOLUME 3)
SOUTH AFRICA (VOLUME 8)

AP/Wide World Photos

LADYSMITH BLACK MAMBAZO

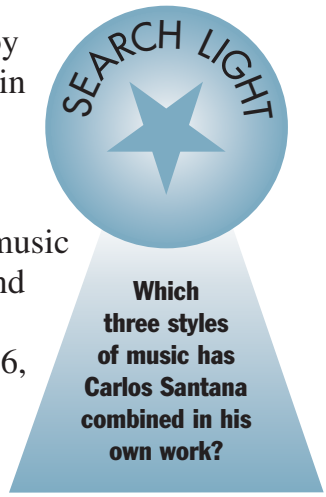
Answer: Mambazo is a type of ax, used in the name because the group "cut down" their singing competition.



Rock Guitarist

Carlos Santana was born in Mexico in 1947. He came by his interest in music naturally, since his father played violin in a traditional Mexican mariachi band. At about 7 years old, Carlos began to study guitar. He tried to copy the music of famous guitarists he heard on the radio.

As time passed, Carlos grew more interested in rock music and the blues. He began playing in bands as a teenager, and even after his family moved to California, he returned to Mexico to play in clubs and bars. In San Francisco in 1966, Carlos founded a group with five other musicians. The group's name, the Santana Blues Band, was later shortened to Santana.



In three years the group shot to fame when it performed at the historic 1969 Woodstock rock festival. The band became known for mixing jazz and Latin music into a rock sound. Carlos' own playing featured a unique, exciting electric guitar sound. His long and complex guitar solos varied and developed a single musical **theme**.

The group's first three albums were all major hits. The music was **vivid** and sparked the audience's imagination. On later albums the band continued to experiment with mixing jazz and rock.

In 1998 the group was named to the Rock and Roll Hall of Fame. The following year Carlos Santana released *Supernatural*. On this CD he performed songs with such top performers as Eric Clapton, Lauryn Hill, Dave Matthews, and Rob Thomas of Matchbox 20. The CD sold more than 20 million copies, Santana's greatest success ever. And it introduced a new generation of listeners to him.

DID YOU KNOW?

Carlos Santana's hit album *Supernatural* reflected the continuing influence of Latin music in his own. Many songs on that CD, as on his earlier recordings, were sung in Spanish.

LEARN MORE! READ THESE ARTICLES…
COUNT BASIE (VOLUME 4)
POPULAR MUSIC (VOLUME 3)
RAVI SHANKAR (VOLUME 3)

© Reuters NewMedia Inc./Corbis

Answer: Santana's music combines jazz, Latin music, and rock.

Music at His Fingertips

In 1930, at age 10, Ravi Shankar and other family members joined his eldest brother's Indian dance **troupe** in Paris, France. The boy lived in France for over five years and studied dance and music.

Shankar gave up dance at age 18. He returned to India and studied the sitar for seven years under master musician Ustad Allauddin Khan. The sitar is a large long-necked stringed instrument, played from a seated position.

In 1944 Shankar began composing film music. A bit later he became music director of All India Radio. His audience grew within India. And when his musical **score** for Satyajit Ray's 1955 film *Pather Panchali* won major awards, Shankar gained worldwide notice.

SEARCH LIGHT

Which instrument did Ravi Shankar play and make famous?
a) sitar
b) drums
c) cymbals

Shankar first toured the United States and England in 1956. Over the next ten years his audiences grew from small groups of Indian immigrants to sold-out concerts at New York City's Philharmonic Hall. As Shankar's fame increased, so did the popularity of Indian music. Sitar music is very different from music of the West. So it was exciting for Shankar and others to combine the two traditions to make altogether new sounds.

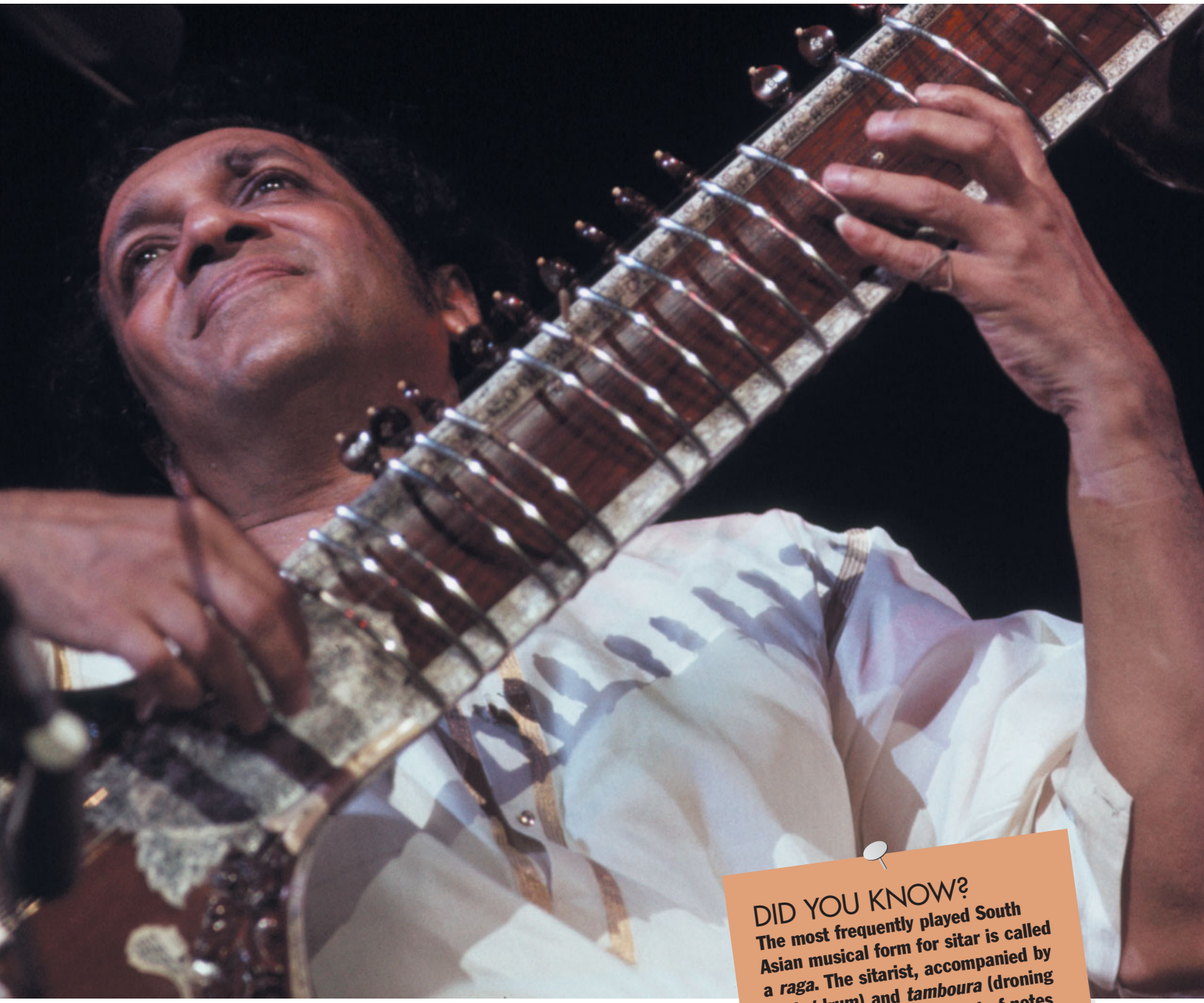


Ravi Shankar and daughter Anoushka performing at a charity concert in Kuala Lumpur, Malaysia, in 2001.
© AFP/Corbis

Shankar met and worked with many famous Western musicians who played a variety of styles. He played with jazz musicians, classical violinist Yehudi Menuhin, pianist and **conductor** André Previn, and experimental composer Philip Glass. His most famous musical association was with rock musician George Harrison of the Beatles. Harrison studied sitar under Shankar in India. Harrison's fame and influence allowed him to introduce Shankar and Indian music to a vast audience in the West.

Shankar continues to compose and perform. And he remains one of the most highly regarded musicians in the world.

LEARN MORE! READ THESE ARTICLES…
INDIA (VOLUME 7) • POPULAR MUSIC (VOLUME 3) • SATYAJIT RAY (VOLUME 3)



In 1971 George Harrison organized the Concert for Bangladesh. Ravi Shankar and many other musicians performed to raise money for the starving people of that country.
© Henry Diltz/Corbis

DID YOU KNOW?

The most frequently played South Asian musical form for sitar is called a *raga*. The sitarist, accompanied by *tabla* (drum) and *tamboura* (droning lute), plays a particular set of notes in a very specific way to create a unique mood.

Answer: a) sitar

Writing for the Ages

Literature is writing that is good enough or important enough to last for tens, hundreds, or even thousands of years. It's valuable work that people make sure is heard, read, and passed down from generation to generation.

People usually think of literature as novels such as *Tom Sawyer,* the poetry of Emily Dickinson, or the plays of William Shakespeare. But even books for young readers, such as *The Cat in the Hat* or *Alice's Adventures in Wonderland,* can be literature. Literature also includes philosophy and history, letters and essays, even journals like *The Diary of Anne Frank*. Some literature tells a story; some literature makes a point; and some literature just uses words and language in an exciting or memorable way. Some literature does all these things at once.



© Royalty-Free/Corbis

Not all literature started on a page. Ancient stories of heroes like Beowulf and Odysseus were spoken first and written down later. Speeches like Martin Luther King, Jr.'s *I Have a Dream* can also be literature.

But just writing something down doesn't make it literature. We don't usually think of useful but such disposable things as phone books, menus, or game instructions as literature. Even books come and go—many that you see in stores today won't be around decades from now. On the other hand, most newspaper articles are read once and tossed aside. But if their topic is important or their writing is very good, those articles might be collected into a book to be preserved and reread. They're on their way to becoming literature!

DID YOU KNOW?

Literature depends on the tastes of the time. When it was given in 1863, Lincoln's Gettysburg Address was considered poorly written. Today people have forgotten the other speech given that day, and Lincoln's speech is thought of as great literature.

LEARN MORE! READ THESE ARTICLES…
ISABEL ALLENDE (VOLUME 4)
RABINDRANATH TAGORE (VOLUME 3)
JULES VERNE (VOLUME 3)

© Kelly-Mooney Photography/Corbis



SEARCH LIGHT

Which of the following would have the best chance of someday being considered literature?

a) phone book
b) restaurant menu
c) your diary
d) stereo instructions

Answer: c) your diary

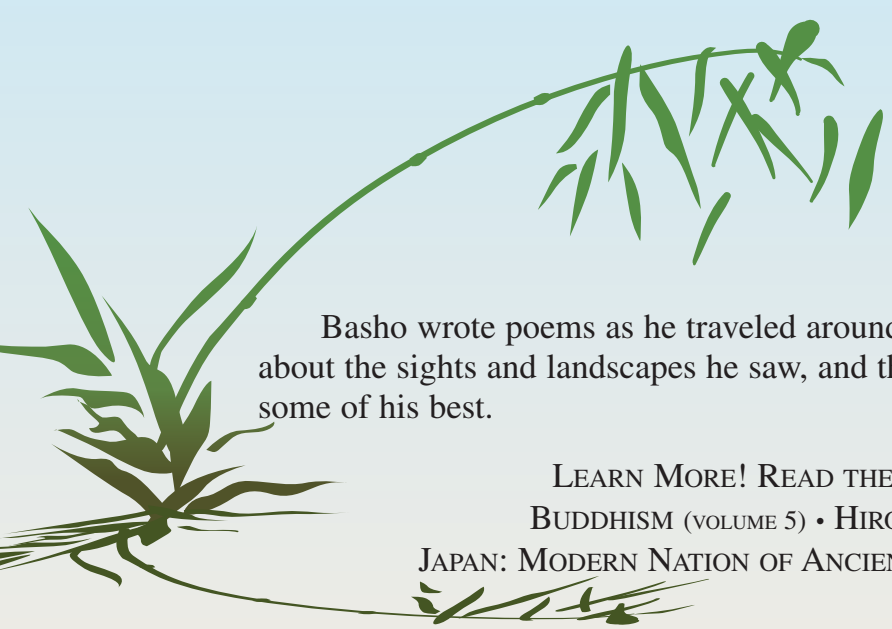
Haiku Master

The poet Basho was born Matsuo Munefusa in 1644. He is considered the greatest of the Japanese *haiku* poets. Basho took his name from the Japanese term *basho-an*, which means "cottage of the plantain tree" (a plantain is like a banana). This was a simple place that the poet liked to go to be by himself.

Haiku is a traditional form of Japanese poetry that puts great emotion in just a few words. *Haiku* poems have only three lines totaling 17 syllables. And they are often about nature.

Although he was interested in poetry from a young age, Matsuo wasn't always a poet. He started out as a **samurai** warrior in the service of a local lord. But following his lord's death in 1666, Matsuo gave up being a warrior and focused on creating poetry. He moved to Japan's capital, Tokyo (at that time called Edo), and soon was well known as a poet and **critic**.

Basho brought a new style of *haiku* to Japanese poetry. Before, it had been basically a hobby and not very serious. Basho instead brought his Buddhist beliefs to his writing. He looked with interest at small things and showed the connection of all things. His new-style *haiku* compared two separate physical events. In the following *haiku*, for example, he links nightfall with the landing of a black crow.



On a withered branch
A crow has alighted:
Nightfall in autumn.

(Note: Unlike the original, this **translation** has only 16 syllables.)

Basho wrote poems as he traveled around the islands of Japan. He wrote about the sights and landscapes he saw, and these poems are considered some of his best.

LEARN MORE! READ THESE ARTICLES…
BUDDHISM (VOLUME 5) • HIROSHIGE (VOLUME 3)
JAPAN: MODERN NATION OF ANCIENT TRADITIONS (VOLUME 7)



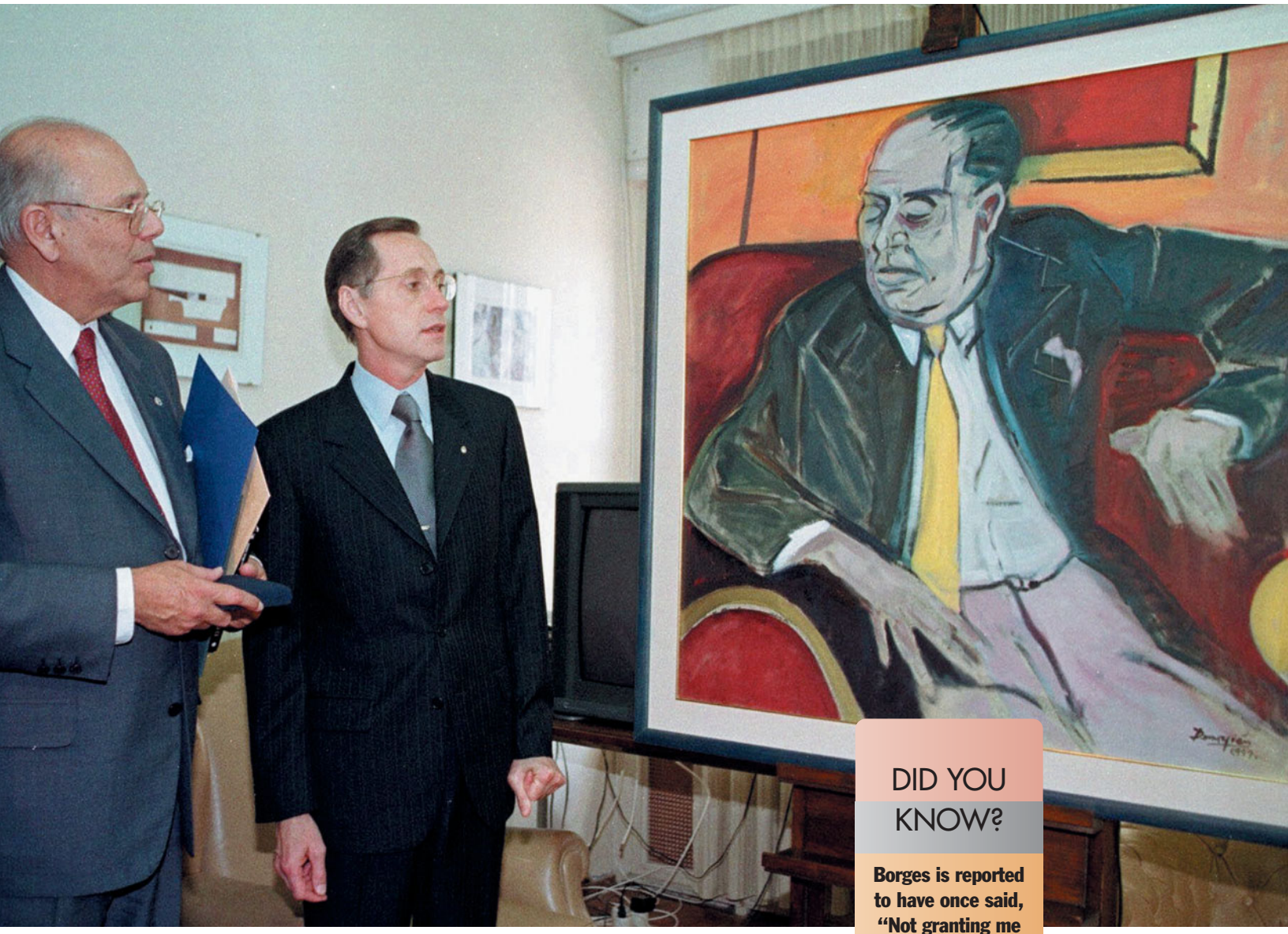
DID YOU KNOW?

One term often used to describe Basho's poetry is *sabi*. The word refers to the love of the old, the faded, and the little-noticed.

SEARCH LIGHT

Basho's pen name came from his
a) cottage.
b) village.
c) lord.

Answer: a) cottage.



Uruguayan President Jorge Batlle (left) and Argentine Chancellor Adalberto Rodríguez Giavariani admire a portrait of Jorge Luis Borges painted by Jorge Demirjian.
AP/Wide World Photos

DID YOU KNOW?

Borges is reported to have once said, "Not granting me the Nobel Prize has become a Scandinavian tradition; since I was born they have not been granting it to me."

Creator of Fantastical Fictions

Can you imagine a garden where a beautiful poppy flower has the power to unravel time? Or a pool where if you gaze too long into it, you could merge with your reflection? Jorge Luis Borges imagined these things and more as he created **fantastical** worlds with his words.

SEARCH LIGHT

Although Borges is famous as a Spanish-language writer, what language did he learn first?

Borges was born in 1899, in Buenos Aires, Argentina. His father was a lawyer, and his mother was a teacher. His English-born grandmother told him many stories. Borges was educated at home by an English governess and learned English before Spanish.



Borges on his 82nd birthday, in 1981.
© Bettmann/Corbis

At age 20 Borges started writing poems, essays, and a biography. But when his father died in 1938, Borges had to take up a job as a librarian to support the family. The same year, Borges suffered a severe head wound that left him near death, unable to speak, and afraid he was insane. This experience seems to have freed in him a great creativity. When he finished his library work, he would spend the rest of the day reading and writing.

Borges' dreamlike short stories would later make him famous when they were collected in the books *Ficciones* (*Fictions*) and *The Aleph and Other Stories, 1933-69*. He also wrote political articles that angered the Argentine government and cost him his library job.

In 1956 Borges received Argentina's national prize for literature. But he had been losing his eyesight for decades because of a rare disease, and by this time he was completely blind. Still, he created stories by having his mother and friends write as he **dictated**. Some of his best work was produced this way, including *El libro de los seres imaginarios* (*The Book of Imaginary Beings*).

LEARN MORE! READ THESE ARTICLES…
ISABEL ALLENDE (VOLUME 4) • ARGENTINA (VOLUME 9) • LITERATURE (VOLUME 3)

Answer: Because his governess was English, Borges learned English before Spanish.

Prized Poet of Illinois

SEARCH LIGHT

Gwendolyn Brooks was the first African American poet to
a) win the Nobel Prize.
b) be published in the United States.
c) win the Pulitzer Prize.

Gwendolyn Brooks was born in 1917 and grew up in Chicago, Illinois, U.S. That city would play a major part in the life and work of this important American poet. She started writing poetry when she was barely 7 years old. By the time she was in her early teens, her writing had begun appearing in magazines.

Brooks, an African American, attended what was then the leading high school for white children in Chicago. This was very unusual for the time. She was later transferred to an all-black school and then to an **integrated** school. These experiences gave her insight into the relationships between black people and white people that strongly influenced her work.



Gwendolyn Brooks with her first published book, *A Street in Bronzeville* (1945).
AP/Wide World Photos

Brooks's first published book, *A Street in Bronzeville* (1945), won rave reviews. Its poems made the ordinary life of her neighbors seem special to the reader. In 1950 Brooks won the Pulitzer Prize for Poetry for *Annie Allen*. She was the first African American poet to win this award. The book's poems focus on an African American girl growing up in Chicago.

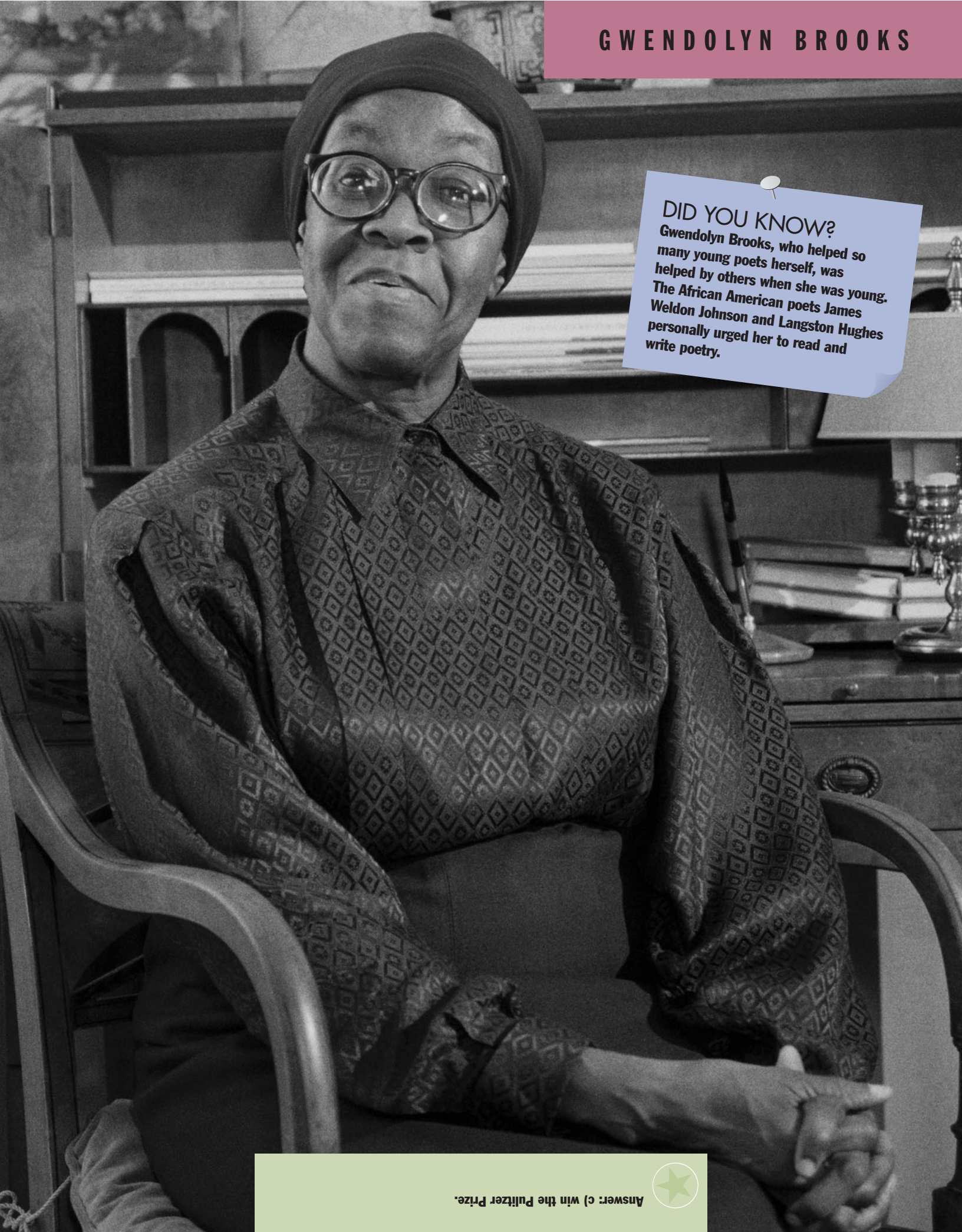
In the late 1960s Brooks's poetry became more **political**. She began to feel "that black poets should write as blacks, about blacks, and address themselves to blacks." In 1968 she published *In the Mecca*. The book's long title poem reflects the pain and struggle of African American people living in the Mecca, a vast apartment building that had become part of a **slum**.

Brooks wrote many more books. She was honored as **poet laureate** of Illinois (1968) and held a similar position for the whole United States (1985-86). Throughout her life Brooks remained strongly committed to teaching about the power of poetry and to encouraging young writers.

LEARN MORE! READ THESE ARTICLES…
MARTIN LUTHER KING, JR. (VOLUME 4) • LITERATURE (VOLUME 3)
UNITED STATES: A YOUNG AND POWERFUL NATION (VOLUME 9)

© Bettmann/Corbis

GWENDOLYN BROOKS



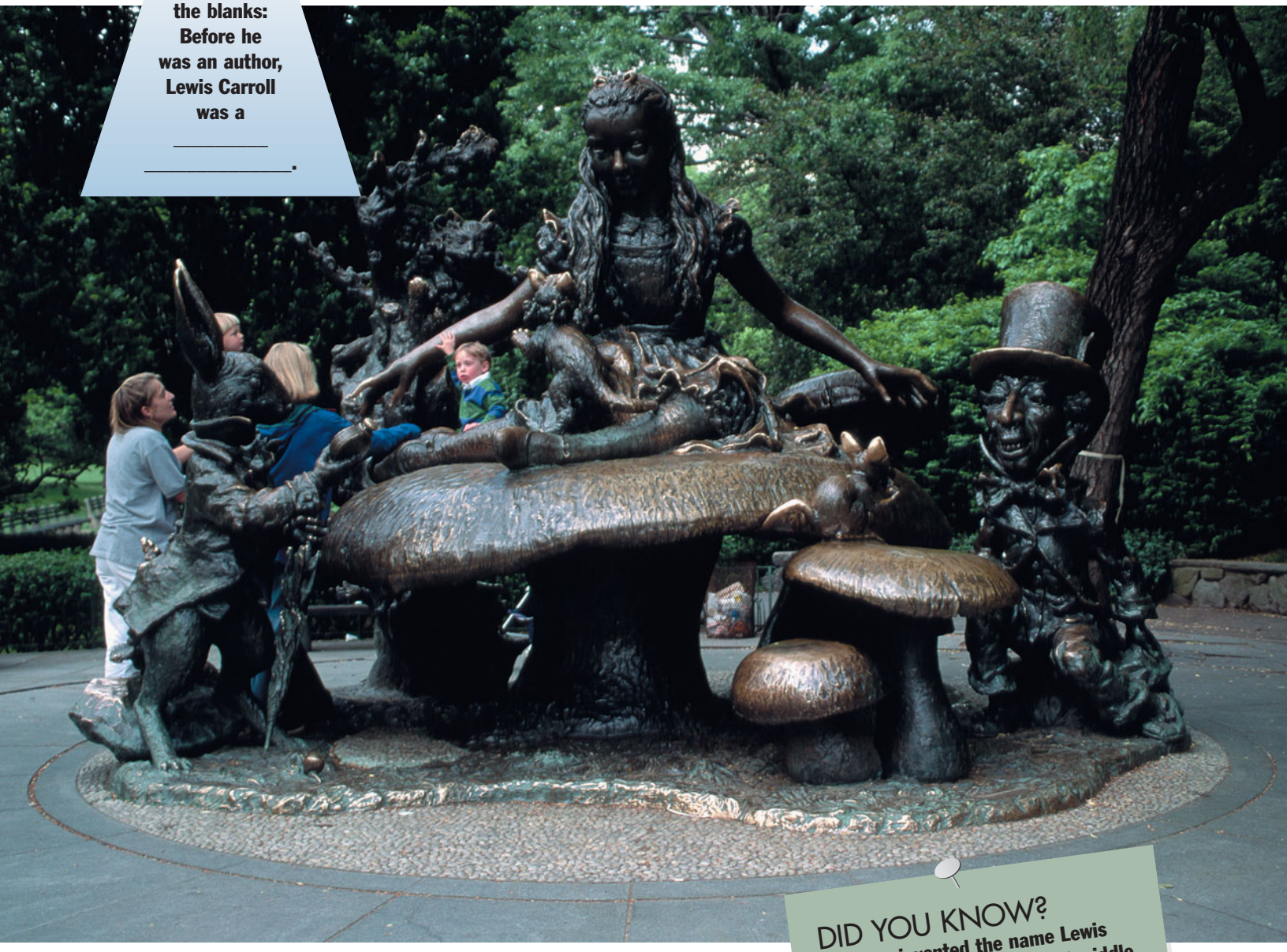
DID YOU KNOW?

Gwendolyn Brooks, who helped so many young poets herself, was helped by others when she was young. The African American poets James Weldon Johnson and Langston Hughes personally urged her to read and write poetry.

Answer: c) win the Pulitzer Prize.

SEARCH LIGHT

Fill in the blanks: Before he was an author, Lewis Carroll was a _____ _____.



Lewis Carroll's characters from *Alice's Adventures in Wonderland* are still some of the most popular in the world.
© Craig Lovell/Corbis

DID YOU KNOW?

Dodgson invented the name Lewis Carroll by taking his first and middle names, Charles Lutwidge, and translating them into Latin as *Carolus Ludovicus*. Then he reversed them and translated the Latin back into English.

The Man Who Created Wonderland

Not many people curl up in their favorite chair to read a math book. But in the 1800s, a math teacher named Charles Dodgson wrote two children's books that are still popular today. Using the pen name "Lewis Carroll," Dodgson dreamed up *Alice's Adventures in Wonderland* and its sequel, *Through the Looking-Glass*.



Lewis Carroll (Charles Dodgson).
© Bettmann/Corbis

As a boy growing up in the English countryside, Lewis Carroll (as we'll refer to Dodgson) loved mathematical puzzles. As an adult, he taught math at the University of Oxford.

Carroll never married, but he loved entertaining children. He was especially fond of the daughters of the **dean** of his college. Carroll often took the girls—Alice, Lorina, and Edith Liddell—on boating and picnic trips and amused them by making up stories and drawing pictures. One story told of a young girl named Alice who fell down a rabbit hole into Wonderland, a magical place where nothing was what it seemed.

Young Alice Liddell asked Carroll to write the story down. He did, filling it with his imagination and humor and also with his knack for puzzles and word games. It became *Alice's Adventures in Wonderland*, a wild tale that includes an anxious White Rabbit, a vanishing Cheshire Cat, and a tea party thrown by a Mad Hatter.

Carroll had not intended to publish the story as a book, but his friends talked him into it. Readers loved the strange and silly adventures, and so Carroll continued Alice's tale in *Through the Looking-Glass*. By the time he died, Carroll's two Alice books were the most popular children's books in England.

LEARN MORE! READ THESE ARTICLES…
CHARLES DICKENS (VOLUME 4) • LITERATURE (VOLUME 3)
JULES VERNE (VOLUME 3)

Answer: Before he was an author, Lewis Carroll was a math teacher.

A Life of Letters and Literature

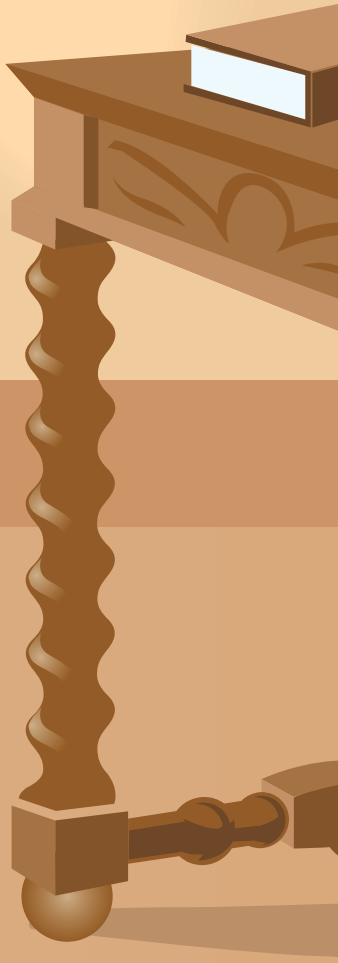
Emily Dickinson, one of America's greatest poets, was born in 1830 in Massachusetts. She had many friends, though she did not often leave her home to meet them. After 1865 she seldom left her room, appearing only occasionally and briefly, in a white dress, when guests visited downstairs.

Dickinson spent a great deal of time writing to her friends. The greatest excitement in Dickinson's life took place in her **vivid** imagination. She included many of her great poems in the letters she wrote. She also wrote or copied poems into little booklets that she made by sewing pages together.

For the time in which she lived, Dickinson's poems were unusual. Most of them are about familiar things such as love and friendship, nature and death. But her rhymes are often not quite exact, and some of her poems are like a puzzle. But many people find great beauty and truth in her words.

Her poems are especially remarkable in how strong an effect they have, even though they're usually very brief. She stripped away unnecessary words and made sure that those that remained were **energetic** and exact. She also liked to place a familiar word in an unusual position, to "surprise" us and to make us pay attention.

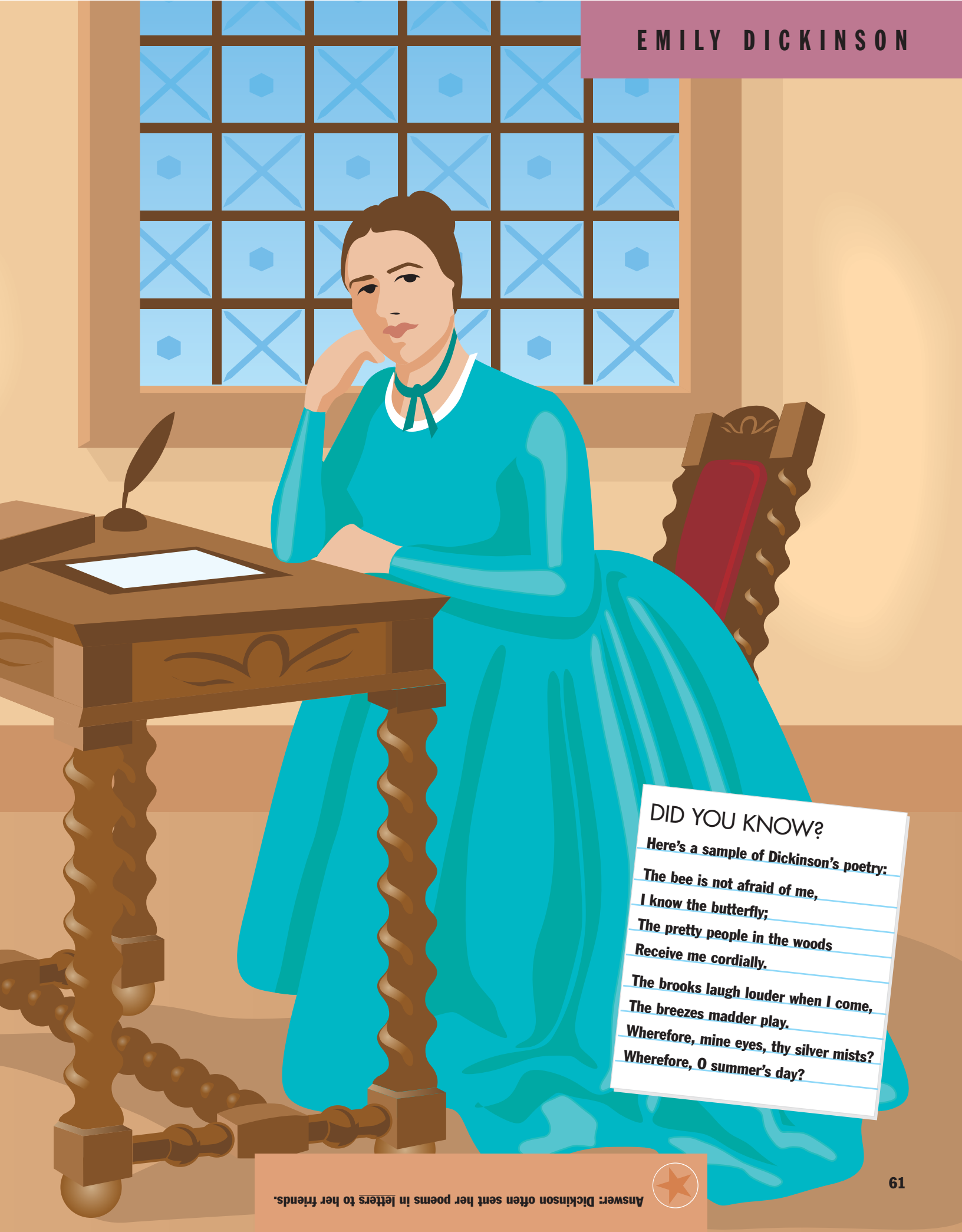
Many people think the poems of Emily Dickinson to be among the best ever written by an American poet. It seems strange, then, that only seven of her poems were published while she lived. It was Dickinson's sister, Lavinia, who first published her poems in a book. She called it *Poems by Emily Dickinson*. It was published in 1890, four years after Emily died.



SEARCH LIGHT

Fill in the blank: Dickinson often sent her poems in _____ to her friends.

LEARN MORE! READ THESE ARTICLES…
BASHO (VOLUME 3) • LITERATURE (VOLUME 3)
NORTH AMERICA (VOLUME 9)



DID YOU KNOW?

Here's a sample of Dickinson's poetry:

The bee is not afraid of me,
I know the butterfly;
The pretty people in the woods
Receive me cordially.

The brooks laugh louder when I come,
The breezes madder play.
Wherefore, mine eyes, thy silver mists?
Wherefore, O summer's day?

Answer: Dickinson often sent her poems in letters to her friends.

The Nobel Laureate

When Wole Soyinka was a child, his grandfather told him how to deal with a bully. "Even if you are beaten, challenge him again. I promise you, either you will defeat him or he will run away."

These words turned out to be true for Wole Soyinka, the first black African writer to win the Nobel Prize for Literature. The bully he fought—with his words, not his fists—was the Nigerian military government. Even when the government put him into prison, he continued to write his stories, novels, essays, poetry, and plays.

SEARCH LIGHT

Fill in the blank: Soyinka was imprisoned for disagreeing with the Nigerian _____.

Soyinka was born in 1934 in Nigeria. His full name is Akinwande Oluwole Soyinka. His large family is of Yoruba heritage. And having a big family, he got to listen to lots of stories—about battles, religion, legends, and family.

Soyinka attended university in England but returned to Nigeria to study African drama. He also taught drama and literature at Nigerian universities. In 1960 he founded a theater group, where he put on his own plays and even acted in some. His first important play, *A Dance of the Forests*, was about Nigerian independence. In *The Lion and the Jewel*, Soyinka made fun of Westernized African schoolteachers.



Wole Soyinka in 1986.
© Jacques Langevin/Corbis

During the Nigerian **civil war**, Soyinka worked for a cease-fire and was arrested because of his work and writings. The government placed him in a cell all by himself for over a year. Only his own ideas kept him entertained. These ideas became some of his later books.

Soyinka's plays draw on Nigerian culture, dance, poetry, music, and myths. These elements combine with his wide knowledge and his strong political beliefs to create powerful dramatic images and ideas.

LEARN MORE! READ THESE ARTICLES…
NIGERIA (VOLUME 8) • A NIGERIAN FOLKTALE: THE MONKEY COURT (VOLUME 5)
THEATER (VOLUME 3)

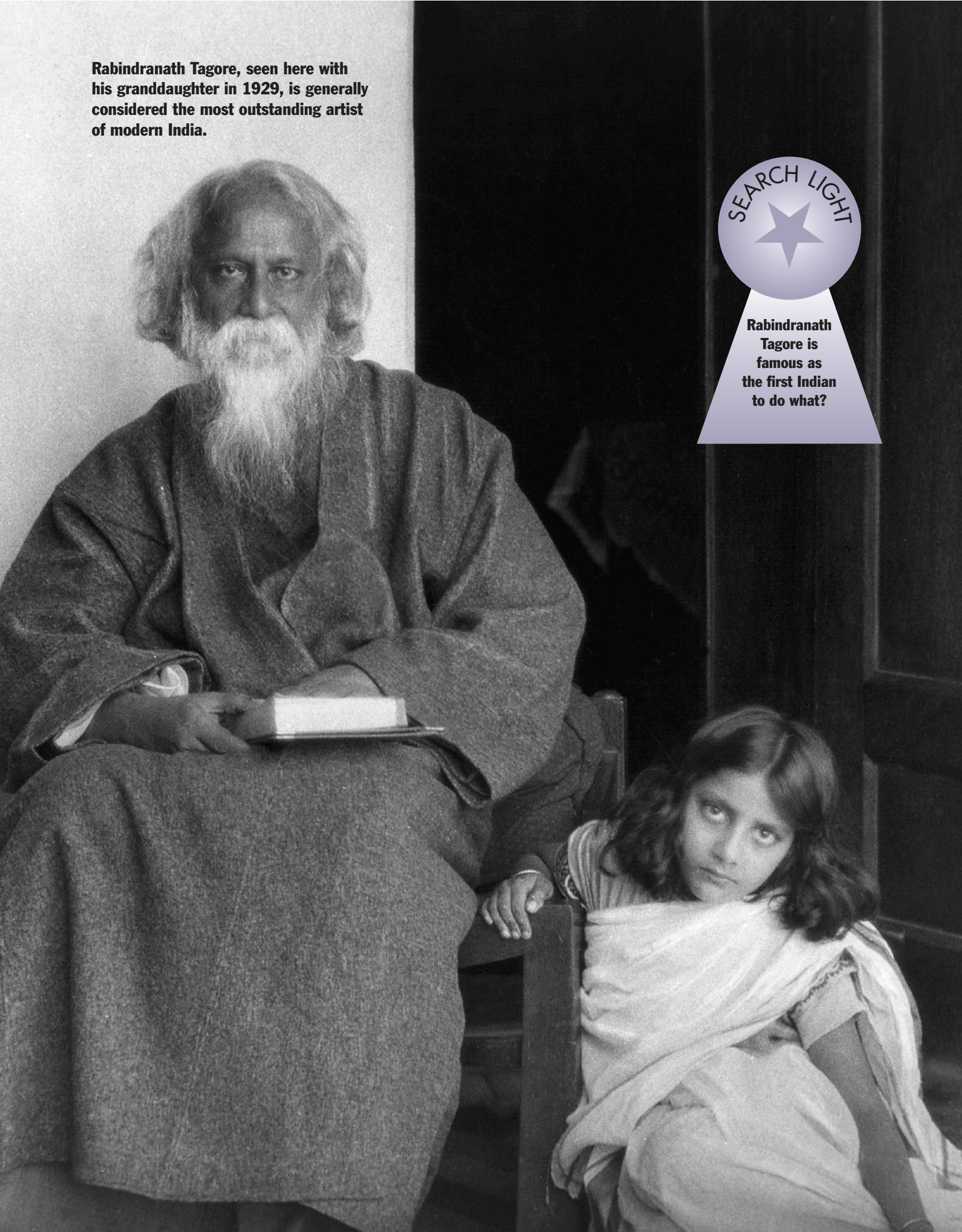


Soyinka's plays have been staged worldwide. *Death and the King's Horseman* (shown here at the Goodman Theatre in Chicago, Illinois, U.S.) dramatizes the conflict between Western morals and African culture and traditions.
The Goodman Theatre; photo by James C. Clark

DID YOU KNOW?

Soyinka often refers to the Yoruba god Ogun as an important figure for him, his writing, and his people. He describes Ogun as "the god of creativity and destruction." Ogun is traditionally the god of war, the hunt, and ironworking.

Answer: Soyinka was imprisoned for disagreeing with the Nigerian government.



Rabindranath Tagore, seen here with his granddaughter in 1929, is generally considered the most outstanding artist of modern India.

SEARCH LIGHT

Rabindranath Tagore is famous as the first Indian to do what?

Poet Laureate of India

Rabindranath Tagore, born in 1861 in Calcutta, India, started writing poems when he was only 8 years old. He grew up to be the first Indian writer to receive the Nobel Prize for Literature.

Tagore studied in India and London, England. In 1890 he published *Manasi*, his first collection of truly fine poems. In 1891 he went to East Bengal (now Bangladesh) to help manage his family's lands. He found the village people kind but very poor. Tagore wrote many poems and stories about their condition. He also wrote about the beautiful Bengali countryside, especially the Padma River.

Tagore wrote in new forms of verse and in the common language of the Bengali people, rather than in **classical** styles. His writings became very popular among all Bengalis. His poems of 1901-07 reflect his great sadness at the death of his wife and two of his children. In 1910 he wrote a little book of devotional songs called *Gitanjali*. It was translated into many languages and became a huge success. In 1913 he won the Nobel Prize for Literature.

Tagore produced 22 collections of writings during his life. He wrote songs, plays, short stories, and books, and he composed music. He also founded a school in rural West Bengal that combined European and Indian traditions. It later became Vishva-Bharati University.

In 1915 the British government knighted Tagore. Four years later he gave up his knighthood after a terrible shooting of Indians by British soldiers. All his life he spoke out against British rule of India.

Tagore lectured and read his works to people in many countries from about 1912. And at about age 70 he took up painting and became one of India's finest artists.

LEARN MORE! READ THESE ARTICLES…
BANGLADESH (VOLUME 7) • LITERATURE (VOLUME 3)
RAVI SHANKAR (VOLUME 3)

DID YOU KNOW?

Rabindranath Tagore's father was a major Hindu thinker. He founded a quiet getaway in rural West Bengal (a state of India), where his son set up his experimental school.

© E.O. Hoppé/Corbis

Answer: Tagore is famous for being the first Indian to win the Nobel Prize for Literature.

Journey to Everywhere

Imagine exploring a distant land in a giant balloon. You could drift over mountains and waterfalls, deep blue lakes, and flaming volcanoes.



Jules Verne.
© Rykoff Collection/Corbis

A French writer named Jules Verne imagined such a journey many years ago. He wrote about it in a book called *Five Weeks in a Balloon* (1863). It was his first adventure story about strange journeys. People liked the story so much that Verne decided to write more. The next one was called *A Journey to the Center of the Earth* (1864). It was about all the wonderful and scary things people might find inside the Earth.

SEARCH LIGHT

How did studying geography and science help Verne's writing? (Hint: He liked to write about things that might happen.)

As a young boy Verne often went sailing with his brother on the Loire River in France. He would imagine that he was sailing a huge **yacht** on a voyage of discovery. Verne wrote about his imaginary sea adventures in *Twenty Thousand Leagues Under the Sea* (1870). He named his imaginary submarine the *Nautilus*, after an actual submarine built in 1800. In *From the Earth to the Moon* (1865), he wrote about traveling to the Moon in a rocket ship long before powered flight was even possible.

People have said that Verne invented the future. It would be more accurate to say that he invented **science fiction**. Verne himself said that he was fortunate to live and write in a time when new discoveries and inventions were being made. He kept up with advances in geography and science to get ideas for his stories. Verne believed the discoveries he studied would someday make his imaginary journeys a reality.

LEARN MORE! READ THESE ARTICLES…
ASTRONAUTS (VOLUME 2) • LEWIS CARROLL (VOLUME 3)
SUBMARINES (VOLUME 2)

Like many of Jules Verne's novels, *Twenty Thousand Leagues Under the Sea* is filled with fantastical creatures and exciting places.
© Bettmann/Corbis

DID YOU KNOW?

Not long after the success of Verne's book *Around the World in 80 Days* (1873), journalist Nellie Bly attempted the around-the-world journey. She finished in 72 days.

Answer: His knowledge of geography and science made the settings of his stories and his invented machines seem very realistic.



SEARCH LIGHT

Find and correct the error in the following sentence: Walker was the first Aboriginal woman to be noticed.

As a young woman, Kath Walker was angry about how Aboriginal people were treated. She then began working to have the laws made more fair—and she succeeded in many ways.

Aboriginal Poet

She was born Kathleen Jean Mary Ruska, but she's known in the Aboriginal language as Oodgeroo Noonuccal. Her Aboriginal last name, Noonuccal, is the name of her clan. Kath Walker, the name she wrote under for most of her career, became a famous Australian Aboriginal writer and political protester. In fact, when her book of poetry, *We Are Going,* came out in 1964, she became the first Aboriginal woman to be published.



Kath Walker (Aboriginal name Oodgeroo Noonuccal) as an older woman.
National Archives of Australia/Canberra, Act, Australia

Walker grew up in Queensland, Australia, where many of the ancient Aboriginal customs were still practiced. At the time Walker was growing up, Aboriginal people had few rights in Australia. She was allowed to go to school only through the primary grades.

When she was 13, Walker began work as a maid. At 16 she wanted to become a nurse but wasn't allowed to because she was Aboriginal. What Walker did instead was work hard for Aboriginal rights. In 1967 she was successful in getting the anti-Aboriginal sections removed from the Australian constitution. In recognition of her efforts, she was awarded the MBE (Member of the Order of the British Empire) in 1970. Walker would later give back this award to protest further discrimination against Aboriginal people. After 1981 most of her work was published under her Aboriginal name.

Walker described her poetry as easy to understand, with simple rhymes and images. Her work focuses on the troubles of the Aboriginal people. Below is a sample of her poetry.

> But I'll tell instead of brave and fine
> when lives of black and white entwine.
> And men in brotherhood combine,
> this would I tell you, son of mine.

DID YOU KNOW?
Walker was left-handed, but her teachers in school forced her to write with her right hand. Not long ago, this practice was common in many places. Right-handedness was thought to be somehow "better" and "normal."

LEARN MORE! READ THESE ARTICLES…
AUSTRALIA (VOLUME 7) • GWENDOLYN BROOKS (VOLUME 3)
CATHY FREEMAN (VOLUME 4)

Answer: Walker was the first Aboriginal woman to be published.

National Archives of Australia/Canberra, Act, Australia

Moving to Rhythms

Thousands of years ago, early groups of people came together to dance. Hundreds of years ago, people danced at great functions in the courts of kings. Today when people gather at social events, they still dance.



© Wolfgang Kaehler/Corbis



© Kennan Ward/Corbis

(Top) Balinese dancers from Indonesia. (Bottom) Gitaga drummers and dancers of Burundi.

Dancing is one of the oldest and most popular of forms of human **expression**. Originally, there were two kinds of dances. Social dances were performed on special occasions, such as births or marriages. Religious dances were performed to ask the gods for help, such as to provide rain or cure the sick.

Over the years, many early forms became folk dances. These continue to be enjoyed to traditional music. Some dances, however, became the specialty of professional artists. This kind of dance tends to be more theatrical and creative.

Ballet dancing developed in Europe, where it became an especially graceful art form. Ballet dancers must train constantly for years to master difficult steps, turns, and leaps. With great strength and beauty, ballet dancers can tell a story through their movements. *Swan Lake*, about a princess turned into a swan, is one famous story ballet.

Twentieth-century modern dance in the West took a different approach. Often it didn't try to tell a story. Instead, the dancers worked to express pure emotions or ideas. And where ballet conveys a sense of lightness, modern dance seems much more "earthbound."

In Asia different traditions arose, producing classical dance-dramas that are highly **stylized** or formal. Some Asian dances involve not only **intricate** steps but detailed hand and arm movements as well. India's classical dance has more than 4,000 *mudra*s, or gestures portraying complex actions, emotions, and relationships. In Thailand, one traditional dance is performed with lighted candles.

LEARN MORE! READ THESE ARTICLES…
FANNY ELSSLER (VOLUME 4) • POPULAR MUSIC (VOLUME 3)
MARIA TALLCHIEF (VOLUME 3)



SEARCH LIGHT

Originally there were two kinds of dance, social dance and what else?

DID YOU KNOW?

Tap dance, a major feature of musical theater, apparently developed from very mixed sources. These include the traditional clog dance of northern England, the jigs and flings of Ireland and Scotland, and the rhythmic foot stamping of African dances.

Native American girl doing a traditional dance.
© Lindsay Hebberd/Corbis

Answer: Religious dance was the other kind of dance besides social dance.

Life Re-created on a Stage

Plays and drama in some form have been a part of all cultures throughout the world for all of human history. Altogether, the making and overall experience of a dramatic performance is called "theater."

At first, theater was part of religious celebrations. Until several hundred years ago, most people couldn't read. Seeing the religious stories acted out helped them better understand their religion.



Actors in traditional Japanese Kabuki drama.
© Charles & Josette Lenars/Corbis

Theater gradually developed into an art, and plays were written and performed for entertainment and to communicate ideas. As the art of theater grew, a whole group of professional artists grew around it. Today the theater employs a great many creative people doing different jobs to make and run a play.

The playwright is the person who writes the play's words and basic actions. That written product is called a "script." The play's director reads the script and thinks of a way to turn the script's words and actions into a live performance. The actors and actresses learn the lines of the script and pretend to be the characters in the story.

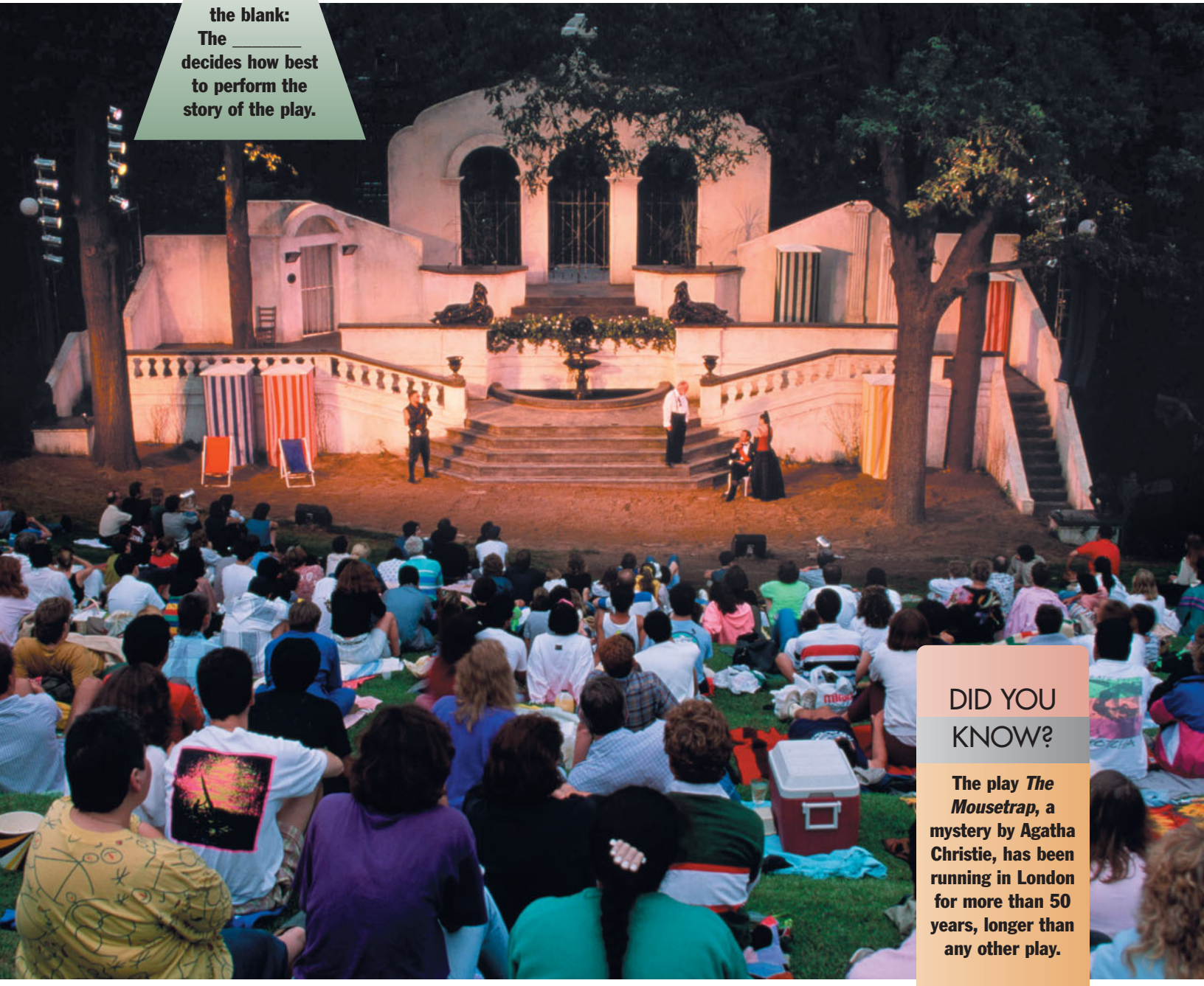
The designers make up another important group of theater artists. These behind-the-scenes people invent and build the environment of the play: the actors' costumes and makeup, the special lighting, any sound or music that's needed, props or properties (objects) used in the play, and the set or scenery the play is performed on. The stage set consists of the background, furniture, and artificial rooms that are built onstage.

All these people and elements build a fascinating dramatic world. Whether the audience is watching the Kabuki drama of Japan or a professional Shakespeare production or a school play, they are for a time part of a very special world of the imagination.

LEARN MORE! READ THESE ARTICLES…
SARAH BERNHARDT (VOLUME 3) • CINEMA (VOLUME 3)
WILLIAM SHAKESPEARE (VOLUME 4)

SEARCH LIGHT

Fill in the blank: The _____ decides how best to perform the story of the play.



Theatrical performances most often take place indoors. But people often enjoy outdoor stagings, especially when the weather is pleasant. This one in Toronto, Ontario, Canada, is a play by William Shakespeare.
© Bob Krust/Corbis

DID YOU KNOW?

The play ***The Mousetrap***, a mystery by Agatha Christie, has been running in London for more than 50 years, longer than any other play.

Answer: The director decides how best to perform the story of the play.



SEARCH LIGHT

What musical instrument often provided music in theaters during silent movies?

DID YOU KNOW?

The amazing effect of parting the Red Sea in Cecil B. DeMille's 1923 film *The Ten Commandments* was created by using a 60-foot tub of Jell-O.

Dreams on the Big Screen

When Thomas A. Edison introduced a moving-picture machine in 1894, only one person at a time could watch his Kinetoscope. But soon movies were being projected onto a large screen for large audiences.

The earliest movies were silent. Words appeared on the screen between scenes to give **dialogue** or to help explain the action. Movie theaters often used a pipe organ to provide live music.

The first feature film was *The Great Train Robbery*, a 10-minute action movie made in 1903. Audiences were thrilled with this story of the holdup of a moving train. Some people even fainted during the final scene when an actor turned and fired his gun at the camera.

In 1927 *The Jazz Singer* marked the beginning of sound in cinema. The first "talkies" were hard to understand. But the **technology** improved, and by 1931 very few silent pictures were still being made.

Gangster movies, westerns, horror films, and musicals became very popular. Cartoons were also popular, especially those made by Walt Disney's company. Film classics from Europe include Jean Renoir's dramas and Sergei Eisenstein's war epics. In the 1950s many people began to think of some directors as the "authors" of their films. Directors of this sort include Alfred Hitchcock, Satyajit Ray, Ingmar Bergman, and Federico Fellini.

Today India and Hong Kong have large film industries. And countries such as Iran, Mexico, France, Spain, and Japan produce especially beautiful, interesting films. In the late 20th century both Australia and Ireland became known for their sensitive and witty films. And, of course, America is the home of the grand and expensive **blockbuster**.



The Kobal Collection–Kennedy Miller



The Kobal Collection–Biograf Jan Sverak/Portobello Pictures



© Bettmann/Corbis



The Kobal Collection–Melampo Cinematografica/Sergio Strizzi

(Clockwise from top right) *The Great Train Robbery* (1903); Italian actor-writer-director Roberto Benigni's *La Vita è Bella* (1997; *Life Is Beautiful*); Czech director Jan Sverak's *Kolya* (1996); and Australian director John Duigan's *Flirting* (1989).

LEARN MORE! READ THESE ARTICLES…
AKIRA KUROSAWA (VOLUME 3) • MOTION PICTURES (VOLUME 2)
SATYAJIT RAY (VOLUME 3)

Director Alfred Hitchcock's *Spellbound* (1945).
© John Springer Collection/Corbis

Answer: The pipe organ often accompanied silent movies.

A Grand Musical Play

SEARCH LIGHT

Find and correct the error in the following sentence: In an opera actors usually speak their lines.

Like a play, an opera is a story acted out onstage. In an opera the actors sing their lines instead of speaking them. But an opera is different from a musical. Unlike in a musical, opera performers usually don't speak at all. Their songs don't happen between conversations, but rather their songs are the conversations. The music an orchestra plays for an opera is as important to the overall effect as the singing.

Traditional opera tells a big story in a grand way. The story is usually serious, though there are comic operas too. Many operas tell tragic tales of lovers who are kept apart. Richard Wagner's *Tristan und Isolde* is one of these. Some operas, like Wolfgang Amadeus Mozart's *The Magic Flute*, tell a story of mystery and enchantment. Comic operas, such as Gioacchino Rossini's *The Barber of Seville*, often feature silly situations and people.



Outdoor performance of the opera *Aida* by Giuseppe Verdi.
© Gail Mooney/Corbis

In the late 1800s, W.S. Gilbert and Arthur Sullivan wrote comic operas that poked fun at people from various walks of life. One of the most popular of their light operas, or operettas, was *The Pirates of Penzance*. But today's opera composers continue the dramatic spirit of classic opera, even though their subjects have changed.

A special form of opera developed in China during the mid-19th century. It is called *jingxi*, and English speakers know it as Peking opera. Its performers use larger-than-life movements to **portray** their characters. The **rhythmic** beating of clappers marks time for movements, and the performance may feature acrobatic fighting scenes.

LEARN MORE! READ THESE ARTICLES…
WOLFGANG AMADEUS MOZART (VOLUME 4) • JOAN SUTHERLAND (VOLUME 4)
KIRI TE KANAWA (VOLUME 3)



***Jingxi*, known in English as Peking opera, is a spectacular musical and dramatic show.**
© Marc Garanger/Corbis

DID YOU KNOW?

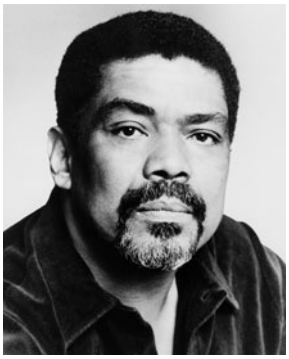
Classic operas are usually performed in the language they were written in. Today, if the audience doesn't speak the language of the opera, the opera company may show the singers' words in the audience's language on a screen above the stage.

Answer: In an opera actors usually sing their lines.

Enriching American Dance

Alvin Ailey, Jr., was born in 1931 in Texas. As a child, he helped his mother pick cotton to earn money. They moved to Los Angeles when Ailey was about 11 years old.

In Los Angeles, Ailey discovered dance during a junior high school field trip to a ballet. He began to study with the dance teacher Lester Horton and joined the Lester Horton Dance Theater in 1949. When Horton died four years later, Ailey became the director of the company. However, the next year the company broke up, and Ailey moved to New York City.



Alvin Ailey in 1983.
© Bettmann/Corbis

In New York Ailey danced in many performances and worked with some famous dance **choreographers**. They included Martha Graham and Hanya Holm. Ailey's own modern dancing combined what he learned from Lester Horton with African and Afro-Caribbean styles.

In 1958 Ailey formed the Alvin Ailey American Dance Theater. Most of its members were African Americans, like Ailey. One of the company's early performances was a work by Ailey called *Revelations*. The dance is set to American **Negro spirituals**, and it has become the company's most popular work.

Since the 1960s Ailey's company has performed around the United States and all over the globe. Its popularity made Ailey one of the most famous American choreographers in the world and encouraged people everywhere to appreciate and enjoy modern dance.

Alvin Ailey died in 1989, but the Alvin Ailey American Dance Theater continues to **flourish**. And just as Ailey hoped, the company he founded has expanded from a troupe of mostly black performers to a rich multi-ethnic mix.

SEARCH LIGHT

Ailey began his professional dancing in
a) the 1950s.
b) the 1940s.
c) the 1980s.

LEARN MORE! READ THESE ARTICLES…
COUNT BASIE (VOLUME 4)
NEW YORK CITY, U.S.: THE GREAT CULTURE MART (VOLUME 9)
MARIA TALLCHIEF (VOLUME 3)



Alvin Ailey's dance *Revelations* is the company's signature piece. Since it is set to the religious music of his childhood, the name is quite appropriate. Revelation is the name of the last book of the Christian New Testament.

© Hulton-Deutsch Collection/Corbis

DID YOU KNOW?

Ailey choreographed 79 ballets during his lifetime. Altogether, however, the Alvin Ailey American Dance Theater has performed over 170 works created by more than 65 choreographers.

Answer: b) the 1940s.



DID YOU KNOW?

Bernhardt liked to keep her fans entertained and shocked, so she let it be known that she slept in a coffin every night. Though she slept mostly in a regular bed, she did pose for photographs "asleep" in her coffin.

EN

L'HONNEUR

de

SARAH BERNHARDT

ses admirateurs et ses amis

"The Divine Sarah"

Sarah Bernhardt, called "the Divine Sarah" by playwright Oscar Wilde, is one of the greatest French actresses of the 19th century—and one of the most famous actresses of all time.

In 1861, at age 17, Bernhardt was enrolled in the acting course at the Paris Conservatoire. She admired some of her teachers. But she considered the school's methods too old-fashioned. Through a family friend, Bernhardt was accepted into the national theater company, the Comédie-Française. But she soon had to leave because she slapped a senior actress who had been rude to her younger sister. After a period when she questioned her talent for acting, Bernhardt joined the Odéon theater and, in six years, established her reputation as an actress.



Sarah Bernhardt in the title role of Victorien Sardou's play *Theodora*.
© Hulton-Deutsch Collection/Corbis

Building on her success, Bernhardt returned to the Comédie-Française. When she played the title role in Jean Racine's *Phédre*, she surprised the critics with the passion of her performance and won rave reviews. From that point on she was a star. She performed in France and internationally. And she was in demand for new plays by major writers of the day as well as for classics such as William Shakespeare's works. She even played a number of male roles, including Hamlet.

Bernhardt possessed a wide emotional range and could show sensitive detail in her acting. Her grace, striking looks, and charm gave her a **commanding** stage **presence**. And her unique voice was sometimes described as sounding like a "golden bell." Her popularity also increased because of her dramatic personality offstage.

In 1915 an earlier injury worsened, and her right leg had to be removed. She continued to act, however, playing parts she could perform while seated.

SEARCH LIGHT

Why do you suppose Sarah Bernhardt was nicknamed "the Divine Sarah"?

LEARN MORE! READ THESE ARTICLES…
JUDI DENCH (VOLUME 3) • PARIS, FRANCE (VOLUME 6)
WILLIAM SHAKESPEARE (VOLUME 4)

Poster of Sarah Bernhardt from the early 1900s.
© Historical Picture Archive/Corbis

Answer: Her wonderful acting, striking looks, and beautiful voice made Sarah Bernhardt seem to some like a goddess.

A Commanding Actress

SEARCH LIGHT

Dame Judi Dench has made a number of films and some TV programs, but her greatest love is the _____.

Dame Judi Dench is one of England's most famous and admired actresses.

Judith Olivia Dench was born in 1934. In 1957 she had her professional stage **debut** as Hamlet's love, Ophelia, in Shakespeare's play *Hamlet.* Her performance and delivery were delicate but intelligent, and the character came alive for audiences.

Although a fairly small woman, Dench has always been known for her **commanding** presence onstage. She has acted with the Royal Shakespeare Company and other major theaters. Dench has also played modern roles during her stage career. She created the role of the odd but lovable Sally Bowles in the first London production of the musical *Cabaret* (1968). But Shakespeare has been her specialty.

Outside Great Britain, people probably know Dench best for her role as the stern spy chief "M" in the James Bond movies. Dench's first film, *The Third Secret,* appeared in 1964. Years later, the 1997 film *Mrs. Brown* brought her wide international attention. She played Queen Victoria in that film. In 1998 she played another queen, Queen Elizabeth I, in the film *Shakespeare in Love*. For this she won an Academy Award for best supporting actress.

DID YOU KNOW?

Dame Judi Dench's first appearance onstage was as a snail in a production at the Mount School.

The great strength that Dench communicates has marked her acting style. In addition, however, she gives touchingly personal life to the characters she plays, whether they are grand historical figures or everyday people. Her two popular television series, "A Fine Romance" and "As Time Goes By," show off her skill at playing ordinary women.

Dench has always considered the stage her first love. For her remarkable contribution to theater and films, Dench was honored with a knighthood as Dame Commander of the British Empire in 1988.

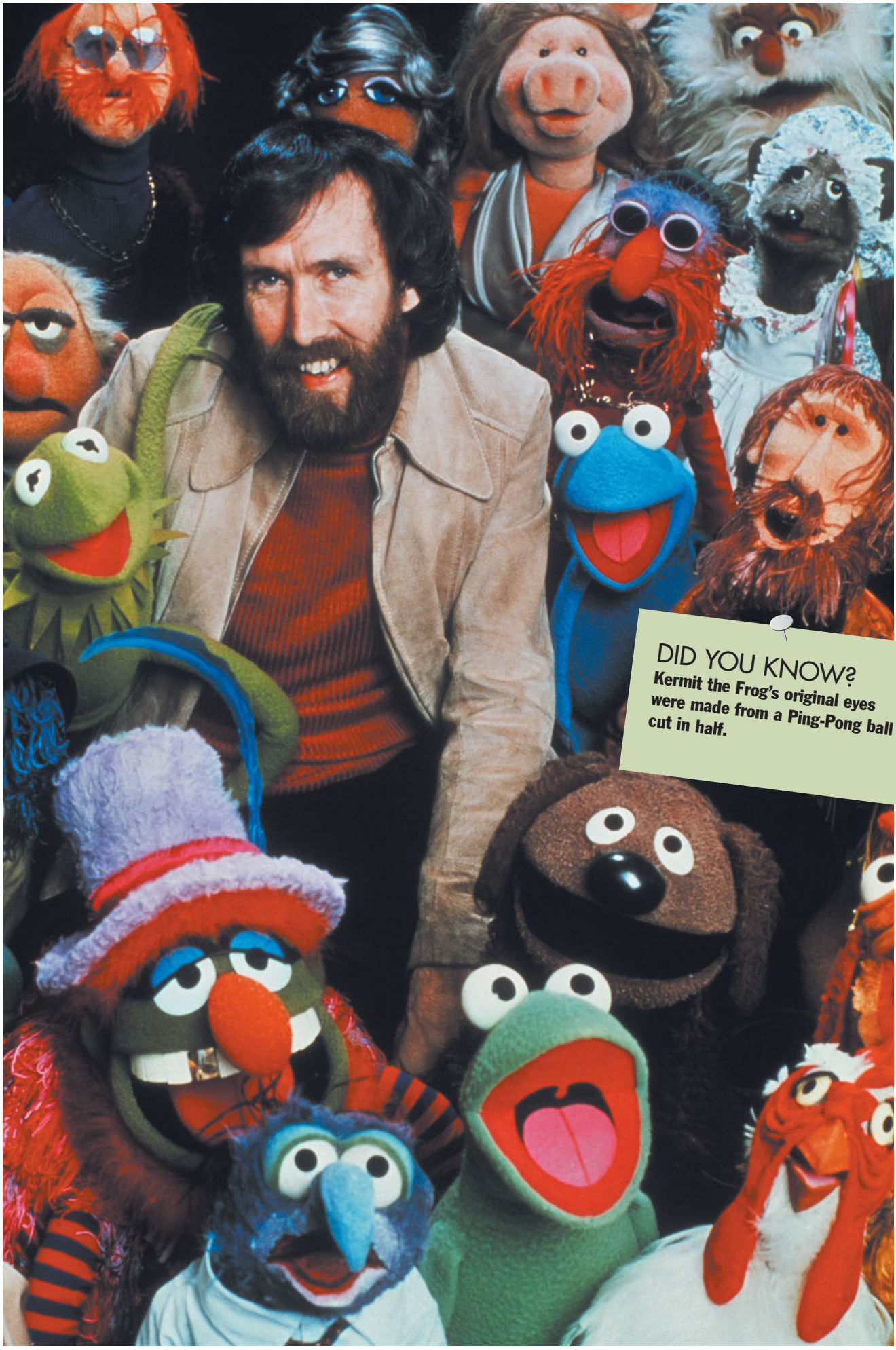
LEARN MORE! READ THESE ARTICLES…
SARAH BERNHARDT (VOLUME 3)
WILLIAM SHAKESPEARE (VOLUME 4)
THEATER (VOLUME 3)

In 1994 Judi Dench played the actress Irina Arkadina in the classic Russian play *The Seagull*, written by Anton Chekhov.
© Robbie Jack/Corbis



Answer: Dame Judi Dench has made a number of films and some TV programs, but her greatest love is the stage (or theater).

JUDI DENCH



DID YOU KNOW?

Kermit the Frog's original eyes were made from a Ping-Pong ball cut in half.

Muppet Master

As a puppeteer and creator of the Muppets, Jim Henson delighted, entertained, and educated several generations of children and adults.

Henson was born in Mississippi in 1936. He grew up in Washington, D.C., and began his career as a puppeteer while in high school there. Later he and his wife had a short puppet show on local television called "Sam and Friends." While he was still in college, Henson put together a team of puppeteers who performed in commercials and on TV programs.



Jim Henson's granddaughters Katrina (left) and Virginia Henson with Kermit the Frog when he was given his own star on the Hollywood Walk of Fame in 2002.
© Reuters Newmedia Inc./Corbis

In 1969 the Children's Television Workshop created a TV show with Henson called "Sesame Street." The program featured his "Muppets" and included such now famous characters as Kermit the Frog, Grover, Big Bird, and Cookie Monster. Kids loved the Muppets. "Sesame Street" also proved Henson's belief that learning could be fun.

The Muppets are a unique form of puppetry that was new to television. Often it takes two people to operate a Muppet, since the head and each arm may require a human hand to move them. The larger Muppets, like Snuffleupagus and Big Bird, are actually costumed actors. The puppeteer who controls each Muppet also provides the character's voice. Henson operated and voiced Kermit himself for 35 years.

"Sesame Street" was so successful that in 1976 Henson created "The Muppet Show"—a TV program for both adults and children. The Muppets make movies as well, including *The Muppet Movie*, *The Muppets Take Manhattan*, and *Muppets from Space*.

Sadly, Henson died suddenly of pneumonia in 1990. But his Muppets continue to perform today, with Henson's son Brian leading the company.

LEARN MORE! READ THESE ARTICLES…
FOLK ARTS AND CRAFTS (VOLUME 3) • FROGS (VOLUME 11)
THEATER (VOLUME 3)

SEARCH LIGHT

Henson's first TV show was called
a) "Cheers."
b) "Sam and Friends."
c) "The Banana Bunch."

Jim Henson, seen here among some of his Muppets, was a favorite with both children and adults. Some adults enjoyed Henson's work from the time they were children themselves.

© Bettmann/Corbis; (left and above) © & ™2003 The Jim Henson Company. THE MUPPET SHOW mark & logo, MUPPET, MUPPETS, KERMIT, characters and elements are trademarks of The Jim Henson Company. All Rights Reserved.

Answer: b) "Sam and Friends."

A Vision in Motion

Filmmaker Akira Kurosawa got his start working as an assistant director for a Japanese film studio. In 1943 he wrote and directed his first feature film, *Sanshiro Sugata*. The story of 19th-century **judo** masters became very popular with Japanese audiences.

Kurosawa's fame grew in 1948 with his film *Yoidore tenshi* (*Drunken Angel*). The film is about an alcoholic doctor who helps the poor fight against disease and **gangsters**. It starred Toshiro Mifune, who would appear in most of Kurosawa's films. In 1951 *Rashomon* made Kurosawa the first world-famous Japanese filmmaker. The film won the Grand Prix at the Venice Film Festival and the Academy Award for best foreign film.

Many consider Kurosawa's best film to be *Ikiru* (*To Live*), from 1952. It follows a man who has only a few months to live and spends his last days helping the poor. Two



Kurosawa with American directors Francis Ford Coppola and George Lucas.
© The Kobal Collection—Toho/Kurosawa

SEARCH LIGHT

Which of the following films is called *Seven Samurai* in English?
a) *Shichinin no samurai*
b) *Yoidore tenshi*
c) *Ikiru*



Kurosawa's film *Ran* ("Chaos") is felt by many to be his finest work. It is a version of Shakespeare's play *King Lear* set in 16th-century Japan.

© The Kobal Collection/Herald Ace-Nippon—Herald-Greenwich

DID YOU KNOW?

Kurosawa was well known for making classic European literature into films with Japanese settings. For example, *Kumonosu-jo* (*The Throne of Blood*) was adapted from William Shakespeare's *Macbeth* and told from a Japanese viewpoint.

years later Kurosawa released his most popular film: *Shichinin no samurai* (*Seven Samurai*). The film is a **tribute** to American movie westerns—but with **samurai** warriors instead of cowboys. In fact, it was later remade in the United States as the western *The Magnificent Seven*.

Many of Kurosawa's films were set in historical Japan. Yet his work was popular not only in Japan but throughout the world. It combined artistic ideas, emotions, and images with plenty of action and drama to keep viewers entertained.

Kurosawa died in 1998. The Kurosawa Akira **Memorial** Satellite Studio has been opened on the Japanese island of Kyushu. It was there that he filmed several of his masterpieces, including *Ran* and *Kagemusha*.

LEARN MORE! READ THESE ARTICLES…
JAPAN: MODERN NATION OF ANCIENT TRADITIONS (VOLUME 7)
MOTION PICTURES (VOLUME 2) • SATYAJIT RAY (VOLUME 3)



Answer: a) *Shichinin no samurai*



Satyajit Ray's 1977 film *Shatranj ke Khilari* (in English, *The Chess Players*) was his first one made in the Hindi language. It deals with the effect of the West on India.
© Nimai Ghosh

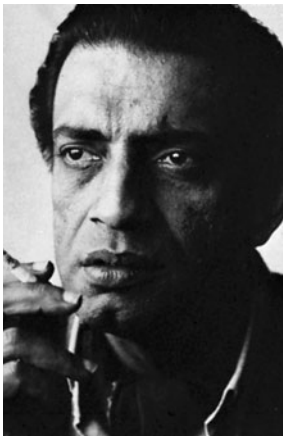
DID YOU KNOW?

Because Ray had so little money for his first movie, his film crew worked for free. This seemed okay, since none of the crew had ever worked on a movie before.

Indian Cinema for the World

Satyajit Ray is probably India's best-known film director and screenwriter. His sensitive and visually interesting works let the world see Indian cinema as more than simple entertainment.

Ray was born in Calcutta, India, in 1921. He started out working as an illustrator for books and advertising. At one point he illustrated the Bengali novel *Pather Panchali*—in English, *The Song of the Road*. It tells the story of Apu, the poor son of a priest. Apu wants to be a novelist and travels from his small village to the city of Calcutta. The story shows the conflict between traditional and modern life.



Satyajit Ray.
© Camera Press

Ray was interested in making a film of *Pather Panchali.* And a famous French director, Jean Renoir, encouraged him. Ray started work on the film in 1952, using friends as actors and film crew. He at first used his own money, but the West Bengal government eventually supplied the rest.

Ray completed the film in 1955. It was a tremendous success. *Pather Panchali* won a major award at the 1956 Cannes International Film Festival. After this, Ray became a very popular and respected filmmaker.

Most of his films are about the struggles of poor people. His movies also focus on the challenges of the modern world. Ray made all kinds of movies: comedies, tragedies, romances, musicals, and detective stories. All of his films, however, show his insight into how people behave and what they go through.

Ray also wrote many short stories and books. But he is best remembered as the person who woke up the world to the possibilities of fine filmmaking in India.

SEARCH LIGHT

How did Ray start out?
a) as an illustrator
b) as a writer
c) as a director

LEARN MORE! READ THESE ARTICLES…
CINEMA (VOLUME 3) • INDIA (VOLUME 7) • AKIRA KUROSAWA (VOLUME 3)

Answer: a) as an illustrator



SEARCH LIGHT

Which of these is not the name of a ballet?
a) Serenade
b) Woman of the Year
c) Gaîté Parisienne
d) Scheherazade

DID YOU KNOW?

Maria's sister, Marjorie Tallchief, was a successful ballerina as well. She was the first American to become a lead dancer with the Paris Opéra Ballet. And she and Maria worked together many times over the years.

America's Prima Ballerina

Delicate, **effortlessly** graceful, radiant, and enchanting—that is how Maria Tallchief has been described. Many people consider her America's finest ballerina ever.

Maria Tallchief was born in 1925, in the small town of Fairfax, Oklahoma. She spent the first eight years of her life in northeastern Oklahoma. Her father was a member of the Osage tribe of American Indians. Her mother was of Irish and Scottish **descent**.

Tallchief enjoyed the Osage ceremonial dances. She loved music and dancing. She trained as a pianist, but her heart was in dancing.

When her family moved to Los Angeles, she studied dance. One of Tallchief's teachers, dancer Bronislava Nijinska, was strict. She always said, "When you sleep, sleep like a ballerina. Even on the street waiting for a bus, stand like a ballerina."



Tallchief receiving National Medal of Arts from President Bill Clinton in 1999.
AP/Wide World Photos

Tallchief worked hard for five years and then joined the Ballet Russe de Monte Carlo. She danced in many ballets and even gave solo performances. Some of these solos were in *Scheherazade* and **choreographer** George Balanchine's *Serenade* and *Firebird*.

Tallchief married Balanchine in 1946, and soon they were both working with the company that became the New York City Ballet. Tallchief was so popular that she had to give as many as eight performances in a week! She was the prima ballerina (main female dancer) with NYCB for most of the next 20 years.

In 1953 she was honored as America's "Woman of the Year." That same year her home state of Oklahoma honored her achievements and her Native American identity by naming her Wa-Xthe-Thomba, meaning "Woman of Two Worlds."

Tallchief retired from dancing in 1965. She felt it was time to pass on to young dancers what she had learned about the art that she loved.

LEARN MORE! READ THESE ARTICLES…
DANCE (VOLUME 3) • FANNY ELSSLER (VOLUME 4) • AMERICAN INDIANS (VOLUME 4)

Maria Tallchief's dancing in *Firebird* became her most famous work.
© Hulton-Deutsch Collection/Corbis

Answer: b) Woman of the Year

New Zealand's Opera Star

Kiri Te Kanawa was born in 1944 in New Zealand. At the age of 5 weeks, she was adopted. Her adoptive and biological mothers were both of British descent. Her adoptive and biological fathers were Maori (native New Zealanders).

Te Kanawa's mother discovered very early that her daughter was musical. So her parents sent her to a school where a well-known singer taught music. After leaving school Te Kanawa won various singing competitions in New Zealand and Australia.

By the 1970s Te Kanawa was world famous as a **soprano** diva (leading female vocalist) of opera. Her first big success was in Wolfgang Amadeus Mozart's opera *The Marriage of Figaro*. She performed in many Mozart operas after that.

SEARCH LIGHT

True or false? Te Kanawa's voice is described as tenor.

Te Kanawa made her first appearance at the Metropolitan Opera in New York City quite by accident. The lead star playing Desdemona in Giuseppe Verdi's *Otello* suddenly fell ill. Te Kanawa was asked to perform instead, with only three hours to rehearse! She did such a splendid job that everyone raved about her performance.

In 1981 Te Kanawa sang at the wedding of Britain's Prince Charles and Diana, princess of Wales. She sang George Frideric Handel's "Let the Bright **Seraphim**." This performance was seen on television by millions of viewers all over the world.



Te Kanawa filming a video.
© Le Poer Trench Michael—Sygma/Corbis

Te Kanawa is particularly known for the warmth of her soprano voice and her engaging personality on the stage. She has made a number of recordings. Most of these are of classical pieces, but she has also recorded traditional Maori songs from her New Zealand childhood.

In 1982 Te Kanawa was given a British noble title. She was made Dame Kiri Te Kanawa for the joy her singing had brought to so many.

LEARN MORE! READ THESE ARTICLES…
NEW ZEALAND (VOLUME 7) • OPERA (VOLUME 3)
JOAN SUTHERLAND (VOLUME 4)

Dame Kiri Te Kanawa appears here in Richard Strauss's comedic opera *Arabella*.
© Robbie Jack/Corbis



DID YOU KNOW?

In 1990, during a tour of Australia and New Zealand, Kiri Te Kanawa performed at an outdoor concert in the city of Auckland. An audience of 140,000 people attended.

Answer: FALSE. She is a soprano.

GLOSSARY

abstract (adjective) artistically communicating feelings or ideas about a subject, rather than creating a realistic image

acrylic type of paint

affordable reasonable in price

archaeology (adjective: archaeological) the science that deals with past human life as shown by fossils, tools, and other material left by ancient peoples

archbishop high-ranking churchman in some Christian churches who supervises church government in a very large area

blockbuster huge, successful event

cast to form a shape by pouring a liquid into a mold and letting it harden

choreographer creator of a dance

civil war war between opposing groups of citizens of the same country

classical traditional in style

commanding grand and powerful

commission (verb) to order to be made; (noun) an order granting the power to perform various acts or duties

compose to create a work of art

composition literary, musical, or other artistic work

conductor the leader of an orchestra

conquistador (plural: conquistadores) a Spanish conqueror of Latin America

critic person who studies and comments on the quality of performances or works of art

dean head of a division of a school or university

debut first formal public appearance

depict to represent by a picture

descent ancestry, heritage, or origin

dialogue conversation in a play, film, or written work

dictate to speak for another person to write down or for a machine to record

effortless easy and natural

energetic lively or active

expression communication, usually of emotions or ideas

fantastical highly imaginative and unrealistic

fiber strand or threadlike structure

flourish to grow successfully; to do well

formal following a specific order or pattern

fresco painting done on freshly spread moist plaster

fusion the blending or combination of two or more things, as if melted together

gangster member of a gang of criminals

gospel, or **gospel music** black American music that grew mostly from Christian church services, blues, and traditional spirituals

humanitarian devoted to the happiness and welfare of other people

hymn song of joy or praise, often to a god

industrialized built up and modernized through business and manufacturing

industry business and manufacturing

integrate (adjective: integrated) to combine two or more parts in order to create a more balanced whole; *especially*, to remove barriers that isolate one group of people from another

intricate complicated or detailed

ivory material that makes up elephant and walrus tusks

judo sport, developed from the Japanese fighting art of *jujitsu*, in which opponents use quick movements and careful positioning to try to throw each other to the ground

landscape picture showing views of nature and the countryside

lyrics the words of a song

majestic grand or splendid

memorial something that keeps alive the memory of a person or event

mourn to feel great sorrow, usually because of a death or other loss

mural a painting on a wall

Negro spiritual religious folk song developed among blacks in the southern United States

orchestra group of musicians playing together, usually with a leader called a "conductor"

pastel type of drawing crayon

poet laureate poet honored by a country or other region as its most outstanding poet

political having to do with creating and controlling a government

portray to show by making a picture or by imitating; also, to act the part of a character in a play

presence the strong and self-confident quality a person has that makes others focus on him or her

print (noun) work of art made by a process that allows more than one copy of an image to be made

recycle to reuse, or to pass used or scrap material through various changes in order to create new useful products from it

refined polished, complex, and advanced

revolution (adjective: revolutionary) activity or movement designed to make changes in a situation

rhythm (adjective: rhythmic) regular pattern of sound

samurai warrior class in Japan from about the 12th to the mid-19th century

science fiction stories that deal with the effects of real or imagined science on society or individuals

score in films, the background music that goes with the pictures on the screen

sculpture three-dimensional artwork, usually shaped by carving, molding, or welding

self-portrait picture of a person, usually showing the face, that is painted or drawn by the artist himself or herself

seraphim in Christianity, Islam, and Judaism, special angels who guard God's throne

shrine place where honor or worship is offered to a saint or deity

slum crowded, dirty, run-down housing

soprano the highest woman's singing voice; also, a person who sings in this voice

stylized simplified or made to suggest natural forms but not imitate them

superstition unproven belief usually based on a mistaken idea of how something is caused

symbolize to stand for something else; *especially*, to stand for or suggest something that cannot itself be pictured or shown

technical having to do with the way a skilled individual handles the details of an art or craft

technology scientific ideas and knowledge put to actual use

texture the feel of a surface

theme the main idea or subject of a work of art; especially, in music, the main melody that a piece of music builds on

three-dimensional having depth (or thickness) in addition to width and height

translation version of a written work that has been changed from its original language into another

tribute gift, performance, or action meant to show appreciation, respect, or caring for someone or something

troupe company or group; *especially*, a working group of stage performers

vaudeville popular American form of entertainment from the 1890s to the 1930s, involving musical, dancing, comedy, magic, and other variety acts

vivid bright or dramatic

weld to join metal parts together with heat

yacht small ship or large boat used for pleasure cruising or racing

I N D E X

abstract art
sculpture *page* **11**

Ailey, Alvin (American dance artist) *page* **78**

"Alice's Adventures in Wonderland" (book by Carroll)
Lewis Carroll *page* **59,** photograph *page* **58**

Ando Hiroshige (Japanese artist): *look under* Hiroshige

architecture *page* **13**
LEARN MORE *look under* Fathy, Hassan; Michelangelo

Armstrong, Louis, *also called* Satchmo (American musician) *page* **39**

ax stroke (painting)
Did you know? *page* **28**

ballet (dance)
dance *page* **70**
LEARN MORE *look under* Tallchief, Maria

Basho, *also called* Matsuo Munefusa (Japanese poet) *page* **52**

Beatles, the (British rock group)
Did you know? *page* **33**
Ravi Shankar *page* **48**

Beethoven, Ludwig van (German composer) *page* **40**

Bernhardt, Sarah, *also called* The Divine Sarah (French actress) *page* **81**

big-band music
jazz *page* **35**
popular music *page* **32**

Borges, Jorge Luis (Argentine writer) *page* **55**

Brooks, Gwendolyn (American poet and teacher) *page* **56**

Calder, Alexander (American artist)
sculpture *page* **11**

Carroll, Lewis, *also called* Charles Dodgson (British writer) *page* **59**

chamber music
classical music *page* **36,** photograph *page* **36**

Christie, Agatha (British writer)
Did you know? *page* **73**

cinema (motion picture business) *page* **75**
LEARN MORE *look under* Dench, Judi; Kurosawa, Akira; Ray, Satyajit

classical music *page* **36**
LEARN MORE *look under* Beethoven, Ludwig van; opera

cool jazz
jazz *page* **35**

crafts: *look under* folk arts and crafts

dance *page* **70**
LEARN MORE *look under* Ailey, Alvin; Tallchief, Maria

"David" (sculpture by Michelangelo)
Michelangelo *page* **21,** photograph *page* **20**

Davis, Miles (American musician)
jazz *page* **35**

Dench, Judi, *also called* Dame Judi Dench, *or* Judith Olivia Dench (British actress) *page* **82**

Dickinson, Emily (American poet) *page* **60**

directing (arts)
theatre *page* **72**
LEARN MORE *look under* Ray, Satyajit

Divine Sarah, The (French actress): *look under* Bernhardt, Sarah

Dixieland (music)
jazz *page* **35**

Dodgson, Charles (British writer): *look under* Carroll, Lewis

Donatello (Italian sculptor)
sculpture photograph *page* **11**

drama (literature and theatre)
theatre *page* **72**

Fathy, Hassan (Egyptian architect) *page* **15**

films: *look under* cinema

folk arts and crafts *page* **6**
LEARN MORE *look under* folk dances; folk music

folk dances
dance *page* **70**

folk music *page* **31**
LEARN MORE *look under* folk arts and crafts; popular music; qawwali

frescoes (painting)
Michelangelo *page* **21,** photograph *page* **21**
painting *page* **8**

Gogh, Vincent van (Dutch painter): *look under* van Gogh, Vincent

haiku (Japanese poetry)
Basho *page* **52**

Henson, Jim (American puppeteer) *page* **85**

hip-hop (music and culture)
Did you know? *page* **30**

Hiroshige, *also called* Ando Hiroshige (Japanese artist) *page* **17**

jazz (music) *page* **35**
LEARN MORE *look under* Armstrong, Louis; popular music

jingxi (music): *look under* Peking opera

Kabuki (Japanese arts)
theatre photograph *page* **72**

Kahlo, Frida (Mexican painter) *page* **19**
LEARN MORE *look under* Rivera, Diego

Kermit the Frog (Muppet)
Jim Henson *page* **85,** photograph *page* **85**

Khan, Nusrat Fateh Ali (Pakistani singer) *page* **43**

Kurosawa, Akira (Japanese film-maker) *page* **86**

Ladysmith Black Mambazo (South African music group) *page* **44**

landscape painting (art)
Hiroshige *page* **17**
painting *page* **8**
Xia Gui *page* **28**

literature (art) *page* **50**
LEARN MORE *look under* Basho; Borges, Jorge Luis; Brooks, Gwendolyn; Carroll, Lewis; Dickinson, Emily;

Soyinka, Wole; Tagore, Rabindranath; Verne, Jules; Walker, Kath

"Magic Flute, The" (opera by Mozart)
opera *page* **76**

Michelangelo (Italian artist) *page* **21**

movies: *look under* cinema

Mozart, Wolfgang Amadeus (Austrian composer)
Ludwig van Beethoven *page* **40**
opera *page* **76**

Muppets (puppets)
Jim Henson *page* **85,** photograph *page* **84**

murals (paintings)
Diego Rivera *page* **22,** illustration *page* **22**
painting *page* **8**

music: *look under* classical music; folk music; jazz; opera; popular music

Noonuccal, Oodgeroo (Australian writer): *look under* Walker, Kath

Oldenburg, Claes (American artist)
sculpture photograph *page* **10**

opera (music) *page* **76**
classical music *page* **36**
LEARN MORE *look under* Te Kanawa, Kiri; theater

orchestra (music)
classical music *page* **36,** photograph *page* **37**

painting (art) *page* **8**
LEARN MORE *look under* Hiroshige; Kahlo, Frida; Michelangelo; Rivera, Diego; van Gogh, Vincent; Xia Gui

Peking opera, *also called* jingxi
opera *page* **76,** photograph *page* **77**

performing arts: *look under* cinema; dance; opera; theater

poetry: *look under* Basho; Brooks, Gwendolyn; Dickinson, Emily; qawwali; Tagore, Rabindranath; Walker, Kath

popular music, *also called* pop music *page* **32**
LEARN MORE *look under* folk music; jazz; Ladysmith Black Mambazo; Santana, Carlos

portraits (art)
Frida Kahlo *page* **19,** illustration *page* **18**
painting *page* **8**
Vincent van Gogh illustration *page* **27**

puppetry: *look under* Henson, Jim

qawwali (music)
Nusrat Fateh Ali Khan *page* **43**

raga (Indian music)
Did you know? *page* **49**

rap music
Did you know? *page* **30**

Ray, Satyajit (Indian film director) *page* **89**
Ravi Shankar *page* **48**

Renaissance (European history)
Michelangelo photograph *page* **20**

Rivera, Diego (Mexican painter) *page* **22**
Frida Kahlo *page* **19**

Rodin, Auguste (French sculptor) *page* **24**

Romanticism (arts)
Did you know? *page* **41**

Rossini, Gioacchino (Italian composer)
opera *page* **76**

Ruska, Kathleen Jean Mary (Australian writer): *look under* Walker, Kath

sabi (Japanese art)
Did you know? *page* **53**

sand painting
painting *page* **8,** photograph *page* **8**

Santana, Carlos (Mexican-American musician) *page* **47**

Satchmo (American musician): *look under* Armstrong, Louis

scat (music)
Louis Armstrong *page* **39**

science fiction (literature)
Jules Verne *page* **66**

scripts (literature)
theatre *page* **72**

sculpture *page* **11**
LEARN MORE *look under* Michelangelo; Rodin, Auguste

"Sesame Street" (television program)
Jim Henson *page* **85**

Shakespeare, William (English writer)
Did you know? *page* **87**

Shankar, Ravi (Indian musician) *page* **48**

silent movies
cinema *page* **75**

Sistine Chapel (chapel in Vatican City)
Michelangelo *page* **21,** photograph *page* **21**

sitars (musical instruments)
Ravi Shankar *page* **48,** photograph *page* **48**

sonatas (music)
classical music *page* **36**

Soyinka, Wole, *also called* Akinwande Oluwole Soyinka (Nigerian writer) *page* **62**

string quartet (music)
classical music photograph *page* **36**

Surrealism (art)
Frida Kahlo *page* **19**

symphonies (music)
classical music *page* **36**

Tagore, Rabindranath (Indian poet) *page* **65**

talkies (motion pictures)
cinema *page* **75**

Tallchief, Maria (American dancer) *page* **91**

tap dance
Did you know? *page* **71**

Te Kanawa, Kiri, *also called* Dame Kiri Te Kanawa (New Zealand opera singer) *page* **92**

theater (arts) *page* **72**
dance *page* **70**
LEARN MORE *look under* Bernhardt, Sarah; Dench, Judi; Henson, Jim; opera; Soyinka, Wole

ukiyo-e (Japanese art)
Hiroshige *page* **17**

van Gogh, Vincent (Dutch painter) *page* **27**
Did you know? *page* **9**

Verne, Jules (French writer) *page* **66**

visual arts: *look under* architecture; folk arts and crafts; painting; sculpture

Walker, Kath, *also called* Kathleen Jean Mary Ruska, *or* Oodgeroo Noonuccal (Australian writer) *page* **68**

Xia Gui (Chinese painter) *page* **28**

Encounter the master artists of yesterday and today in THE ARTS


Volume 1: The Earth and Earth Sciences


Volume 2: Physical Sciences and Technology


Volume 3: The Arts


Volume 4: People in History


Volume 5: Folklore and Religions


Volume 6: Europe


Volume 7: Asia, Australia, and New Zealand


Volume 8: Africa


Volume 9: The Americas


Volume 10: Plants


Volume 11: Birds, Insects, Reptiles, and Aquatic Life


Volume 12: Mammals


Volume 13: Reference Guide and Index

ENCYCLOPÆDIA
Britannica®

AV

My First Britannica



People in History

4

My First Britannica

People in History

4



Chicago London New Delhi Paris Seoul Sydney Taipei Tokyo

© 2008 by Encyclopædia Britannica, Inc.

International Standard Book Number: 978-1-59339-476-9 (set)

No part of this work may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, recording, or by any information storage and retrieval system, without permission in writing from the publisher.

My First Britannica:
Volume 4: People in History 2008

Britannica.com may be accessed on the Internet at http://www.britannica.com.

Encyclopædia Britannica, Britannica, and the Thistle logo are registered trademarks of Encyclopædia Britannica, Inc.

People in History

TABLE OF CONTENTS

INTRODUCTION 5

Creators

Isabel Allende: The Letter Writer's Stories 6
Count Basie: An Aristocrat of Jazz 8
Charles Dickens: Writer of Life-Changing Stories 10
Fanny Elssler: Theatrical Ballerina 12
Francisco de Goya:
Painter to the King and to the People 14
Wolfgang Amadeus Mozart: A Life Filled with Music 16
I.M. Pei: Grand Architect 18
Pablo Picasso: Exploring with an Artist 20
William Shakespeare: Plays That Never Grow Old 22
Socrates: Teaching People to Think 24
Joan Sutherland: Australia's Golden Voice 26
Mark Twain: The Writer and the Mississippi River 28

Leaders and Conquerors

Yasir Arafat: Leader of the Palestinians 30
Ashoka: The Emperor and the Right Way of Living 32
Menachem Begin: Struggling for Israel 34
Julius Caesar:
Rome's Remarkable General and Statesman 36
Fidel Castro: The Man Who Changed Cuba 38
Charlemagne: The Father of Europe 40
Cleopatra: Queen of Egypt 42
Elizabeth I: A Clever, Courageous Queen 44
Empress of China: The Dragon Empress 46
Hirohito: Emperor of Japan 48
Mohammed Ali Jinnah: Founder of Pakistan 50
Nelson Mandela: A Fighter for Rights 52
Mao Zedong: Architect of Modern China 54
Golda Meir: Israel's First Woman Prime Minister 56
Anwar el-Sadat: Egypt's Man of Peace 58
U Thant: World Peacemaker 60
Vikings: Men in Dragon Ships 62

Scientists and Doctors

Elizabeth Blackwell: The First Modern Woman Doctor . . . 64
Luther Burbank: Inventing New Plants 66
Nicolaus Copernicus: Student of the Sky 68
Marie Curie: Discovering a New Kind of Science 70
Charles Darwin: The Theory of Evolution 72
Albert Einstein: A Brilliant Wonderer 74
Galileo Galilei: The Man Who Discovered Outer Space . . . 76
Jane Goodall:
The Woman Who Lived with Chimpanzees 78
Johannes Kepler: Stargazer 80
Sir Isaac Newton: An Apple, an Idea 82
Louis Pasteur: The Man Who Conquered Disease 84

Extraordinary Lives

American Indians: The First Native North Americans . . . 86
Simón Bolívar: Hero of Many Nations 88
Anne Frank: A Young Girl and Her Diary 90
Cathy Freeman: Gold Medalist in Track 92
Mahatma Gandhi: Salt and Empires 94
Helen Keller: Woman of Courage 96
Martin Luther King, Jr.: Civil Rights Leader 98
Ferdinand Magellan: Around-the-World Voyager 100
Mayan Civilization:
Writers, Mathematicians, and Architects 102
Pelé: Football Star 104
Mother Teresa: Mother of the Poor and Dying 106
Tenzing Norgay: On Top of the World 108

GLOSSARY 110

INDEX 111



Egyptian relief of Cleopatra VII
© Bettmann/Corbis

Cover photos (top): illuminated manuscript showing Charlemagne meeting Pope Adrian I, © Archivo Iconografico, S.A./Corbis; (center): Nelson Mandela, © David Turnley/Corbis; (bottom): Egyptian relief of Cleopatra VII, © Bettmann/Corbis

People in History

INTRODUCTION

Who is known as the Father of Europe?
What writer's name means "two fathoms deep"?
How did Cleopatra die? Why did Gandhi march to the sea?

In Volume 4, ***People in History,*** you'll discover answers to these questions and many more. Through pictures, articles, and fun facts, you'll learn about the extraordinary people who have changed the course of history.

To help you on your journey, we've provided the following guideposts in *People in History*:

■ **Subject Tabs**—The colored box in the upper corner of each right-hand page will quickly tell you the article subject.

■ **Search Lights**—Try these mini-quizzes before and after you read the article and see how much—*and how quickly*—you can learn. You can even make this a game with a reading partner. (Answers are upside down at the bottom of one of the pages.)

■ **Did You Know?**—Check out these fun facts about the article subject. With these surprising "factoids," you can entertain your friends, impress your teachers, and amaze your parents.

■ **Picture Captions**—Read the captions that go with the photos. They provide useful information about the article subject.

■ **Vocabulary**—New or difficult words are in **bold type**. You'll find them explained in the Glossary at the back of this volume. And there's a complete listing of all Glossary terms in the set in the ***Reference Guide and Index***, Volume 13.

■ **Learn More!**—Follow these pointers to related articles throughout the set.

And don't forget: If you're not sure where to start, where you saw something before, or where to go next, the Index at the back of this volume and the ***Reference Guide and Index*** (Volume 13) will point the way.

Have a great trip!



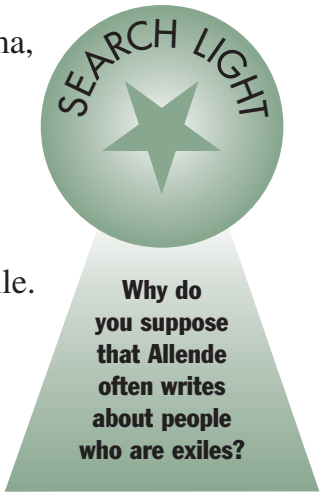
© Ed Kashi/Corbis

DID YOU KNOW?

After *Paula* was published, Allende suffered from severe writer's block. "Writer's block" is the term used when a writer is unable to think what to write or how to write it. Allende eventually broke through by writing another nonfiction work.

The Letter Writer's Stories

Latin American writer Isabel Allende was born in 1942, in Lima, Peru. Her many books, in Spanish, have been translated into several languages. Her works feature a **technique** called "magic realism"—the use of fantasy and myth in realistic fiction. Her stories reflect her own experiences and also look at the role of women in Latin America.



Isabel Allende's uncle was Salvador Allende, president of Chile. She was a journalist there, as well as a short-story writer. In 1973 Salvador Allende was murdered during a time of political problems. Under the new government, Isabel Allende was threatened, and she and her husband and children were forced to flee to Venezuela. They ended up spending 13 years there.

In 1981, while still in **exile**, she started writing a letter to her dying grandfather. She wrote about childhood memories and of the people who had touched their lives. This letter turned into her first novel, *La casa de los espíritus* (1982; *The House of the Spirits*). It was followed by the novels *De amor y de sombra* (1984; *Of Love and Shadows*), *Eva Luna* (1987), and *El plan infinito* (1991; *The Infinite Plan*).

Most of Allende's stories have a political **aspect** and include a number of exiles. Allende calls these people "the **marginals**." She says they are exiled from the big umbrella of society. They have the courage to stand on the edge of life and not be sheltered or protected.

In 1990 Allende was able to return to Chile. But she was heartbroken when her young daughter became sick and died of a terrible blood disease. Out of her sorrow came a book, *Paula* (1994). It was Allende's first **nonfiction** book, and it went on to become a best-seller.

LEARN MORE! READ THESE ARTICLES…
JORGE LUIS BORGES (VOLUME 3) • CHILE (VOLUME 9)
MYTHS AND LEGENDS, FOLKTALES AND FABLES (VOLUME 5)

Answer: Allende and her family became exiles themselves. It's not unusual for writers to draw on their own experiences for their work—even if it's fiction.



DID YOU KNOW?

Before he was a count, Basie was a baron. His first band was called the Barons of Rhythm.

An Aristocrat of Jazz

Young William Basie began studying music with his mother. He later learned to play the organ from pianist Fats Waller. Waller himself was a well-known jazz player.

Basie started his career playing piano on the vaudeville stage. Vaudeville was performed in a chain of theaters in the United States during the late 19th and early 20th centuries. Vaudeville shows provided an entertaining mixture of dancing, singing, comedy, and magic acts.



Count Basie in 1982.
© Roger Ressmeyer/Corbis

When Basie was about 23 years old, he went to Kansas City, Missouri. It was there that he formed his first jazz band. Basie's nine-piece band was distinct because it highlighted the **rhythm** instruments. The bass fiddle, drums, guitar, and Basie's piano became the core sound of his music. Basie had once played bass himself, and he developed a four-beat "walking" style of rhythm. This even beat provided a light, simple, and relaxed musical **foundation**. It also helped the harmonies and melodies in his songs stand out. Basie's rhythm section set the pattern that modern jazz accompanying styles would follow.

Basie and his band played at many nightclubs and often did radio broadcasts. One night a radio announcer called him "Count" Basie, to liken him to another fine bandleader with an **aristocratic** nickname, Duke Ellington. From that point on, the band gained in popularity.

The Basie band's popular early numbers included "Lady Be Good," "Shoe Shine Boy," "One O'Clock Jump," and "Jumpin' at the Woodside." He formed another orchestra in the 1950s that was more **sophisticated**. Those musicians could read music and perform very difficult pieces. This group's hits included "Alright, Okay, You Win" and "April in Paris."

SEARCH LIGHT

True or false? Count Basie was a real count.

Answer: FALSE. "Count" was Basie's nickname.

LEARN MORE! READ THESE ARTICLES…
LOUIS ARMSTRONG (VOLUME 3) • JAZZ (VOLUME 3) • RADIO (VOLUME 2)

© Bettmann/Corbis

Writer of Life-Changing Stories

The famous English author Charles Dickens lived more than 100 years ago. Many of the stories he wrote were about how hard life could be for children. And many changes were made because of his books.

Some of Dickens' stories tell about children being treated badly in schools, at home, or at work. At his own school his teacher beat him with a cane for laughing too loudly. Dickens was barely a teenager when he had to quit school and take a job away from home. His father had spent too much money and could not pay it back. He used many of his own experiences when he wrote his book *David Copperfield*.



Charles Dickens.
© Bettmann/Corbis

When Dickens' stories were first read, some people were angry. Others were ashamed. Such stories as *Oliver Twist* made them think seriously. They realized that children should be treated kindly and have fun as well as study hard. They should not be made to leave home and go to work when they are very young.

One of Dickens' best-known stories is called *A Christmas Carol*. It tells about a rich man named Scrooge, who didn't like Christmas. As a matter of fact, he didn't like much of anything except making money. In the story Scrooge learns that his life is better when he helps others and spends time enjoying their company.

People still like to read Dickens' books, not just to learn what life was like a long time ago but for the wonderful stories that they tell. Some are funny, like his *Pickwick Papers*. Some are family stories, such as *David Copperfield* and *Great Expectations*. Some of his books are historical, like *A Tale of Two Cities*.

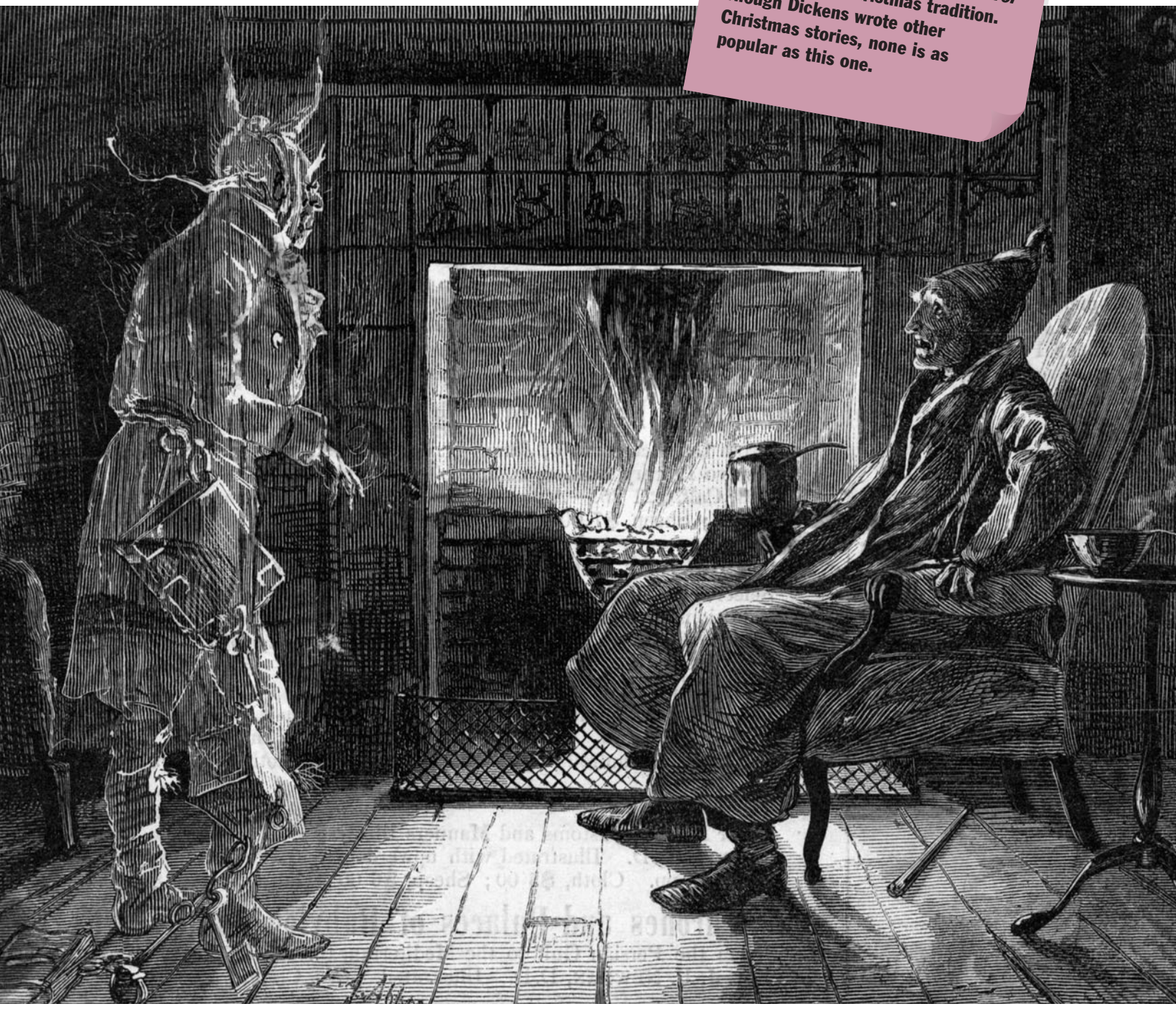
LEARN MORE! READ THESE ARTICLES…
LEWIS CARROLL (VOLUME 3) • LITERATURE (VOLUME 3) • LONDON (VOLUME 6)

SEARCH LIGHT

True or false? Dickens' stories were entirely imaginary creations.

DID YOU KNOW?

For many people, *A Christmas Carol* has become a Christmas tradition. Though Dickens wrote other Christmas stories, none is as popular as this one.



In this illustration from Dickens' *A Christmas Carol,* the miserly Ebenezer Scrooge is visited by the miserable ghost of his former partner, Jacob Marley.

© Bettmann/Corbis

Answer: FALSE. Dickens drew on his own life and the lives of unfortunate children for some of his stories.



DID YOU KNOW?

Elssler and her sister danced at Marie Taglioni's debut, in Taglioni's father's ballet troupe.

Theatrical Ballerina

Fanny Elssler was a famous Austrian dancer who brought energy and drama to her performances. She was born in 1810, in Vienna, Austria, and studied ballet from a young age. As a child, Elssler appeared with her sister in several ballets at Vienna's Kärntnerthor Theatre.

When she was a young adult, Elssler became famous worldwide thanks to her energetic spirit onstage and her remarkable pointe work (dancing on the points of the toes). She made her Paris Opéra debut in 1834 in Jean Coralli's ballet *La Tempête,* a dance version of William Shakespeare's play *The Tempest*.

Before Elssler came along, most ballet was "classical ballet," which featured light graceful dance, like that performed by Elssler's greatest rival dancer, Marie Taglioni. But Elssler introduced theatrical, or "character," ballet, which borrowed from folk dance traditions and even mime. She performed a Polish folk dance called the "cracovienne" in the ballet *La Gypsy*. And because some Gypsies were associated with Spain, she got the nickname "the Spaniard from the north."

Elssler spent the later part of her career touring the United States, England, Germany, Italy, and Russia. Because of her long world tours, Elssler had to break her agreement with the Paris Opéra, and so she could not return to dance in France. Her worldwide tour ended up lasting more than ten years.

Elssler retired from the ballet in 1851. Her last years were spent in her native Vienna. During her career she was unequaled as a "character" dancer with amazing dramatic powers.

SEARCH LIGHT

Find and correct the error in the following sentence: Elssler's style of ballet borrowed from break dance traditions.

LEARN MORE! READ THESE ARTICLES…
AUSTRIA (VOLUME 6) • DANCE (VOLUME 3) • MARIA TALLCHIEF (VOLUME 3)

Fanny Elssler was known for her great dramatic skill. She was one of the first ballerinas to tour the United States. She was noted for her Spanish dances and often performed with her sister Therese.
© Archivo Iconografico, S.A./Corbis

Answer: Elssler's style of ballet borrowed from folk dance traditions.

Painter to the King and to the People

As a young man in Spain, Francisco de Goya worked as a bullfighter. But his great love was painting. After studying art in Rome, Goya returned to Spain and worked as a **tapestry** designer. Soon his talents drew attention, and he began painting portraits of wealthy Spaniards. By 1786 Goya had become a "painter to the king of Spain."

But Goya became tired of painting pictures of dukes and duchesses and the royal family. Most of the people of Spain were poor and often hungry. Constant wars made their lives worse. Wanting to portray this "everyday" world, Goya began to draw and paint images of the poor and hardworking people of Spain.

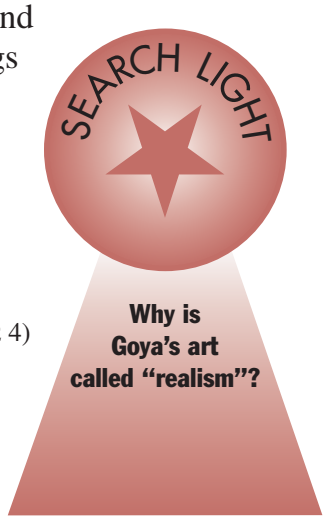


Goya's self-portrait at the age of 69.
© Francis G. Mayer/Corbis

Goya didn't make the men and women in his art look prettier or more important than they were. His paintings show people as they looked after a life of hard work. Goya included the lines in their faces and the sadness in their lives. He showed their bent backs and their worn clothes. This style of painting people and scenes from daily life is called "realism."

The subjects of Goya's paintings did not always please the king and the people of the royal court. They thought he should paint only famous people and beautiful things. In fact, his "Disasters of War" series of etchings was so realistic and **gory** that it was not shown until over 35 years after Goya's death. But today, hundreds of years later, the power and honesty of Goya's "everyday" paintings still impress and move viewers.

LEARN MORE! READ THESE ARTICLES…
MADRID (VOLUME 6) • PAINTING (VOLUME 3) • PABLO PICASSO (VOLUME 4)





DID YOU KNOW?
Even though he died in 1828, Goya is considered by some to be a "modern" painter. This is because of his focus on painting realistic scenes.

Goya's pictures of everyday life include some pleasant moments such as this one, titled "Two Boys with Two Mastiffs." (As you've probably guessed, a mastiff is a large breed of dog.)

© Archivo Iconografico, S.A./Corbis

Answer: Goya's painting style was called "realism" because he showed ordinary people as they really were.



DID YOU KNOW?

In the late 1990s, some parents played Mozart for their babies, even while they were still in the womb. They thought Mozart's music would make children more intelligent, but there's no evidence to prove this notion.

A Life Filled with Music

When he was only three years old in Salzburg, Austria, Wolfgang Amadeus Mozart used to join his elder sister, Maria Anna, for her music lessons. But by the time he was five, Mozart was making up his own music.

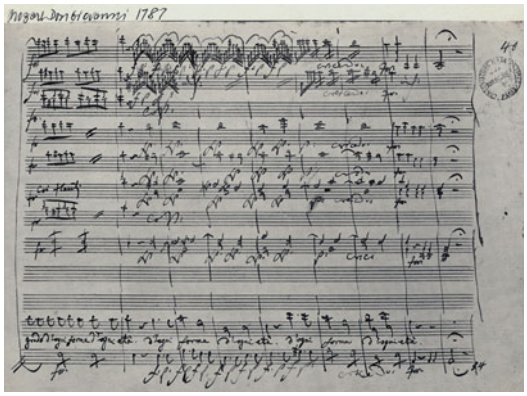
In the 18th century, when Mozart lived, most people didn't believe that a little boy could write such beautiful music. They thought Mozart's father had secretly written it.

So to test him, they asked young Mozart to stay in a room alone for a week. At the end of the week, Mozart had written a new piece of choir music. People agreed that this child was a musical genius.

SEARCH LIGHT

How old was Mozart when he began writing his own music?
a) 15
b) 5
c) 8

Mozart studied, taught, played, and wrote music all his life. His music was often joyous, sometimes grim. But it was always beautiful. Mozart used the orchestra's players and instruments in ways no one else had before.



Music from Mozart's opera *Don Giovanni*.
© Bettmann/Corbis

Mozart often blended popular and classical music to create new styles of music, especially in the opera. He could compose in many musical styles and could play equally well on the organ, the harpsichord, the piano, and the violin. Mozart could hear a piece once and then play it from memory, sometimes rewriting and improving it as he played.

Although he died when he was still a young man, Mozart wrote 16 operas, 41 symphonies, and more than 500 other pieces of music. Some of his most famous works include the operas *The Marriage of Figaro*, *Don Giovanni*, and *The Magic Flute* and the "Jupiter" Symphony.

LEARN MORE! READ THESE ARTICLES…
LUDWIG VAN BEETHOVEN (VOLUME 3) • CLASSICAL MUSIC (VOLUME 3)
JOAN SUTHERLAND (VOLUME 4)

© Archivo Iconografico, S.A./Corbis

Answer: b) 5

Grand Architect

Ieoh Ming Pei is one of the most important modern **architects**. He has created many major buildings throughout the world. And his style and ideas have strongly influenced the work of many other architects. He has specialized in building multistory structures in cities.



I.M. Pei on-site during construction at the Louvre, Paris.
© Owen Franken/Corbis

I.M. Pei was born in Canton, China, in 1917. He went to America to study but couldn't return to China when World War II started. So most of his work has been in North America and Europe.

In the 1940s Pei began working as a professional architect. He worked on such important projects as the Mile High Center in Denver, Colorado.

In 1955 Pei formed his own architectural company, I.M. Pei & Associates. The company's early work included a museum in Syracuse, New York, that was actually four buildings joined by bridges. He also created a design for a new type of airport control tower that was widely used.

Pei's buildings are often tall, with lots of glass and steel. The designs combine simple **geometric** shapes, especially rectangles and triangles.

But his buildings are not dull or simple. In many of them, you can see the building's supports or building materials, and these are its only decoration. The way that concrete, glass, and steel look together creates interesting designs on the sides of Pei's buildings. Special reflective glass also adds to the designs. He often combines different shapes and emphasizes the picture these shapes make in the **skyline**.

Some of Pei's most famous work includes the John Hancock Tower in Boston, the East Building of the National Gallery of Art in Washington, D.C., and the glass **pyramid** at the Louvre Museum in Paris, shown in the photograph here.

LEARN MORE! READ THESE ARTICLES…
ARCHITECTURE (VOLUME 3) • HASSAN FATHY (VOLUME 3)
MAYAN CIVILIZATION (VOLUME 4)

SEARCH LIGHT

According to the article, which building is not one that Pei designed?
a) East Building of the National Gallery of Art
b) John Hancock
c) Sears Tower



© Richard List/Corbis

DID YOU KNOW?

We think of the pyramids as being old stone structures in Egypt or Mexico. But Pei built a new glass pyramid as the entrance to the famous Louvre Museum in Paris in the late 1980s.

Answer: c) Sears Tower

Exploring with an Artist

There's a story that says the artist Pablo Picasso started to draw before he learned to speak. While this is probably only a story, it does suggest how important art was to Picasso.

Picasso was born in Spain in 1881 but lived much of his life in France. He was an inventor and an explorer. But he didn't invent machines or explore strange places. He explored and invented with art. He painted with his fingers, made drawings with a rusty nail, and even made a bull's head from the handlebars and seat of a bicycle. He was able to work anywhere at any time of the day or night.



Visitors viewing a Picasso painting—"Mandolin, Fruit Bowl, and Plaster Arm."
© AFP/Corbis

Picasso's big studio was a sort of jungle—a jungle of paint cans, brushes, chalk, pottery, colored pencils, and crayons, among many other things. Rolls of heavy paper and canvas, picture frames and easels, and tools for cutting designs on heavy board lay scattered about like rubbish. But to Picasso it was all **inspiration**.

He painted Spanish bullfighting, horse races, and clowns. He painted happy pictures in warm colors (such as pink) and sad, lonely ones in cool colors (such as dark blue). He sometimes painted people and animals the way they looked. But more often he painted them from his imagination.

The art style that Picasso and fellow artist Georges Braque invented is called Cubism. They painted people and things so that all parts and sides could be seen at the same time. Cubists often created pictures from simple shapes such as squares or cubes.

SEARCH LIGHT

What does it mean to say that Picasso's studio was a jungle? (Hint: Jungles are hard to walk through.)

LEARN MORE! READ THESE ARTICLES…
FRANCISCO DE GOYA (VOLUME 4) • PAINTING (VOLUME 3) • SPAIN (VOLUME 6)

In 2001 the works of Picasso were shown in a large exhibit in China. These children are practicing drawing by imitating some Picasso prints. A large photo of the artist looks on from the wall.
© Reuters NewMedia Inc./Corbis

DID YOU KNOW?

Picasso was probably the single most influential figure in 20th-century Western art. And he worked for 80 of his 91 years. He experimented with a large variety of styles in a number of artistic mediums.

Answer: Picasso's studio was so cluttered with art supplies that it was difficult to move around in it. Just as jungles are rich and dense with plant and animal life, so his studio was crowded with materials that helped him create.



DID YOU KNOW?

Shakespeare was so imaginative in his use of language that he created, or "coined," more than 2,000 words or sayings that people have used ever since.

Plays That Never Grow Old

William Shakespeare is considered to be the greatest playwright in the English language and one of the most beloved playwrights in the world.

Not much is known about Shakespeare's life. He was born in Stratford-upon-Avon, England, in 1564. This was during the **reign** of Queen Elizabeth I. In his late 20s, Shakespeare went to the city of London to write and act. He joined a theater **troupe** and began to write plays.

Over the next 20 years, Shakespeare wrote 38 plays and many poems. From his writing we can tell that he knew a lot about human feelings, as well as both city and country life. Most of the stories that Shakespeare told were known to his audience. But his characters and the way he told their stories in his plays attracted crowds of people to the Globe Theatre, where his troupe often performed.



2001 production of *A Midsummer Night's Dream* performed at the Albery Theatre in London.
© Archivo Iconografico, S.A./Corbis

Four hundred years later, people still enjoy reading Shakespeare's plays and seeing them onstage and in films. They quote his most famous lines (such as "To be or not to be") and laugh and cry along with his characters. Shakespeare's plays have remained popular for several reasons. His characters show realistic human emotions. His **plots** are often complicated, but they always hold the audience's attention. And his language is powerful and poetic.

Some of Shakespeare's plays, such as *Hamlet*, have very sad endings. They are called "tragedies." Others, such as *A Midsummer Night's Dream*, are full of silly plots and have happy endings. They are the "comedies." Other Shakespeare plays, such as *Julius Caesar* or *Henry V*, are based on real-life figures and events. These are the "histories." And some plays, such as *Romeo and Juliet,* have a little bit of everything: romance, comedy, *and* tragedy.

LEARN MORE! READ THESE ARTICLES…
ELIZABETH I (VOLUME 4) • ENGLAND (VOLUME 6) • THEATER (VOLUME 3)

SEARCH LIGHT

Which of the following describes a play with a happy ending?
a) tragedy
b) comedy
c) plot

William Shakespeare's plays have been popular for hundreds of years. Shown here is a portrait of the famous playwright.
© Robbie Jack/Corbis

Answer: b) comedy

Teaching People to Think

Socrates was a thinker and teacher who lived in Athens, Greece, almost 2,500 years ago. Socrates knew all the famous people and leaders in Athens, but he never wanted to be famous or rich himself. He just wanted to think and to talk about ideas.

Socrates didn't give lectures or tell people what to think. Instead, he asked questions. He thought it was very important to "know yourself" and to learn how to be a good person and how to live a good life. Socrates talked to many people who thought they knew what was good and what was right. By asking them questions, Socrates helped them realize that they really didn't understand these things.

SEARCH LIGHT

True or false? Socrates wrote many books.

Some people said that Socrates thought too much. Sometimes Socrates would stand in one spot and think for many hours without moving or saying a word. Socrates never wrote down his thoughts, and he was never paid for his teaching. Socrates often angered people because he made them feel embarrassed when they could not answer his questions.

Eventually the leaders of Athens put Socrates in prison because they thought that he made young people misbehave and that he did not believe in the gods of Athens. As a punishment, they made Socrates drink a deadly poison. Socrates could have run away, but he chose to stay and accept his punishment. He believed he had a duty to obey the law. One of Socrates' students, Plato, became a famous teacher himself. He wrote down many of Socrates' conversations so that his ideas would be preserved for many future generations.

LEARN MORE! READ THESE ARTICLES…
ATHENS (VOLUME 6) • CONFUCIUS (VOLUME 5) • ALBERT EINSTEIN (VOLUME 4)

DID YOU KNOW?
Socrates' method of asking questions to teach new ideas is still used in schools today. It is called the "Socratic method."

Socrates is often admired for holding on to his views even though it cost him his life. Sometimes, as here, the great thinker is celebrated in art.
© Araldo de Luca/Corbis



Answer: FALSE. Socrates never wrote down his thoughts.

SOCRATES


SEARCH LIGHT
True or false? Joan Sutherland never needed any training to become a great singer.

Australia's Golden Voice

Opera singer Joan Sutherland was born in Sydney, Australia, on November 7, 1926. She was a musical child and studied piano and music with her mother. At about age 20 Sutherland won a singing competition and began studying professionally.

A year later Sutherland made her first appearance as a singer in a performance of Henry Purcell's opera *Dido and Aeneas*. She played the lead female role of Dido.

Sutherland won many prizes in singing competitions, and she used the money to move to London. There she studied at the Royal College of Music. In 1952 she became a member of the company of the Royal Opera, Covent Garden. She made her first appearance there in Wolfgang Amadeus Mozart's *The Magic Flute*.

In 1961 Sutherland performed in Gaetano Donizetti's *Lucia di Lammermoor* at the **Metropolitan** Opera, New York City. Lucia was a difficult role. On one hand, it required the singer to do some extremely tricky vocal **gymnastics**. In addition to that, it was a major acting challenge. Sutherland performed it so well that her fame spread around the world. She was soon performing in major opera houses all over Europe.

Sutherland was admired as a coloratura soprano. Sopranos are female singers with very high voices. Coloratura singers have to have a very light and flexible voice. They must be able to sing complex series of notes very rapidly.

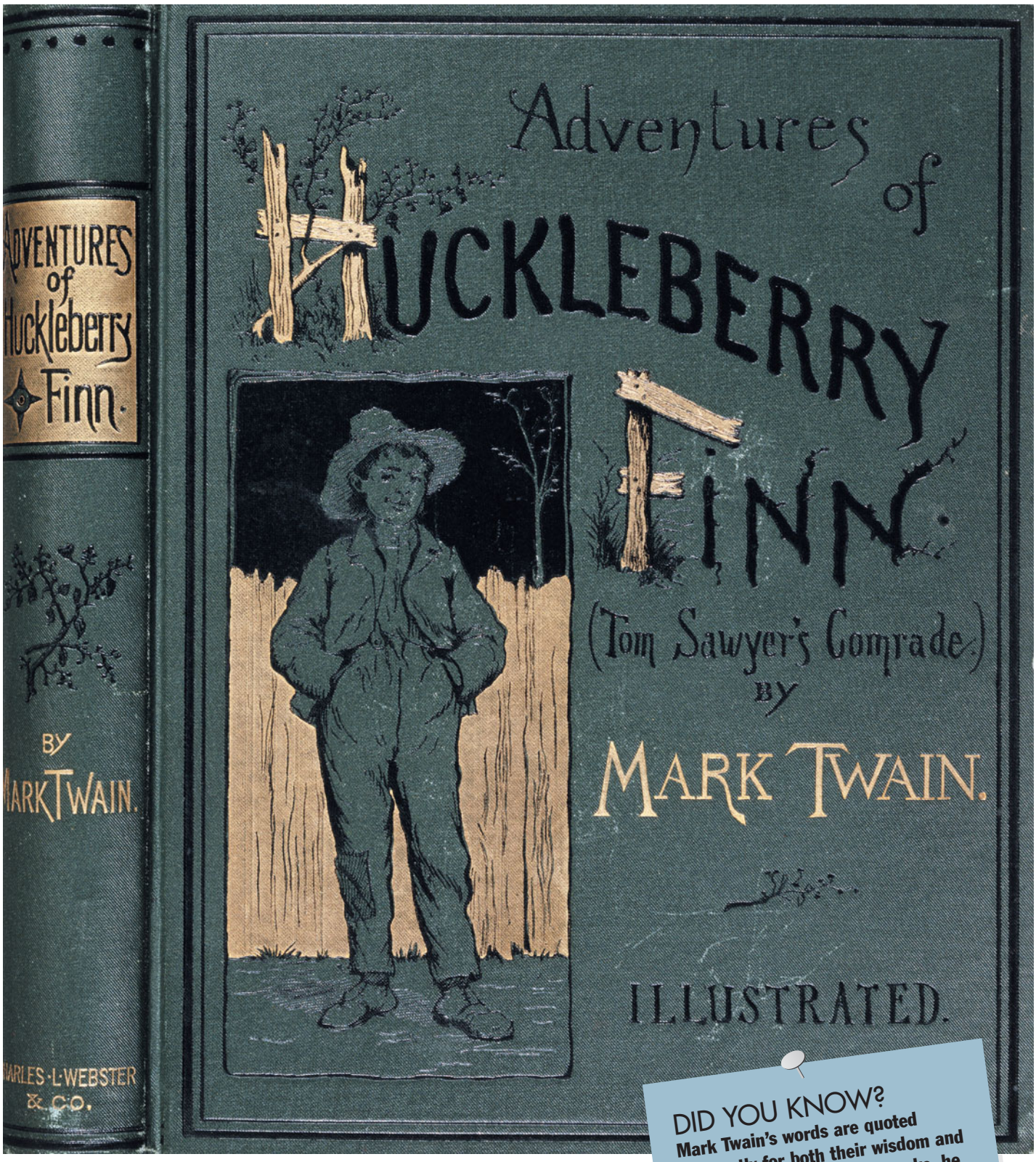
Sutherland was one of the most successful opera stars of her day. In 1978 she was knighted as a Dame Commander of the British Empire. She retired from the stage in 1990, at the age of 64.

DID YOU KNOW?
Sutherland's nickname to her fans was "La Stupenda," because of her stupendous (fantastic) talent.

LEARN MORE! READ THESE ARTICLES…
AUSTRALIA (VOLUME 7) • OPERA (VOLUME 3)
KIRI TE KANAWA (VOLUME 3)

© Bettmann/Corbis

Answer: FALSE. Sutherland continued to train throughout her career.



Huckleberry Finn **is considered by many to be Twain's finest work. But from time to time it is banned in schools or libraries because of racial issues in the book.**
© Stapleton Collection/Corbis

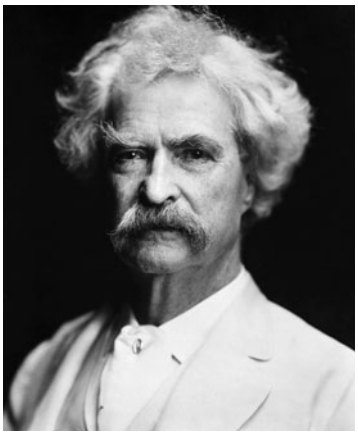
DID YOU KNOW?

Mark Twain's words are quoted frequently for both their wisdom and their humor. In one of his books, he wrote: "Man is the Animal that Blushes. He is the only one that does it—or has occasion to." What do you suppose he meant?

The Writer and the Mississippi River

A onetime Mississippi River boat pilot, Mark Twain became one of America's greatest authors. His *Tom Sawyer*, *Huckleberry Finn*, and *Life on the Mississippi* rank high on any list of great American books.

Mark Twain was born Samuel Langhorne Clemens in 1835. He grew up in Hannibal, Missouri, on the Mississippi River. From this river town he gathered the material for his most famous stories. Young Tom Sawyer, for instance, was a combination of several boys—including himself.

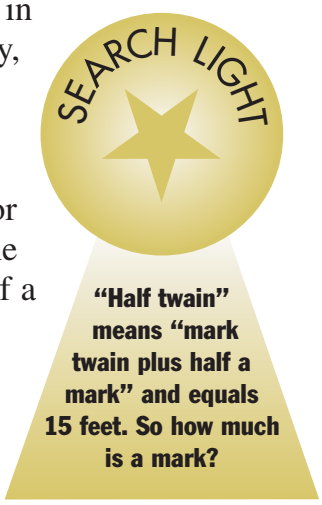


Mark Twain.
© Bettmann/Corbis

During his life, he held jobs that he would turn into material for his writing. His work as a steamboat pilot gave him experience he used to write *Life on the Mississippi*. When he began working as a newspaper reporter, he began using the pen name Mark Twain. It is an old river term meaning two fathoms, or 12 feet, of water—a depth that was not very safe for riverboats.

One of his stories, "The Celebrated Jumping Frog of Calaveras County," was printed in many newspapers. It was a popular story, and Twain traveled as a roving reporter and then on a lecture tour. After these travels he wrote *The Innocents Abroad*, which made him famous.

Twain was known as a humorist. But behind his mask of humor lay a serious view of life. He had known the sadness of poverty, the early death of his father and later his brother Henry, and the loss of a daughter. One of his most famous novels, *Huckleberry Finn*, is sometimes thought of as a child's book. But its heartbreak and wisdom are appreciated best by adults. Another of his famous novels, *Tom Sawyer*, is mostly a young person's book that adults can also read with pleasure.



LEARN MORE! READ THESE ARTICLES…
CHARLES DICKENS (VOLUME 4) • FROGS (VOLUME 11) • SHIPS (VOLUME 2)

Answer: A mark equals 6 feet. Mark twain, 12 feet, is two marks. Half twain is 2 1/2 marks, or 15 feet.

Leader of the Palestinians

From the time he was a teenager in the 1940s, Yasir Arafat was involved with the Palestinian movement. Israel was formed after World War II to give the Jewish people a homeland. But it was formed in a region called Palestine, where many other people lived. After Israel was created hundreds of thousands of Palestinian Arabs left or were forced off their land. After 1948 Palestinians such as Arafat wanted to get that land back by fighting against Israel. To do this they formed the Palestine **Liberation** Organization (PLO).

SEARCH LIGHT

Fill in the blanks: PLO stands for _____ _____ _____.

For years the PLO carried out deadly attacks on Israel. Israel responded by attacking the Palestinians. Arafat became **chairman** of the PLO in 1969. He wanted the PLO to work for change through discussion and bargaining more than by force. Arafat worked to get countries around the world to accept the idea of a Palestinian homeland.



Yasir Arafat in 1990.
© David Turnley/Corbis

In 1993, with help from other countries, Arafat and Israeli Prime Minister Yitzhak Rabin signed agreements to make peace between the two sides. The next year Arafat, Rabin, and Israeli Foreign Minister Shimon Peres shared the Nobel Prize for Peace for their work together.

As part of the peace plan the Palestinians recognized Israel's right to exist as a country. The Israelis agreed that the Palestinians would be allowed to rule certain areas that had been controlled by Israel. To do this the Palestinians set up a group called the Palestinian Authority. Arafat was elected president of the authority in 1996. But there were other Palestinians who did not agree with the peace agreement. They continued to fight against Israel. Some world leaders tried to get Arafat to stop the violence, but the fighting continued. Arafat died in 2004.

LEARN MORE! READ THESE ARTICLES…
MENACHEM BEGIN (VOLUME 4) • ISRAEL (VOLUME 7)
MOHAMMED ALI JINNAH (VOLUME 4)



DID YOU KNOW?

Arafat's full name was Muhammad 'Abd al-Ra'uf al-Qudwah al-Husayni. Yasir is a nickname that means "easy."

These Palestinian policemen carry a poster of Yasir Arafat. To many Palestinians, Arafat long symbolized their hope for a return to the land that became Israel after World War II.

© AFP/Corbis

Answer: PLO stands for Palestine Liberation Organization.

The Emperor and the Right Way of Living

Some 2,200 years ago, the emperor Ashoka ruled India. Like many ancient rulers, he expanded his empire by conquering new lands. But unlike most rulers, Ashoka suddenly turned his back on warfare and began to govern according to the nonviolent beliefs of Buddhism.

It is said that Ashoka became a Buddhist when he saw the horrors caused by the wars he'd led. After that, he decided to serve his subjects and all humanity instead of conquering others. He called this "conquest by *dharma*." In India *dharma* means the "right way of living" and "universal truth." This included being honest, truthful, and kind. It also meant being merciful, generous, and thoughtful.

SEARCH LIGHT

Ashoka was an Indian
a) mathematician.
b) emperor.
c) priest.

The emperor himself would often tour the countryside, preaching his belief in *dharma* to the people. Ashoka also appointed "*dharma* ministers" to help relieve people's sufferings. These ministers were assigned to look after the special needs of women and people living in religious communities.

Ashoka passed laws to prevent cruelty to animals and had hospitals built for both people and animals. He also started construction projects to make all people's lives easier. Trees were planted on roadsides, wells were dug, and watering sheds and rest houses were built.

The only recognition Ashoka wanted was for people to remember that he had ruled according to *dharma*. To preserve his ideas, Ashoka had his teachings carved on rocks and pillars (columns) in public areas. These inscriptions are called the Rock **Edicts** and Pillar Edicts. The most famous is the lion pillar found at Sarnath, which has become India's national emblem.

DID YOU KNOW?
Despite his reputation as a kind and generous ruler, some stories describe Ashoka as cruel and ruthless. According to one story, he had all his brothers killed in order to seize the throne.

LEARN MORE! READ THESE ARTICLES…
BUDDHISM (VOLUME 5)
CHARLEMAGNE (VOLUME 4) • INDIA (VOLUME 7)

Sarnath, an archaeological site in northern India, is said to be the place where the Buddha first preached to his followers. Ashoka built this stupa (shrine) and others, as well as pillars, to honor the event.
© Brian A. Vikander/Corbis

Answer: b) emperor.



Menachem Begin visited the Western Wall in Jerusalem to offer a prayer of thanks following his 1981 election victory.

SEARCH LIGHT

A Zionist believes in
a) having Europeans in the government.
b) an independent Jewish state.
c) making Poland part of Israel.

Struggling for Israel

When Menachem Begin was a little boy growing up in Poland, he probably never imagined that someday he would lead a Jewish nation and win a Nobel Prize for Peace.

As a young man, Menachem earned a law degree and became an active Zionist. Members of the Zionist movement wanted to create a Jewish community in the Middle Eastern region of Palestine.



Menachem Begin in 1981.
© Bettmann/Corbis

Germany invaded Poland early in World War II, and the Nazis began to **persecute** the Jews. Begin joined the Polish army in **exile**. He went with them to Palestine in 1942. There Begin joined a group fighting to create a Jewish state. However, after the creation of the State of Israel in 1948, hundreds of thousands of Palestinian Arabs either left or were forced off their land. This led to many years of trouble between Israel and the Arab countries that surround it.

Begin was active in Israeli politics in the 1950s and '60s, and in 1977 he became the country's **prime minister**. By that time Israel had fought several wars with the Arabs and had captured some Arab land. Begin reached a peace agreement with Egyptian leader Anwar el-Sadat, returning Egypt's land. This earned Begin and Sadat the Nobel Prize for Peace in 1978. But Begin refused to accept the demands by Palestinians for a return of lands that he considered part of Israel.

Four years later he ordered Israeli troops to invade Lebanon and attack Palestinian guerrillas. The war in Lebanon was very unpopular in Israel, and Begin stepped down as prime minister in 1983.

LEARN MORE! READ THESE ARTICLES…
ISRAEL (VOLUME 7) • GOLDA MEIR (VOLUME 4)
ANWAR EL-SADAT (VOLUME 4)

DID YOU KNOW?

Menachem Begin and Anwar el-Sadat's 1978 peace agreement is known as the Camp David Accords. Camp David is the getaway spot where U.S. President Jimmy Carter took the two men to help them work toward peace.

© David Rubinger/Corbis

Answer: b) an independent Jewish state.



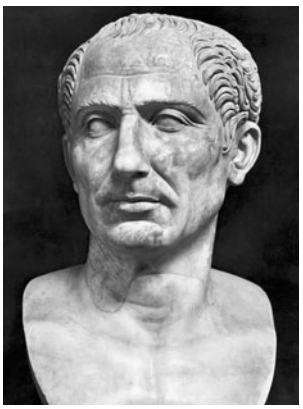
DID YOU KNOW?

In William Shakespeare's play *Julius Caesar*, Caesar is told to "beware the ides of March." The ides refers to the time around the 15th of the month. Today those famous words are sometimes used as a warning.

Rome's Remarkable General and Statesman

Julius Caesar was a brilliant general and a gifted writer. But most important, he helped create the ancient Roman Empire.

Early in his career Caesar formed a **bond** with the two most powerful men in Rome, the wealthy Crassus and the general Pompey. In 59 BC they helped elect Caesar as one of Rome's two consuls, the government's highest rank. After a year as consul, Caesar left Rome to govern Gaul (now France). There he earned a reputation as a military leader. He stopped uprisings and invasions, and he even landed in Britain. Caesar also wrote detailed accounts of his battles.



Sculpture of Julius Caesar, in the National Museum in Naples.
© Bettmann/Corbis

While Caesar was in Gaul, Crassus was killed. Pompey now controlled Rome, and he turned against Caesar. He declared Caesar a criminal and ordered him to break up his army. Instead, Caesar declared war and marched to Rome. Pompey fled to Greece.

At that time Rome was governed by a senate (a supreme council). But Caesar felt the government was corrupt and needed a strong leader. In 49 BC he declared himself **dictator,** and he spent five years fighting a civil war against Pompey to make his rule secure. Some of the Roman senators worried that Caesar had too much power. On March 15, 44 BC, they murdered Caesar on the floor of the Senate.

In the short time he led Rome, Caesar proved to be a great statesman. The changes he made helped begin the 500-year Roman Empire. And for almost 2,000 years after his death, some world leaders used a form of the title "caesar" (such as "Kaiser" in Germany and "czar" in Russia).

LEARN MORE! READ THESE ARTICLES…
CHARLEMAGNE (VOLUME 4) • ITALY (VOLUME 6) • ROME (VOLUME 6)

By crossing over the stream known as the Rubicon in 49 BC, Caesar basically declared war against the Roman Senate. "Crossing the Rubicon," the subject of this engraving, became a phrase that means taking a step from which there's no turning back.
© Bettmann/Corbis



Fill in the blank: Caesar took power in Rome after defeating _____, his former political supporter.

Answer: Caesar took power in Rome after defeating Pompey, his former political supporter.



DID YOU KNOW?

Castro was a very good baseball player. It is said he once even tried out for the Senators, a professional baseball team in Washington, D.C.

The Man Who Changed Cuba

In the 1950s General Fulgencio Batista ruled the Caribbean island of Cuba. His rule was harsh and often violent, and some large American companies grew rich while many Cubans remained poor. Fidel Castro was a young lawyer who believed Batista's rule was unfair. There were no free elections in Cuba, so Castro organized a military force to overthrow Batista.

Castro bought guns with his own money and attacked Batista's forces in 1953. The attack failed badly, and after two years in prison Castro went to Mexico to make a new plan. Soon he and about 80 other **rebels** arrived in Cuba. They hid in the mountains and fought a **guerrilla** war using small-scale battles and making hit-and-run attacks. Batista finally fled Cuba in 1959.

Castro became Cuba's leader and created a **communist** government. In some ways the lives of the people did not improve under Castro's rule. The people lost many of the same rights that Batista had taken away, and poverty was still a problem. But Castro also greatly increased many benefits to the Cuban people. Education and health services were free, and every citizen was guaranteed work.



Fidel Castro in 1960.
© Bettmann/Corbis

The United States, Cuba's near neighbor, strongly opposed Castro's government. They even tried to overthrow it in 1961. But the **Soviet Union**, another communist country, supported Castro. The United States complained when Castro let the Soviets set up **nuclear weapons** in Cuba. The protest almost led to a war, but the weapons were soon removed.

In the late 20th century there was unrest among Cubans, and Castro relaxed some of his strictest controls. Still, Castro remained Cuba's powerful leader for many years.

LEARN MORE! READ THESE ARTICLES…
SIMÓN BOLÍVAR (VOLUME 4) • CUBA (VOLUME 9) • MAO ZEDONG (VOLUME 4)

Fidel Castro often spoke out strongly against people who disagreed with his communist government in Cuba. Here he speaks at a rally in 2003.
© AFP/Corbis

SEARCH LIGHT

True or false? The United States has also supported Castro's rule in Cuba.

Answer: FALSE. Since the early 1960s, the United States has opposed Castro and has supported attempts to overthrow him.



DID YOU KNOW?

Charlemagne enjoyed swimming. He even built a palace on a hot spring that he used for bathing with friends.

Charlemagne's empire survived for only a brief time after he died. But no other ruler in the European Middle Ages had such a deep and long-lasting effect.

© Ali Meyer/Corbis

The Father of Europe

During the Middle Ages (about AD 500-1500) one of the most powerful European kings was Charlemagne. Charlemagne was a Frank. The Franks were a people who lived in parts of what are now France and Germany. When he became the one and only ruler of the Frankish lands in AD 771, Charlemagne wanted to make his kingdom bigger and stronger. He also wanted to spread Christianity and protect the Roman Catholic church.

With this plan in mind, Charlemagne spent 30 years battling the Saxons, another Germanic people. In these and many other wars, Charlemagne gained control over much of western Europe, including what is now France, Switzerland, Belgium, the Netherlands, and half of Italy and Germany.

SEARCH LIGHT

Which of these did Charlemagne <u>not</u> build?
a) pyramids
b) schools
c) libraries

In 794 Charlemagne established his capital at Aachen in western Germany. In the year 800, the **pope** crowned him emperor of the whole region. He worked with leaders of the church to improve the church and government. And he sent out special agents to make sure that his laws were being obeyed.



Illuminated (richly decorated) manuscript showing Charlemagne meeting Pope Adrian I.
© Archivo Iconografico, S.A./Corbis

Charlemagne brought about many improvements in the empire. He set up a new money system and reformed the law courts. He built a large court library and set up a school at his palace court. He was concerned with educating the ordinary people and improving the learning of priests. He hoped education would make his people better Christians.

Charlemagne died in 814. Today he is remembered as one of the most important rulers in European history. In fact, he's sometimes called the father of Europe.

LEARN MORE! READ THESE ARTICLES…
ASHOKA (VOLUME 4) • EUROPE (VOLUME 6) • MUHAMMAD (VOLUME 5)

Answer: a) pyramids



Queen of Egypt

She spoke nine languages, was a good mathematician, and had a great head for business. And she would use both her intelligence and her beauty to hold on to power. Today, Cleopatra VII Thea Philopator of Egypt is still an amazing historical figure.

Cleopatra was the second daughter of King Ptolemy XII. When her father died in 51 BC, 18-year-old Cleopatra was supposed to rule Egypt with her 15-year-old brother, Ptolemy XIII. In a few years, her brother's supporters drove Cleopatra from power. But later the Roman leader Julius Caesar helped her get her throne back. War soon broke out. In 47 BC Cleopatra's brother and co-ruler drowned. By law she couldn't rule alone, so she married her 11-year-old brother.

SEARCH LIGHT

How many times did Cleopatra rule Egypt?

Cleopatra returned to Rome to live with Caesar and had a son by him named Caesarion. But Caesar was murdered in 44 BC, and Cleopatra lost her strongest supporter. She soon went back to Egypt. With Caesar dead, the two most powerful men in Rome were Octavian and Mark Antony. When Antony wanted to invade Persia, he invited Cleopatra to meet him.

Antony quickly fell in love with Cleopatra and married her. But he was also married to Octavian's sister. An angry Octavian declared war against Antony and eventually defeated him. Antony died in Cleopatra's arms.

Cleopatra did not want to live without Antony. The story is that she had an asp (a kind of snake) brought to her, and when it bit her, Cleopatra died at the age of 39. The Egyptians believed that death by snakebite made you **immortal**. Cleopatra didn't live forever, but her legend has lasted more than 2,000 years.

LEARN MORE! READ THESE ARTICLES…
JULIUS CAESAR (VOLUME 4) • EGYPT (VOLUME 8)
WILLIAM SHAKESPEARE (VOLUME 4)

DID YOU KNOW?
William Shakespeare wrote a play about Egypt's most famous queen, called *Antony and Cleopatra*.

This image of the Egyptian queen Cleopatra appears on a temple of the goddess Hathor in Dandarah, Egypt. Hathor was the goddess of the sky, of women, and of love.
The Art Archive

Answer: Cleopatra ruled Egypt twice.

A Clever, Courageous Queen

When Elizabeth I became queen of England, few thought she would last very long. But Elizabeth I not only ruled for almost half a century. She became one of England's greatest rulers.

Elizabeth was the daughter of Anne Boleyn, King Henry VIII's second wife. Henry also had a daughter, Mary, from his first marriage, and he would have a son, Edward, from his third. After Henry's death, Edward ruled for a short time until he died. Mary ruled for three years before she too died. In 1558 Elizabeth became the queen of England at age 25.



Oil painting of Elizabeth I with members of her court.
© Stapleton Collection/Corbis

At the time, England was poor, weak, and torn by **conflict** between different groups. The people hoped Elizabeth would marry a strong man who would guide her. But Elizabeth had no desire to share her power. She was determined to be a successful queen, so she gathered experienced and trustworthy advisers. Elizabeth herself had a good education and was very clever and brave.

The queen encouraged English sailors to travel to distant parts of the world. Captains such as Francis Drake brought back riches and found new trade routes to the Americas, Asia, and Africa. As trade developed with other lands, England grew wealthy. Under Elizabeth, England also experienced a Renaissance, or "rebirth" of the arts. Some of the famous writers of the period were William Shakespeare, Christopher Marlowe, Francis Bacon, Edmund Spenser, and John Donne.

By the time Elizabeth died in 1603, England had become both rich and strong. The 45 years of her **reign** became known as the Elizabethan Age.

LEARN MORE! READ THESE ARTICLES…
CLEOPATRA (VOLUME 4) • JUDI DENCH (VOLUME 3) • ENGLAND (VOLUME 6)

Elizabeth I, popularly known as Good Queen Bess, became queen after the death of her half sister in 1558. She loved showy clothing and jewels.
© Archivo Iconografico, S.A./Corbis

ELIZABETH I



DID YOU KNOW?

During Elizabeth's rule, Spain attacked England with a great fleet of ships called the Spanish Armada. England's victory over the Spanish forces saved the country from becoming part of the Spanish empire.

SEARCH LIGHT

Elizabeth ruled England only after her
a) two sisters ruled.
b) sister and brother ruled.
c) two brothers ruled.

Answer: b) sister and brother ruled.


大清國當今慈禧端佑康頤昭豫莊誠壽恭欽獻崇熙聖母皇太后

The Dragon Empress

One of the most powerful women in Chinese history was Cixi. She played a major role in ruling China for more than 40 years in the late 1800s.

Cixi lived in a group of palace buildings called the Forbidden City, within the city of Beijing. She spoke to all her visitors from a large red throne shaped like a dragon that was hidden behind a silk screen. Every one of her orders ended with the warning "Hear and obey."

Cixi was never really an empress. She was, however, the mother of the emperor's only son. When the emperor died, she helped her 6-year-old son, who was heir to the throne, rule China. She still had power when her son was old enough to rule by himself. Then he died, and the Dragon Empress made sure her 3-year-old nephew became the new emperor. Cixi helped him rule too.

SEARCH LIGHT

Find and correct the error in the following sentence: One of the most powerful women in Japanese history was Cixi.

During Cixi's time the Chinese government became very dishonest. But she did not rule alone during this time. A group of dishonest officials helped her make decisions. When her nephew grew up he tried to make some changes to improve life in China. The officials were against such changes. Only after foreign armies captured Beijing in 1900 did Cixi begin to make things better. In 1908, when the Dragon Empress was dying, her nephew, the emperor, also died. Some say that she was **ruthless** and did not want him to rule without her so she poisoned him. But this was never proved.

DID YOU KNOW?

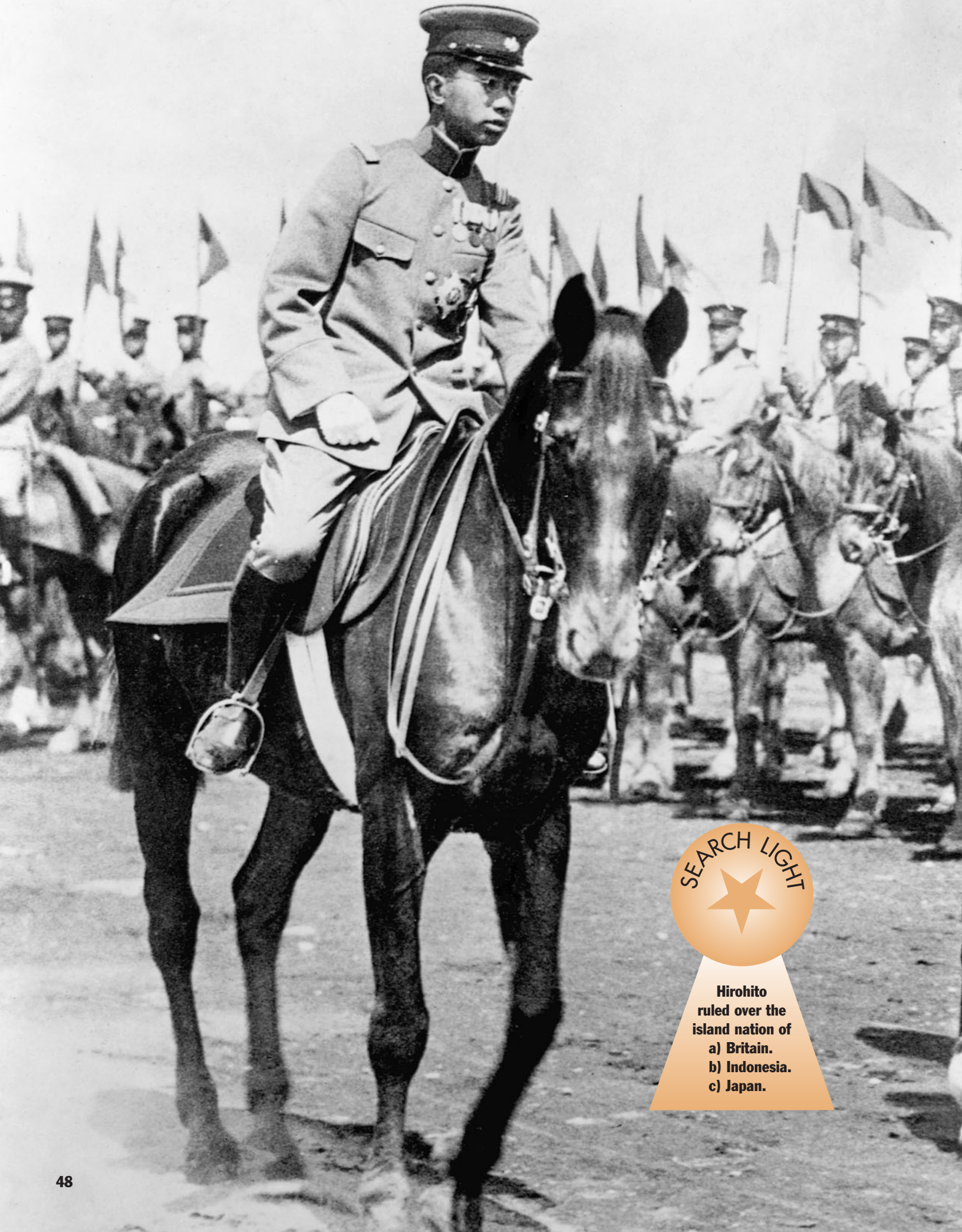
Cixi wore solid gold shields on her very long fingernails to keep them from breaking.

LEARN MORE! READ THESE ARTICLES…
CHINA (VOLUME 7) • CLEOPATRA (VOLUME 4)
MAO ZEDONG (VOLUME 4)

Known in the West as the Empress Dowager, Cixi controlled the political life of China for many decades. The nation was fairly stable under her influence, but the government was dishonest and did not make changes that were needed to benefit the people.

© Hulton-Deutsch Collection/Corbis

Answer: One of the most powerful women in Chinese history was Cixi.



SEARCH LIGHT

Hirohito ruled over the island nation of
a) Britain.
b) Indonesia.
c) Japan.

Emperor of Japan

Michinomiya Hirohito was the last of the old-style **emperors** of Japan. He helped usher in a new age for the Japanese people. He was born in 1901, and he was the first Japanese **crown prince** to travel abroad.



Emperor Hirohito in 1982.
© Bettmann/Corbis

Hirohito became emperor on December 25, 1926, after his father's death. At that time the military was gaining control of the government and would soon take Japan into a major war in Asia. Eventually Japan attacked Hawaii and the Philippines, which brought the United States into World War II. Historians still don't agree about whether the emperor actually wanted a war with the United States or if he just couldn't stop the military chiefs.

By 1945 Japan was nearing defeat, and Hirohito favored ending the war. On August 15, 1945, he broadcast his country's surrender on the radio. It was the first time the Japanese people had heard their emperor's voice.

After the war Hirohito made many changes. Until then, Japanese emperors had claimed to be descended from gods. Hirohito now gave up this claim. The old **constitution** had also given the emperor highest authority. A new constitution gave power to the people.

The emperor also started appearing before the Japanese public. He allowed the press to photograph and write about him and his family. In 1959 he permitted his son, Crown Prince Akihito, to marry a **commoner**, which was a major break with tradition. Hirohito helped Japan build relationships with countries all over the world.

Hirohito's health began to fail as he grew older. He died on January 7, 1989.

LEARN MORE! READ THESE ARTICLES…
EMPRESS OF CHINA (VOLUME 4)
JAPAN: MODERN NATION OF ANCIENT TRADITIONS (VOLUME 7)
SHINTO (VOLUME 5)

DID YOU KNOW?

According to tradition, 123 emperors ruled over Japan before Hirohito. Yet Hirohito ruled the longest—he was the emperor of Japan for 63 years.

After World War II, Emperor Hirohito tried to bring the imperial family closer to the Japanese people. He began to appear in public more often and allowed pictures and stories of his personal and family life to be published.
© Corbis

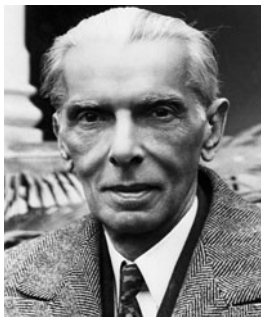
Answer: c) Japan.



Founder of Pakistan

Mohammed Ali Jinnah was born in Karachi in 1876. At that time the city was part of India, and India was controlled by the British. When Jinnah was a young man, his parents sent him to London to gain business experience. Instead, he studied law and learned about the British system of government. After his studies, he returned to India and began to practice law in Bombay (now Mumbai). It was about this time that the people of India began to seek freedom from British rule.

DID YOU KNOW?
When Jinnah was a law student in London, he worked to help Dadabhai Naoroji become the first Indian member of the British Parliament.



Mohammed Ali Jinnah.
© Bettmann/Corbis

For hundreds of years, Muslims and Hindus—the area's two major religious groups—had lived together peacefully in India. But there were many more Hindus than Muslims. Because of this, many Muslims feared that they might not be treated equally once India became an independent country.

Although Jinnah was Muslim, at first he didn't think there was anything to be afraid of. But as time passed, he began to feel that the Muslims in India should have their own country. So Jinnah began to work hard to make a Muslim nation out of part of India's land. The new country would be called Pakistan.

In 1947 the British government agreed to the formation of Pakistan. India became independent from Britain in August of that year, and a section of the country became Pakistan. Jinnah was chosen as Pakistan's first head of state, but he served for only a year before he died. Still, Jinnah's people loved him. And because he helped create Pakistan, Jinnah is considered the Father of Pakistan.

LEARN MORE! READ THESE ARTICLES…
MAHATMA GANDHI (VOLUME 4) • ISLAM (VOLUME 5) • PAKISTAN (VOLUME 7)

SEARCH LIGHT

For which people did Jinnah want to build a country?

Mohammed Ali Jinnah founded the state of Pakistan in 1947. Here, Pakistani soldiers in 1993 hang a portrait of Jinnah as part of preparations for Pakistan Day in March.
© Reuters NewMedia Inc./Corbis

Answer: Jinnah wanted to build a country for Muslims.



DID YOU KNOW?

In 1993 Nelson Mandela and F.W. de Klerk were jointly awarded the Nobel Prize for Peace for getting rid of the apartheid system.

A Fighter for Rights

South African leader Nelson Mandela was a fighter. He fought against apartheid. Apartheid was an official policy of the government of South Africa that separated people according to their race and color.

During World War II, Mandela joined the African National Congress (ANC), and he later became one of its leaders. This organization had one aim: to fight for the freedom of the black people in South Africa.

SEARCH LIGHT

True or false? Mandela served a life sentence in jail.

Mandela hadn't wanted to use violence in the ANC's fight against the government. However, after the police killed unarmed Africans, Mandela changed his mind. He argued for using **sabotage** against the government—that is, secretly working to undermine and destroy it. At the same time, the South African government outlawed the ANC. In 1962 the government decided that Mandela was guilty of acts against the government. He was sentenced to five years in prison. The next year, he was found guilty on more charges and sentenced to life imprisonment.



Nelson Mandela in 1990.
© David Turnley/Corbis

By the 1980s more and more people had heard of Mandela's hopes for South Africa. They began to **campaign** for his release from prison. Countries and organizations all over the world got involved. Early in 1990 South Africa's president, F.W. de Klerk, ordered Mandela's release. President de Klerk, together with Mandela, worked to change South Africa into a country where all races would have equal rights.

South Africa held its first elections open to people of all races in 1994. Mandela and the ANC won the elections, and Mandela became the country's first black president.

LEARN MORE! READ THESE ARTICLES…
MAHATMA GANDHI (VOLUME 4) • MARTIN LUTHER KING, JR. (VOLUME 4)
SOUTH AFRICA: A PEOPLE APART (VOLUME 8)

Nelson Mandela spent nearly 30 years of his life as a political prisoner. Four years after his release, he ran for president of South Africa. He was elected in April 1994.
© Peter Turnley/Corbis

Answer: FALSE. He served a large part of a life sentence—almost 30 years.

Architect of Modern China

Mao Zedong was born in 1893, in China's Hunan province. Mao's father had been born a poor peasant, but he became wealthy as a farmer and grain dealer. Only limited education was available where Mao grew up. So at age 13 Mao left school to work on his family's farm. He later ran away to attend school in the provincial capital, where he discovered new ideas from Chinese and Western thinkers.



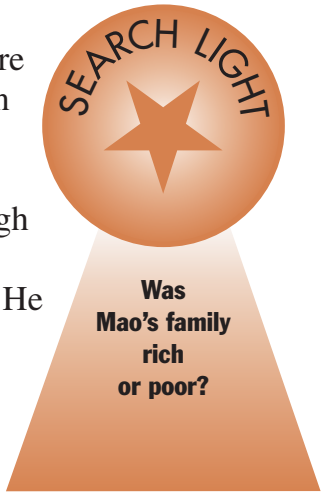
Mao Zedong in 1967.
© Bettmann/Corbis

Mao briefly served in the army during the Chinese Revolution (1911-12). This uprising overthrew the ruling Manchu **dynasty** and turned China into a **republic**. After that there were many years of fighting between different groups who wanted to rule China. This time was known as the "warlord period."

After the war, Mao returned to school, ending up at Beijing University, where he worked in the library. There he became involved in the May Fourth Movement of 1919. This was the beginning of China's turn toward communism. In communism, property is owned by the state or community, and all citizens are supposed to share in the nation's wealth.

In the 1920s Mao helped found the Chinese Communist Party (CCP). He started a communist revolution among peasants in the countryside. The CCP split off from the Nationalist Party. The Nationalists thought the Chinese should decide their own future, but they were against communism. The Red Army, Mao's military force, began fighting them and gathering strength in the late 1920s.

Mao finally took control of the whole country in 1949 and became the chairman of the People's Republic of China. Although many poor people's lives were better under Mao, many others suffered and died during his efforts at reform and improvement. He died on September 9, 1976.



LEARN MORE! READ THESE ARTICLES…
CHARLEMAGNE (VOLUME 4) • CHINA (VOLUME 7)
CONFUCIUS (VOLUME 5)

DID YOU KNOW?
During World War II, Mao's communists and the Nationalists joined together to fight off Japan's invasion of China.



Mao Zedong, the leader of the Chinese communists, spent a great deal of time in the countryside trying to gain support for his ideas. Here, as a young man, he speaks to a group of his followers.
© Bettmann/Corbis

Answer: Actually they were both. His father was born poor but later became a wealthy farmer and merchant.



SEARCH LIGHT

Unscramble the words.
- nestseK
- stiPlateen
- raslel

Israel's First Woman Prime Minister

In 1906, when Goldie Mabovitch was a child, poverty forced her family to move from Russia to the United States to find work. In high school, she joined a group that wanted Jews to have their own country. This was known as Zionism. A few years later she and her husband, Morris Myerson, moved to Palestine, a Middle Eastern region then under British control.



Israeli Prime Minister Golda Meir in 1972.
© Hulton-Deutsch Collection/Corbis

Goldie Myerson became involved in political activities in Palestine. She **negotiated** protection for Jews who fled from Nazi Europe during World War II. After the war, she worked to help Jewish war refugees.

In 1948 part of Palestine became the State of Israel, and Goldie Myerson was one of the signers of Israel's declaration of independence. The surrounding Arab countries attacked Israel, but the new country defended itself and remained independent.

The next year she was elected to the Knesset, the Israeli **parliament**. Later she changed her last name from Myerson to "Meir," a Hebrew word meaning "to burn brightly." She also became known as "Golda" instead of "Goldie." Meir became the prime minister of Israel in February 1969. As prime minister, she worked hard for peace in the Middle East and traveled widely to meet with the leaders of many other countries.

But in 1973 Egypt and Syria's invasion of Israel led to another Arab-Israeli war. Though Israel eventually won the war, the whole country was stunned by the attack. Many Israelis felt Meir's government was to blame, and so she resigned as prime minister the next year.

LEARN MORE! READ THESE ARTICLES…
MENACHEM BEGIN (VOLUME 4) • ISRAEL (VOLUME 7)
JUDAISM (VOLUME 5)

DID YOU KNOW?
Meir was 71 years old when she became the world's third female prime minister. The first two were Sirimavo R.D. Bandaranaike of Ceylon (now Sri Lanka) and Indira Gandhi of India.

Before she became Israel's prime minister, Golda Meir served as Israel's representative to the United Nations. In this photo, Meir helps a little girl light five candles to celebrate Israel's fifth anniversary.
© Bettmann/Corbis

Answer: Knesset, Palestine, Israel



SEARCH LIGHT

True or false? Sadat did not want Egypt to be run by a king.

Egypt's Man of Peace

When Muhammad Anwar el-Sadat was born in 1918, Egypt was controlled by the British and was ruled by a sultan. But Sadat would rise to one day become Egypt's president.

Sadat was in the military during World War II. After that he joined an organization that wanted to overthrow the Egyptian **monarchy** and drive out the British. The organization was led by Gamal Abdel Nasser. In 1952 Nasser's group was successful, and Egypt gained its independence. Nasser became the country's first president, and Sadat twice served as his vice president. When Nasser died in 1970, Sadat became president.



Anwar el-Sadat, reviewing a military parade, shortly before he was killed.
© Kevin Fleming/Corbis

Egypt had lost control of the land lying between Egypt and Israel during a war with Israel in 1967. The two countries remained enemies after that. In six years Sadat ordered Egyptian forces to retake this land. Israel won the war that followed. But Sadat's actions made him very popular in Egypt and in other Arab countries.

Four years after the war, Sadat tried for peace with Israel. He visited there to share his peace plan. Later he held peace talks in the United States with the Israeli prime minister, Menachem Begin. Because of their efforts, Sadat and Begin shared the 1978 Nobel Prize for Peace.

The next year Egypt and Israel signed a peace treaty—Israel's first with an Arab country. Sadat's actions were praised around the world. But many Egyptians and other Arabs opposed the treaty. In 1981 Sadat was killed by religious **extremists** during a military parade.

LEARN MORE! READ THESE ARTICLES…
MENACHEM BEGIN (VOLUME 4) • EGYPT (VOLUME 8)
HASSAN FATHY (VOLUME 3)

DID YOU KNOW?
While Sadat was working to overthrow the Egyptian monarchy, he went to jail twice. The second time he was jailed, he taught himself French and English.

When Egypt and Israel were working to make peace, U.S. President Jimmy Carter was a great help. Here (from left to right) you see Sadat's wife, Jehan, and Sadat himself, with the U.S. first lady, Rosalynn Carter, and President Carter.
© Wally McNamee/Corbis

Answer: TRUE.

World Peacemaker

A peacemaker has to be impartial—that is, be fair and not take sides. U Thant was a true peacemaker. As the secretary-general of the United Nations between 1961 and 1971, he had the job of peacemaker among many warring countries.

U Thant was born in 1909 in Burma (now called Myanmar). "U" is not a name but a term of respect similar to the English "Mister." Thant means "pure." Thant got his education at the University of Rangoon. It was here that he met Thakin Nu, later called U Nu. U Nu went on to become the prime minister of Burma after World War II.

SEARCH LIGHT

True or false? U is U Thant's first name.

Nu recognized Thant's abilities and appointed him as a spokesman for the government. Later Thant became a **diplomat** when he was appointed a member of the Burmese representatives to the United Nations (UN). In 1957 he became his country's permanent representative to the UN, and he later served as vice president of the UN General Assembly.

When the UN's leader, the secretary-general, died in 1961, the United States and the Soviet Union could not agree on a new leader for the body. Though neither country got their first choice, they were able to settle on Thant as acceptable.

As secretary-general, Thant worked for peace around the world. In 1962 he aided in the removal of Soviet missiles from Cuba. He helped end the civil war in Congo, and he established a peacekeeping force on Cyprus in the Mediterranean Sea. When India and Pakistan went to war in 1965, Thant flew to India to help negotiate the cease-fire.

DID YOU KNOW?

In 1976 an island in New York's East River, near UN headquarters, was redecorated with trees and flowers and named U Thant.

LEARN MORE! READ THESE ARTICLES…
NELSON MANDELA (VOLUME 4) • YANGON (VOLUME 7)
MAO ZEDONG (VOLUME 4)

U Thant was a faithful Buddhist, and he applied a Buddhist attitude of focus and open-mindedness to his work at the United Nations.

© Bettmann/Corbis

U THANT

Answer: FALSE. U is a word with a meaning something similar to "Mister."

Men in Dragon Ships



"The Vikings are coming!"

When people in the seacoast towns of northern Europe heard this cry, some of them prepared to fight. Others took their children, grabbed anything they could carry, and quickly fled. A thousand years ago the arrival of Viking invaders in a coastal town caused great fear.

The Vikings were also called Norsemen (Northmen), because they came from Scandinavia—the area of northern Europe that includes the modern countries of Denmark, Norway, and Sweden. The Norsemen were made up of **pagan** warriors who wanted adventure and treasures. Like pirates, they sailed around northern Europe, fighting, killing, and stealing in towns and villages.

Sometimes the Vikings even took **captives** and sailed away with them. These captives had to serve their masters, but they often found that the Norsemen were not so fierce at home. When they weren't sailing on raids, many Norsemen were farmers.

The Vikings didn't always raid villages. Sometimes they traded with them. The Norsemen built special large boats called longships, or "dragon ships," to carry goods to people in faraway lands. Vikings were brave sailors who would sometimes sail great distances with only the Sun, Moon, and stars to guide them.

In addition to pirating and trading, the Vikings also used their longships for exploring. It is believed that around the year AD 1000 a Viking named Leif Ericson sailed across the Atlantic Ocean and spent a winter in what is now Newfoundland, Canada. This would make him the first European to have landed in North America—about 500 years before Christopher Columbus!

LEARN MORE! READ THESE ARTICLES…
NORTH AMERICA (VOLUME 9) • NORWAY (VOLUME 6) • SHIPS (VOLUME 2)

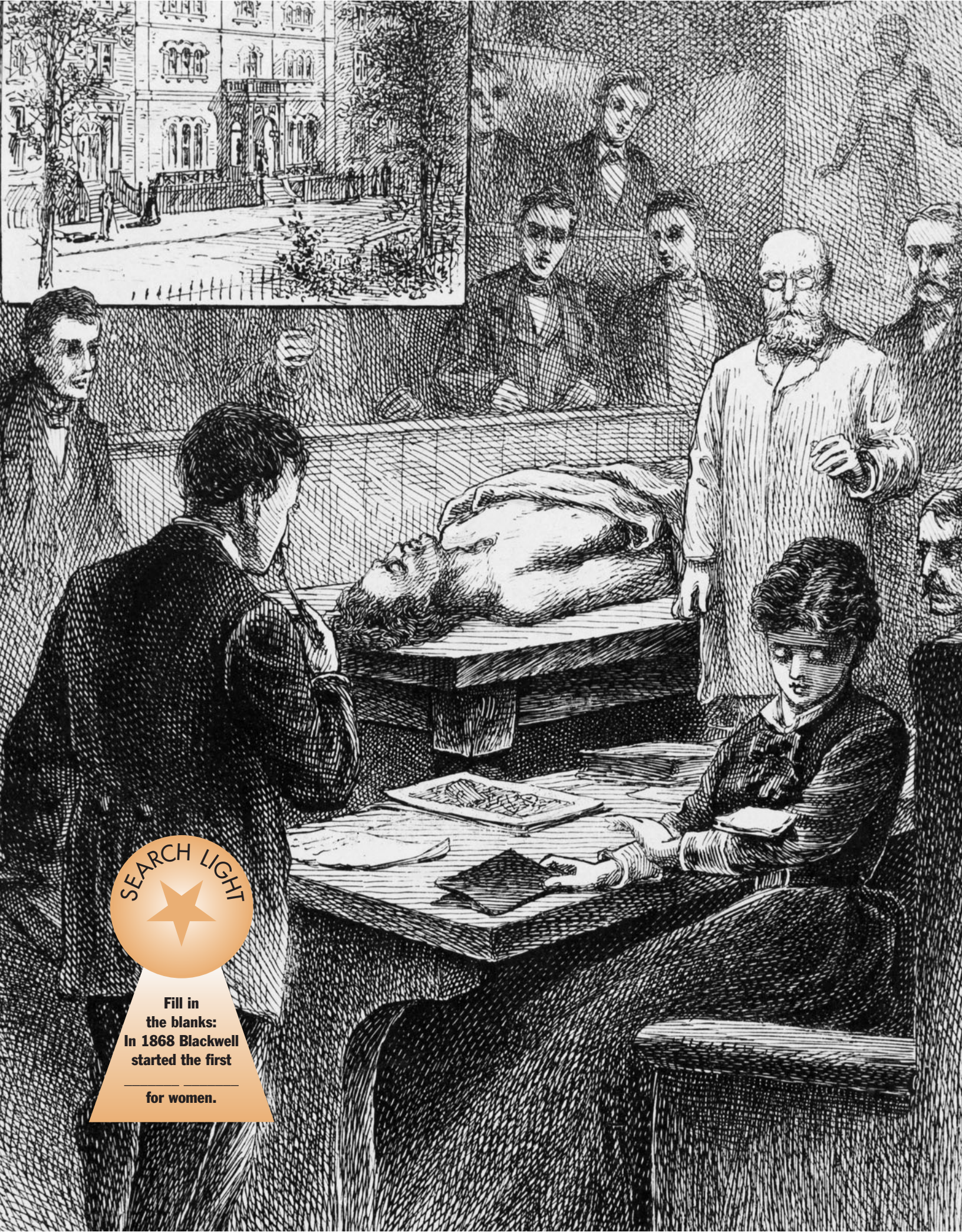


Vikings were skilled sailors who used the position of the Sun and the stars to find their way on the sea. Their longships, made from the wood of oak trees, carried their goods to foreign lands.
© Bettmann/Corbis

DID YOU KNOW?

A "berserker" was a Viking warrior who wrapped himself in bearskin (or a "bear shirt") and fought as if he couldn't be harmed. Today if someone says you've "gone berserk," they mean you're acting crazy.

Answer: FALSE. Vikings were usually peaceful at home.



SEARCH LIGHT

Fill in
the blanks:
In 1868 Blackwell
started the first
_____ _____
for women.

The First Modern Woman Doctor

Elizabeth Blackwell was born in England in 1821, but she moved to the United States with her family when she was 11. By the time she was 23, Blackwell had decided that she wanted to be a doctor. But at this time there were no female doctors in the United States.

DID YOU KNOW?
A year after Blackwell opened her hospital, her sister Emily went to work with her. She too had become a doctor.

It wasn't easy for Blackwell to study medicine. Most of the medical colleges she applied to turned her down. The men who taught medicine didn't think it was right for a woman to be a doctor. Finally Blackwell was admitted to Geneva Medical College in New York. She was the only woman in a class of 150.

The other medical students made things difficult for Blackwell. They criticized her, refused to talk to her, and kept her from taking part in the classroom medical demonstrations. However, two years later Blackwell was the best student in her class. In 1849 she became the first female doctor in the United States.



Elizabeth Blackwell in later years.
Courtesy, Hobart and William Smith Colleges

Despite this training, Blackwell could not get a job in any of the city hospitals. So she opened her own hospital, the New York Infirmary for Women and Children, in a district where many poor people lived. When the American Civil War broke out in 1861, Blackwell's hospital became a relief center for wounded soldiers. She also helped select and train nurses for the war.

Blackwell worked to establish a medical school for women so that other women could become doctors. In 1868 she opened the Woman's Medical College, the first of its kind in America.

LEARN MORE! READ THESE ARTICLES…
MARIE CURIE (VOLUME 4) • MEDICINE (VOLUME 2) • LOUIS PASTEUR (VOLUME 4)

Elizabeth Blackwell was not only the first American woman doctor. She also became the first woman to have her name placed on the British medical register. This meant she was allowed to practice medicine in Great Britain.
© Bettmann/Corbis

Answer: In 1868 Blackwell started the first medical school (or medical college) for women.

Inventing New Plants

Luther Burbank grew up on a farm in the United States. Though he had only a high school education, he had read Charles Darwin's ideas about how living things change over time. Burbank wanted to understand why different plants had their own kind of fruit and flowers—and how they might be changed to grow better ones.

In the 1870s most people didn't think it was possible to make new kinds of plants. But Burbank surprised them by creating hundreds of new varieties, including a white blackberry so clear that you could see its seeds through its skin. Burbank grew a tomato on a potato vine and called it a "pomato." He combined a plum tree and an apricot tree to make a new fruit called a "plumcot."



Benefiting today from Burbank's work with plants.
© Lynda Richardson/Corbis

Burbank produced many of these plants by "grafting." He took a small twig from one plant and put it into a cut he had made on a different plant. The plant with roots controlled the size of the new plant, while the twig grew into branches with flowers and fruit. Sometimes he produced completely new kinds of plants by cross-pollination. He did this by putting **pollen** from the flowers of one type of plant onto the sticky part of the flowers of another type of plant.

Getting the new plants he wanted was not easy. The white blackberry took Burbank 65,000 tries to get right. And he spent eight years cross-pollinating different types of daisy to turn a small yellowish daisy into a tall snow-white flower with a yellow center. The result was the famous Shasta daisy.

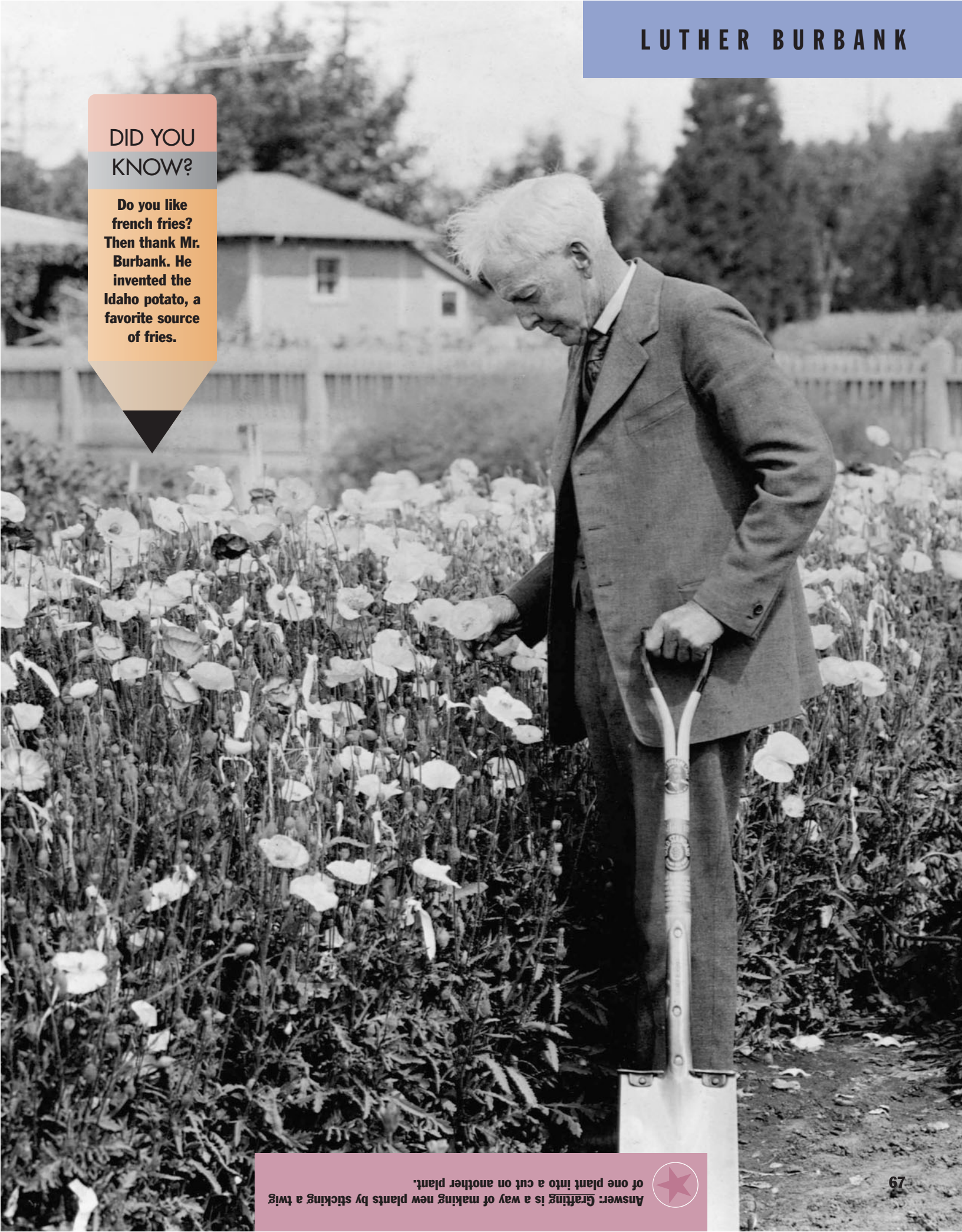
Burbank's work produced many useful plants. And his experiments added greatly to the knowledge of how features pass from parents to offspring.



Find and correct the error in the following sentence: Rafting is a way of making new plants by sticking a twig of one plant into a cut on another plant.

LEARN MORE! READ THESE ARTICLES…
CHARLES DARWIN (VOLUME 4) • FOSSILS (VOLUME 1)
ROSE (VOLUME 10)

© Corbis



DID YOU KNOW?

Do you like french fries? Then thank Mr. Burbank. He invented the Idaho potato, a favorite source of fries.

Answer: Grafting is a way of making new plants by sticking a twig of one plant into a cut on another plant.



SEARCH LIGHT

Find and correct the error in the following sentence: Copernicus studied the skies and finally decided that the Sun circles the Earth.

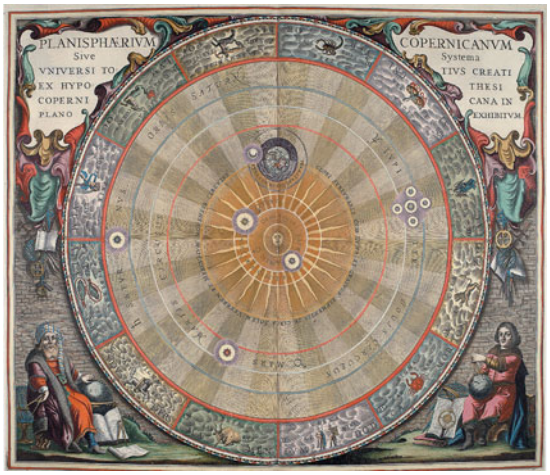
Student of the Sky

DID YOU KNOW?
Andreas Osiander, who was in charge of getting Copernicus' last book printed, made some changes and added a note to the front saying that the book wasn't meant to be true—all without the author's permission!

Hundreds of years ago many people thought that the Earth stayed still and the Sun went around it. Then came a man named Nicolaus Copernicus, who said that it was the Sun that stayed still and the Earth that moved. And he was mostly right.

Copernicus was born on February 19, 1473, in Poland. His father died a few years after Copernicus was born, and a wealthy uncle brought the young boy up. He sent him to the University of Kraków to study mathematics. There Copernicus also studied the stars and planets.

Copernicus didn't believe that the Earth was the center of the universe and that all the other planets and stars circled around it. He studied the sky for years and finally decided that the Sun sat at the center of the universe. The Earth and the other planets spun around the Sun.



An image of the solar system as Copernicus imagined it.
© Stefano Bianchetti/Corbis

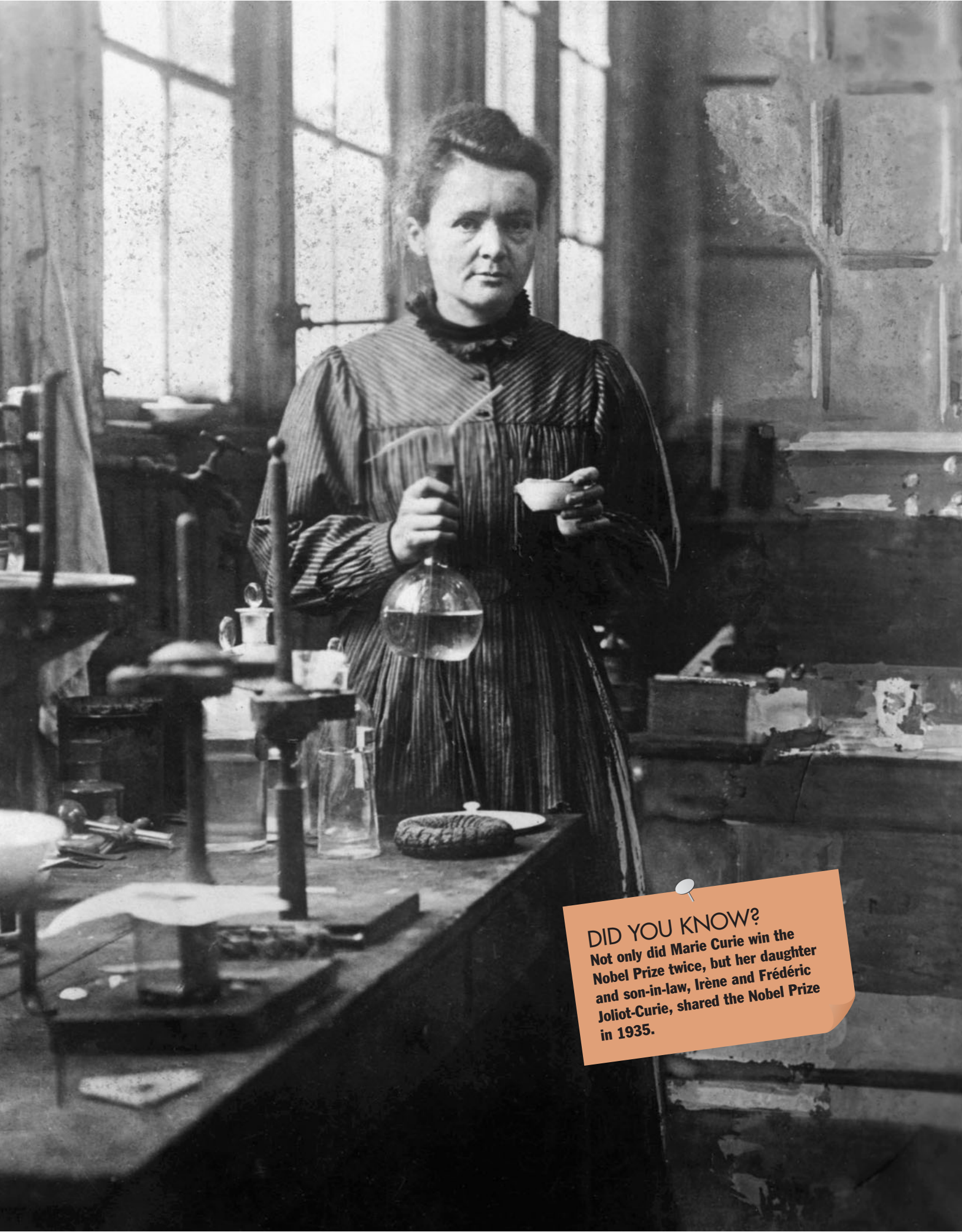
Some of what Copernicus said wasn't correct. We know today that all the planets and the stars, including the Sun, move constantly. We also know that the Sun is the center not of the universe but rather of the solar system. Yet Copernicus was right in some ways. It is true that the Earth circles the Sun.

Copernicus presented his ideas in a book called *On the Revolutions of the Celestial Spheres*. The book wasn't published for 13 years because the Roman Catholic church opposed it. It is said that Copernicus received the first copy as he was dying, on May 24, 1543.

LEARN MORE! READ THESE ARTICLES…
ASTRONOMY (VOLUME 2) • GALILEO (VOLUME 4)
JOHANNES KEPLER (VOLUME 4)

Unlike most people in his day, Nicolaus Copernicus didn't believe that the Earth was the center of the universe. And his studies eventually showed that he was right.
© Bettmann/Corbis

Answer: Copernicus studied the skies and finally decided that the Earth circles the Sun.



DID YOU KNOW?

Not only did Marie Curie win the Nobel Prize twice, but her daughter and son-in-law, Irène and Frédéric Joliot-Curie, shared the Nobel Prize in 1935.

Discovering a New Kind of Science

The French scientist Marie Curie became the first woman to win the Nobel Prize, one of the greatest honors in the world. What's more, she was the first person ever to win the prize two times.

Marie, who was born in Poland, studied science at the Sorbonne, the great French university. She was one of the best students there. She worked very hard, often late into the night, sometimes eating little more than bread, butter, and tea day after day.

SEARCH LIGHT

True or false? Marie Curie's research led to her death.

Marie married Pierre Curie after completing her science course. Pierre was also a scientist, and the two worked together. Another scientist, named Henri Becquerel, had already discovered that certain types of material send out tiny "bullets" of energy all the time. Marie called this action "radioactivity."

These strange radioactive **particles** were far too small to be seen, but it was possible to take a kind of photograph of them. Marie studied radioactivity and discovered two new **elements** that were radioactive, polonium and radium.

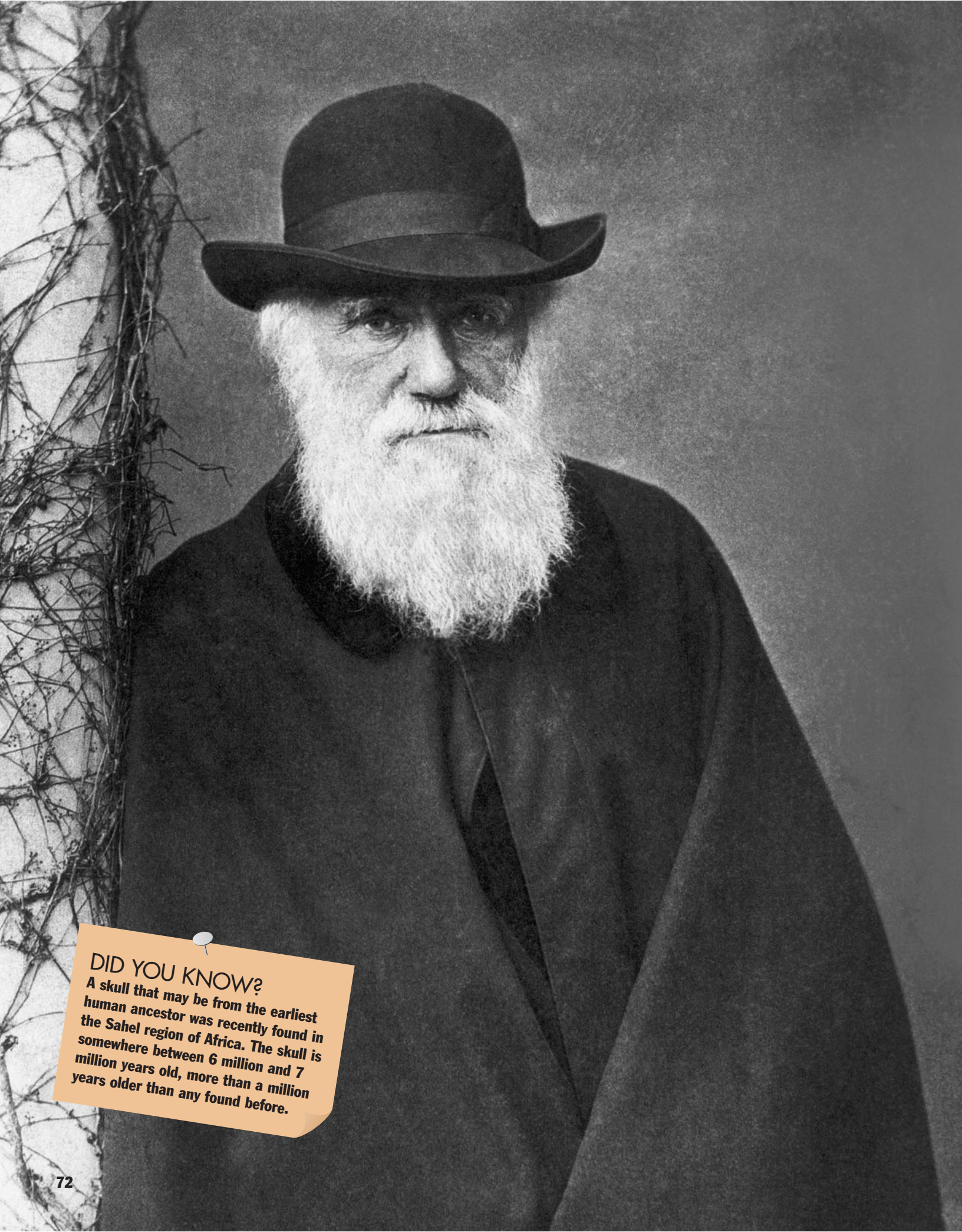
Over the years Marie Curie's discoveries about radioactivity have proved extremely important in many ways. Radioactivity helps doctors identify and treat diseases. A major form of power generation based on nuclear energy has been developed, a process involving radioactivity. And in geology, radioactivity is used to determine the age of ancient rocks.

Marie's entire life was spent working for science. She fell ill and eventually died because of working so closely with radioactive materials. She knew about this risk, but she felt her work was too important to stop. Marie Curie was awarded the Nobel Prize in 1903 for her work on radioactivity and in 1911 for discovering radium.

LEARN MORE! READ THESE ARTICLES…
ATOMS (VOLUME 2) • ELIZABETH BLACKWELL (VOLUME 4)
NUCLEAR ENERGY (VOLUME 2)

© Bettmann/Corbis

Answer: TRUE. Marie Curie's work with radioactive materials damaged her blood and caused her death.



DID YOU KNOW?

A skull that may be from the earliest human ancestor was recently found in the Sahel region of Africa. The skull is somewhere between 6 million and 7 million years old, more than a million years older than any found before.

The Theory of Evolution

All cultures tell a story about how life came to be on Earth. Most traditions and religions tell of creation happening in a particular event. But what does science tell us? A scientist named Charles Darwin came up with a very different idea about how humans and other creatures came to be.



Darwin and his ideas being made fun of in a magazine.
© Archivo Iconografico S.A./Corbis

In 1831, at age 22, Darwin set out from England on a scientific expedition aboard a ship called the *Beagle*. He sailed to the coast of South America and to some Pacific islands, such as the Galapagos.

On the trip, Darwin studied many **species**, or groups, of plants and animals. He also studied fossils—rocks that carry imprints of ancient plants and animals. The fossils showed that plants and animals living on Earth long ago were different from the same types of plants and animals that lived in his own time. Darwin wondered why these old species had disappeared and the new species had developed.

After much thought, here's what Darwin decided: Living things must work hard for food and shelter, so only those that do this best will survive. Small individual strengths, such as being bigger or faster, can be the keys to survival. And these strengths are passed on to the individuals' offspring. Helpful individual differences add up over time to make the whole species change, or evolve.

This was Darwin's famous **theory** of **evolution**. He also believed that over time the same species living in different surroundings could evolve into two separate species.

Darwin published his theory in his books *On the Origin of Species* and *The Descent of Man*. He proposed that all living things, including humans, have slowly evolved from earlier species. Many people do not accept Darwin's theory. But it remains the most widely accepted scientific theory.

SEARCH LIGHT

Fill in the blank: Darwin's theory of evolution says that species of living things _____ over time.

LEARN MORE! READ THESE ARTICLES…
LUTHER BURBANK (VOLUME 4) • FOSSILS (VOLUME 1) • GALAPAGOS ISLANDS (VOLUME 9)

© Bettmann/Corbis

Answer: Darwin's theory of evolution says that species of living things change (or evolve) over time.

A Brilliant Wonderer

Young Albert Einstein didn't always do well in school. His teachers thought he took too long to answer questions. And often they got upset because Albert thought of questions they couldn't answer.



The Einstein Memorial, a sculpture honoring the great scientist, in Washington, D.C., U.S.
© Roman Soumar/Corbis

The more Albert learned, the more things he thought about. The more he thought, the more questions he had. By age 12 he had decided that he would solve the riddle of the "huge world," the universe.

Einstein thought there must be some rules to explain why everything in the universe, big and little, acts as it does. How can gravity attract distant objects through empty space? What makes tiny atoms stick together to form all the different things there are?

He thought and thought until he believed he had some of the answers for things that scientists had long tried to figure out, such as what makes gravity work and how fast light can travel. Einstein even proved such unexpected things as the fact that light bends under the force of gravity.

SEARCH LIGHT

Find and correct the error in the following sentence: Albert Einstein invented gravity.

You may have heard of Einstein's famous formula $E = mc^2$. This stands for a complex idea called "relativity." But in the simplest terms it shows that a small **particle** of matter is equal to an enormous quantity of energy.

Einstein introduced entirely new ways of thinking about time, space, matter, energy, and gravity. His ideas guided such scientific advances as space exploration and the control of atomic energy. One of the concepts he explained, the **photoelectric effect**, led to something most people enjoy daily: television.

DID YOU KNOW?
One story about Einstein has it that he once used a check for $1,500 as a bookmark—and lost it.

LEARN MORE! READ THESE ARTICLES…
ATOMS (VOLUME 2) • NUCLEAR ENERGY (VOLUME 2)
UNIVERSE (VOLUME 2)

Albert Einstein, shown here in his study, introduced entirely new ways of thinking about time, space, matter, energy, and gravity.
© Bettmann/Corbis

ALBERT EINSTEIN

Answer: Albert Einstein explained gravity.



This fresco (a painting created on wet plaster) shows Galileo demonstrating his version of the telescope.
© Archivo Iconografico, S.A./Corbis

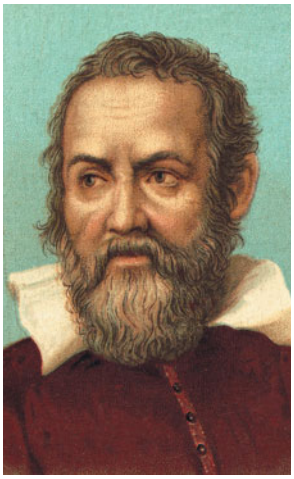
DID YOU KNOW?

Galileo agreed with Nicolaus Copernicus and Johannes Kepler that the Earth orbits the Sun. This upset the Roman Catholic church, and Galileo was forced to tell everyone he was wrong.

The Man Who Discovered Outer Space

Galileo Galilei was born in Pisa, Italy, in 1564. As a young man he became interested in mathematics and **astronomy**. He loved to experiment and try out new ideas.

A story claims that Galileo once dropped objects of different weights from the top of the famous Leaning Tower of Pisa. He wanted to prove that things fall at the same speed, no matter how much they weigh. But some of Galileo's ideas angered other scientists, so he left Pisa and went to Padua.



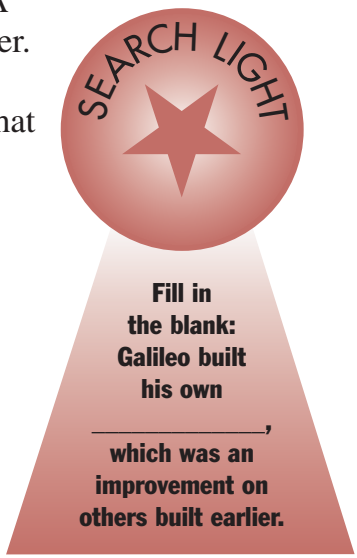
Galileo.
© Bettmann/Corbis

For years Galileo taught mathematics at the University of Padua. But in 1609 his career changed direction. Galileo heard about the telescope, a Dutch invention that could make distant objects appear closer. Galileo figured out how such a device would work and then used **lenses** from eyeglass makers' shops to make his own telescopes. Galileo's telescopes were better than most and could make objects appear up to 20 times larger than what the naked eye could see.

Galileo began to look up into the night sky. In December 1609, with the help of his telescope, Galileo learned that the Moon's surface is rough and uneven. A month later he discovered four moons orbiting the planet Jupiter. Also, when Galileo studied Saturn, he noticed something mysterious about its appearance. Later scientists would learn that the planet's strange look was due to its large rings.

Using his telescopes, Galileo helped change how people looked up at space. Likewise, much of the modern science of **physics** is based on his ideas—especially his ideas about how objects of all sizes move and how helpful it is to test scientific ideas by experimenting.

LEARN MORE! READ THESE ARTICLES…
ASTRONOMY (VOLUME 2)
NICOLAUS COPERNICUS (VOLUME 4) • ITALY (VOLUME 6)



Answer: Galileo built his own telescope, which was an improvement on others built earlier.

The Woman Who Lived with Chimpanzees

In the 1940s a young English girl named Jane Goodall dreamed of living in the African forests among the animals she'd read about. As she grew older, Goodall began to make her dream come true.



Jane Goodall presenting a stuffed toy monkey to United Nations Secretary-General Kofi Annan in 2002.
© AFP/Corbis

In 1957, when she was about 23 years old, a school friend invited Goodall to Kenya, Africa. While in Africa, Goodall met the famous scientist Dr. Louis Leakey. At the time, Leakey was studying wild chimpanzees in order to find out more about the origins of human life. He was impressed by Goodall's interest in animals and encouraged her to study chimpanzees in Tanzania.

Some people thought that Goodall wouldn't last for more than a few months in the jungle among the wild animals. But Goodall proved them wrong and ended up living in Tanzania for 15 years. During that time, the chimpanzees slowly became used to Goodall and finally allowed her to spend hours around them.

Being able to watch the chimpanzees up close allowed Goodall to discover many things about the animals that people did not know. Goodall saw chimpanzees use sticks as simple tools to draw termites and ants out of their nests. Goodall also found that all chimpanzees are different from each other in their behavior and **natures**, just like human beings.

As a child, Jane Goodall grew up reading about wild animals. But as an adult, she ended up writing many books of her own. In them she shared what she learned from 15 years of living with the wild chimpanzees of Africa.

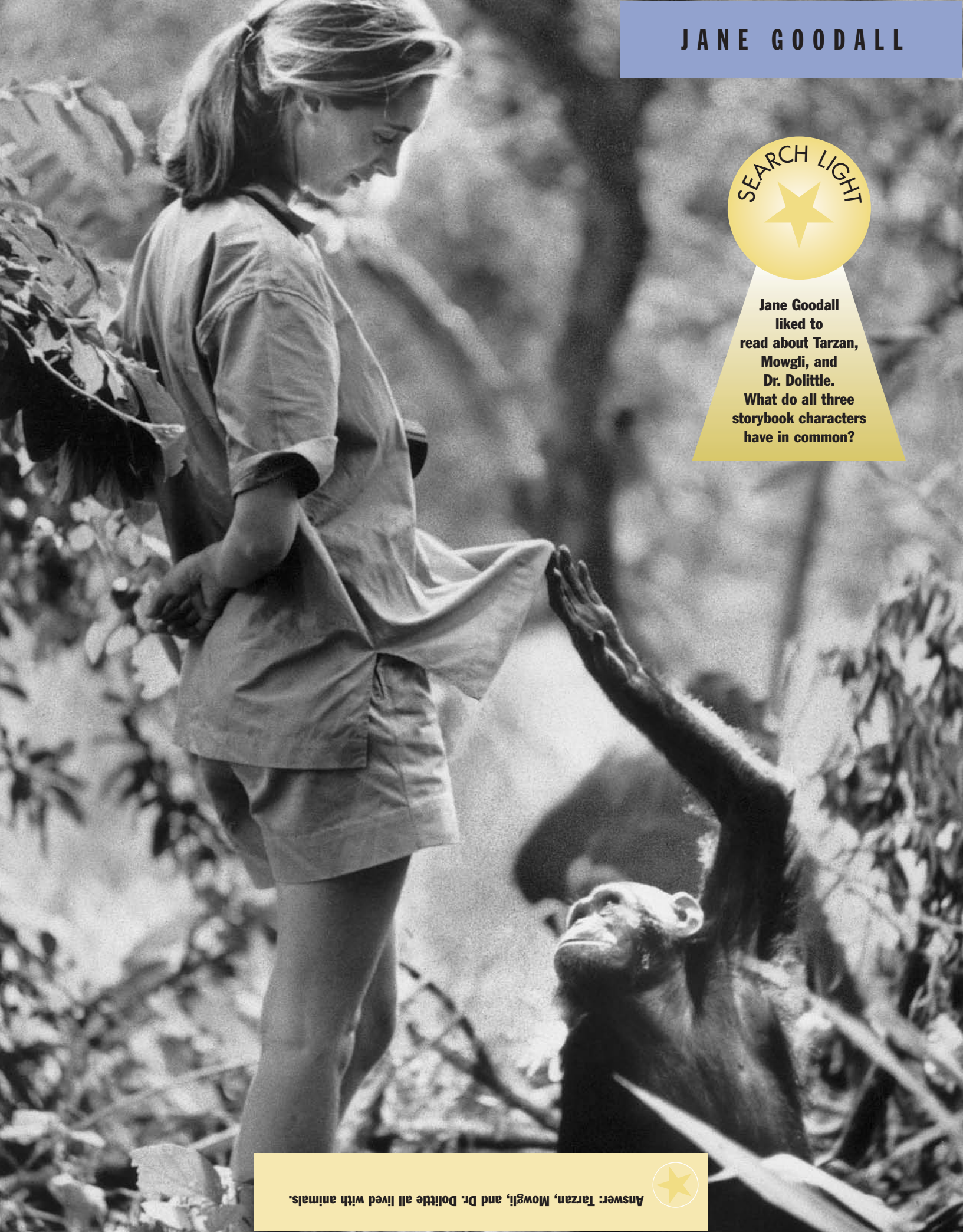
DID YOU KNOW?

Before Goodall's studies, scientists believed chimpanzees were vegetarians. But Goodall learned that they do sometimes hunt and eat meat.

LEARN MORE! READ THESE ARTICLES…
AFRICA (VOLUME 8) • APES (VOLUME 12)
CHARLES DARWIN (VOLUME 4)

Jane Goodall spent many years in Africa studying chimpanzees. She encountered this curious chimp at the Gombe Stream Research Center in Tanzania in 1972.
© Bettmann/Corbis

JANE GOODALL



SEARCH LIGHT

Jane Goodall liked to read about Tarzan, Mowgli, and Dr. Dolittle. What do all three storybook characters have in common?

Answer: Tarzan, Mowgli, and Dr. Dolittle all lived with animals.



DID YOU KNOW?

Kepler's grave was lost during a war, but the words he composed for his gravestone survive:

I used to measure the heavens,
now I shall measure the shadows of the earth.
Although my soul was from heaven,
the shadow of my body lies here.

Stargazer

Johannes Kepler was born on December 27, 1571, in Germany. He was to grow up to be an important astronomer who made many discoveries by studying the stars. Astronomers study the movements of planets, stars, comets, and meteors. However, for most of his life Kepler studied and taught mathematics.

When he was 23 years old, Kepler became an official calendar maker. Calendar making was a difficult job because certain church holy days had to happen just as a particular star was in a particular spot in the sky. It took a lot of complicated math to make a calendar come out right.

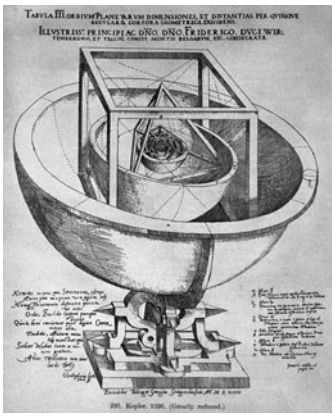


Diagram of Kepler's first model of the universe.
© Bettmann/Corbis

In 1597 Kepler published his first important work, *The Cosmographic Mystery*. Kepler's book explained the distance of the planets from the Sun. Kepler also said that all the planets revolve around the Sun and that the Sun remains in one position—an idea that built on those of the earlier astronomer Nicolaus Copernicus.

In 1600 Kepler moved to Prague, where he soon became Emperor Rudolf II's **imperial** mathematician, the most important mathematics post in Europe. Kepler discovered that Mars's orbit is an ellipse (an oval-like shape) rather than a circle. He also gave important laws for the motion of all of the planets around the Sun.

Kepler's scientific work was focused on astronomy. But he also studied other sciences and mathematics so he could learn everything possible about the stars.

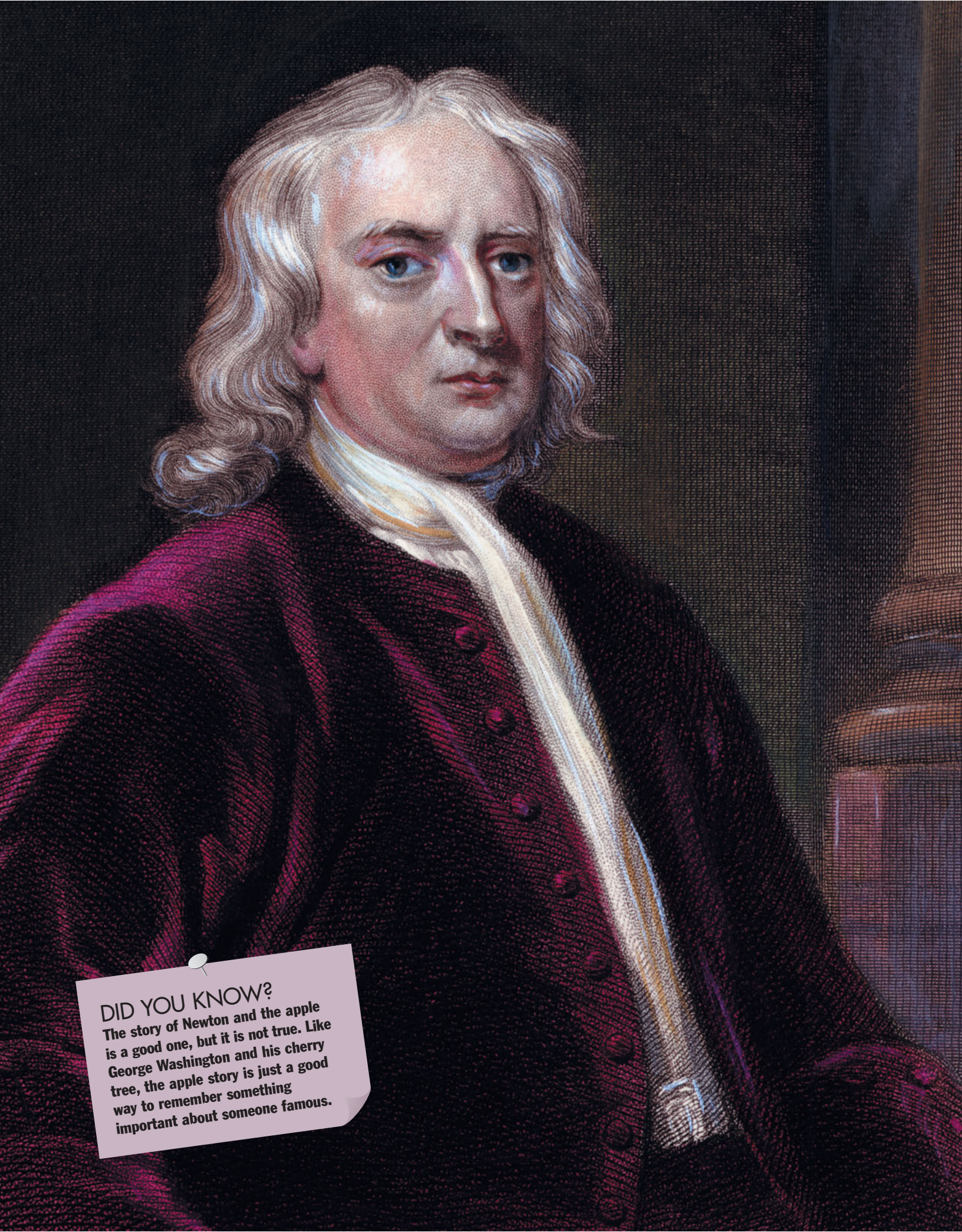
LEARN MORE! READ THESE ARTICLES…
CALENDAR (VOLUME 2) • NICOLAUS COPERNICUS (VOLUME 4)
GALILEO (VOLUME 4)

SEARCH LIGHT

Kepler was teacher of
a) science.
b) German.
c) math.
d) astronomy.

Johannes Kepler became the official mathematician to Emperor Rudolf II. This picture shows him explaining some of his discoveries to the emperor.
© Bettmann/Corbis

Answer: c) math.



DID YOU KNOW?

The story of Newton and the apple is a good one, but it is not true. Like George Washington and his cherry tree, the apple story is just a good way to remember something important about someone famous.

An Apple, an Idea

When you throw a ball into the air, do you wonder why it always comes back down? Why doesn't it keep going up?

One man did more than wonder. He was Sir Isaac Newton.

There is a story that as Newton sat under an apple tree, an apple struck him on the head. He wondered why the apple fell down instead of up. Was some force that no one could see pulling the apple to the ground?



Newton's reflecting telescope, made in 1668.
© James A. Sugar/Corbis

Actually, it was Newton's observation of the motions of the planets that contributed most importantly to his great discovery: the Law of Universal Gravitation. This "natural law" helps explain how the Earth and the Moon and the planets keep from bumping into each other. It explains why things feel light or heavy and what makes them fall to the ground.

What Newton decided was that everything has gravity. And every object's gravity has a pull on everything else around it. Heavy things pull harder than light ones.

Newton figured out many other things too. Did you know that white light is actually made of seven colors? They are the colors that make up a rainbow. Newton discovered that. He let the light pass through a **prism**, and the seven colors all came out separately. He then let the colors pass through another prism and they combined back into white light.

Newton's investigations also led him to invent the first reflecting telescope, which uses mirrors to gather light to improve a telescope's capability. His design is still used by amateur telescope makers.

Isaac Newton, one of the greatest scientists who ever lived, died in 1727 and was buried in Westminster Abbey in London, England. He was the first scientist to be honored this way.

LEARN MORE! READ THESE ARTICLES…
GRAVITY (VOLUME 2) • RAINBOWS (VOLUME 1) • TELESCOPES (VOLUME 2)



Find and correct the error in the following sentence: Newton's theory of reflecting telescopes helped explain how the planets keep from bumping into each other.

Sir Isaac Newton's theory of gravity contributed to his lasting reputation as one of the greatest scientists of all time.
© Bettmann/Corbis

Answer: Newton's theory of gravitation (or gravity) helped explain how the planets keep from bumping into each other.



DID YOU KNOW?

In 1868 Pasteur saved the French silk industry. These businesses were facing ruin because a mysterious disease was attacking the silkworms. Pasteur worked out a way of detecting the disease and preventing it from spreading.

The Man Who Conquered Disease

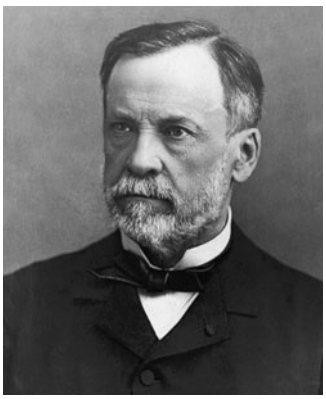
In the 1800s, the bite of a rabid dog meant certain death for the person bitten. In 1885, when a rabid dog bit a boy named Joseph Meister, his mother was desperate. She went to Louis Pasteur, a French **chemist** and **biologist**, the only man who she thought might be able to cure her son.

Pasteur had found that rabies was caused by a virus—a disease-causing **agent** so small it could not be seen even under a microscope. He had already figured out a way to defeat the rabies virus in animals. But he had never tried his treatment on humans. Pasteur treated the child, and Joseph was the first person to be cured of rabies.

SEARCH LIGHT

Pasteurization refers to
a) a disease-causing organism.
b) a weak dose of a disease.
c) heating something to kill bacteria.

Pasteur had devoted his life to solving the problems of industry, farming, and medicine. He figured out that if a liquid like milk is heated to a certain temperature for a few minutes, it takes longer to spoil. If milk is not treated in this way, tiny living organisms called "bacteria" cause it to rot. These organisms are killed with heat in a process that came to be known as "pasteurization."



Scientist Louis Pasteur.
© Hulton-Deutsch Collection/Corbis

Pasteur also discovered that other diseases are caused by germs that enter the body from outside. In 1877 he sought a cure for anthrax, a disease that affects the lungs and kills cattle and sheep. Pasteur successfully developed the method known as "immunization." Immunization means giving the patient a weak dose of a virus that the patient can fight off. Then the patient's body knows how to stop an actual case of the disease.

LEARN MORE! READ THESE ARTICLES…
ELIZABETH BLACKWELL (VOLUME 4) • MARIE CURIE (VOLUME 4)
MEDICINE (VOLUME 2)

Louis Pasteur's discoveries are among the most important in the history of medical science. He is often known as the founder of microbiology—the study of simple life forms too small to be seen with the naked eye.
© Hulton-Deutsch Collection/Corbis

Answer: c) heating something to kill bacteria.

DID YOU KNOW?

It was Christopher Columbus who gave the Native Americans the mistaken label "Indians." When he landed in what are now the Bahamas, he thought he had reached the area of south and southeast Asia called India, the Indies, or the Indias.



When gold was discovered near the Cherokee Indian territory in Georgia, the U.S. government drove the Native Americans from their land to new territory. Here, Cherokee dancers perform at a modern gathering that preserves Indian traditions, the Chehaw National Indian Festival in Albany, Georgia.
© Kevin Fleming/Corbis

SEARCH LIGHT

Which Native American group uses adobe to build houses?
a) Plains Indians
b) Pueblo Indians
c) Northwest Coast Indians

The First Native North Americans

Indians, or Native Americans, lived in North America long before Europeans even knew the continent existed. The Indians lived everywhere, and today many places such as Michigan, Illinois, Lake Huron, and the Mississippi River are known by their Indian names.

Each group of Indians lived differently, depending on the land around them. Eastern America had many lakes, rivers, and vast forests. The Indians there lived in villages, often in wooden houses. The men were hunters, and the women were farmers.


© Peter Turnley/Corbis


© Corbis

(Left) Native American children in traditional dress. (Right) Portrait of Cherokee warrior Austenaco.

In the West, the Plains Indians lived on large rolling areas of grassland. Bison (sometimes called "buffalo") wandered the plains in large herds, and hunting them gave the Indians everything they needed to survive. These Indians didn't stay in one place but followed the bison's **migration**.

The Southwestern states were dry and mountainous. The Pueblo Indians were farmers and lived in stone and adobe (sun-dried clay) houses. They also built cave houses on the sides of cliffs, high on the faces of **mesas**.

The Northwest Indians lived along the northern coast of the Pacific Ocean and fished in the ocean and rivers. They created tall painted totem poles showing important animals and ancestors.

When Europeans arrived in the Americas, they wanted the New World's land, so they often **betrayed** and attacked the Indians and stole their lands. For many years, many **descendants** of the original Native Americans have lived on reservations—areas put aside by the government for Indians to live on. But this arrangement has mostly served to isolate Native Americans. Today Indians must work hard to keep their ancient culture and traditions alive.

LEARN MORE! READ THESE ARTICLES…
AKLAVIK (VOLUME 9)
A CHEROKEE STORY: WHY POSSUM'S TAIL IS BARE (VOLUME 5)
UNITED STATES: A YOUNG AND POWERFUL NATION (VOLUME 9)

Answer: b) Pueblo Indians



DID YOU KNOW?

The money in Venezuela is named for the South American liberator Simón Bolívar. It's called the *bolívar*.

Hero of Many Nations

In the early 1800s, in the country that would become Venezuela, there lived a man with a big dream. He wanted the countries of Spanish South America to become independent from Spain and join together as one strong country.

This man was Simón Bolívar. For years he fought the Spanish in support of this dream, and many people came to help him from around the world. Many of them sailed from Europe and searched all over South America to find him.

Bolívar was born in 1783. His **liberation** of New Granada—now Colombia, Ecuador, and parts of several other countries—is one of the most daring acts in the history of war. In the spring of 1819, he led a small army of 2,500 men through floodwaters and across icy mountain passes, through places where there were no paths at all. Tired and hungry, they finally arrived in Boyacá, near Bogotá, the capital of New Granada. There they surprised a big Spanish army. Fighting fiercely, they beat the Spanish and freed New Granada.



Portrait of Simón Bolívar by M.N. Bate.
© Bettmann/Corbis

Bolívar fought many battles to free other countries in South America, including his native Venezuela. His dream of freeing the South American countries from Spain came true. But even if he was never able to join all the different countries together as one nation, he was one of the most important heroes in South America. The South American country of Bolivia was named in his honor.

SEARCH LIGHT

True or false? Bolívar made all of South America come together as one nation.

LEARN MORE! READ THESE ARTICLES…
FIDEL CASTRO (VOLUME 4) • COLOMBIA (VOLUME 9) • SOUTH AMERICA (VOLUME 9)

In addition to the countries that are now Colombia and Ecuador, Simón Bolívar and his troops won the independence of Venezuela and Peru.
© Bettmann/Corbis

Answer: FALSE. He did, however, help free many nations from Spanish rule.



DID YOU KNOW?

A new English translation of Anne Frank's diary was published in 1995. The new edition has material that was not in the original version, making it nearly one-third longer.

SEARCH LIGHT

True or false? Anne Frank went on to write many other famous books.

A Young Girl and Her Diary

During World War II in Europe, the Nazis of Germany tried to destroy the Jewish people and their culture. The Nazis had taken control of many countries, including the Netherlands. In the city of Amsterdam, the Nazi threat meant that a young Jewish girl and her family had to spend two years in hiding. Anne Frank's moving diary of those years in hiding has since become a classic book.



Anne Frank.
Anne Frank House, Amsterdam and Anne Frank-Fonds, Basel—Hulton/Archive by Getty Images

Halfway through the war, the Nazis began sending Jews to prison camps. So in July 1942, Anne's family went into hiding in the back-room office and warehouse of Anne's father's business. Four other Jews hid with them in the small space, and non-Jewish friends smuggled food and other supplies to them.

Anne was 13 when she went into hiding. In her diary, she describes daily life in the secret rooms. She also writes about her own dreams and feelings while growing up in hiding.

The family never once left their hideout until the Nazi police discovered them in August 1944. Then the Frank family was moved to the concentration camp at Auschwitz in Poland, where Anne's mother died in 1945. Anne and her sister were sent to another camp, Bergen-Belsen, where they both died of typhus. Anne's father, Otto Frank, was the only family member who survived.

Friends had found Anne's diary in the hiding space. After the war, they gave it to her father, and he published it in 1947. Since then, Anne's story of courage and hope has inspired millions of readers. Today, the Frank family's hiding place in Amsterdam is a museum.

LEARN MORE! READ THESE ARTICLES…
AMSTERDAM (VOLUME 6) • GERMANY (VOLUME 6) • JUDAISM (VOLUME 5)

Anne Frank sits at her desk at school in 1940. She left school at the age of 13 to go into hiding.
Anne Frank House, Amsterdam and Anne Frank-Fonds, Basel—Hulton/Archive by Getty Images

Answer: FALSE. Anne died during World War II, and her diary is the only writing of hers that survived.

Gold Medalist in Track

When she won the 400-meter world championship in 1997, Cathy Freeman ran a victory lap carrying two flags. One was the flag of her country, Australia. The other was that of her people, the Aboriginals. The Aboriginals are the original people of Australia, who have suffered great mistreatment and injustice since the Europeans came to their country. Her choice to carry both flags was **controversial**. But it showed Freeman's strong sense of national and ethnic pride.

SEARCH LIGHT

How many Olympic Games has Freeman competed in?
a) 1
b) 2
c) 3



Cathy Freeman holding the Olympic torch in 2000.
© Reuters NewMedia Inc./Corbis

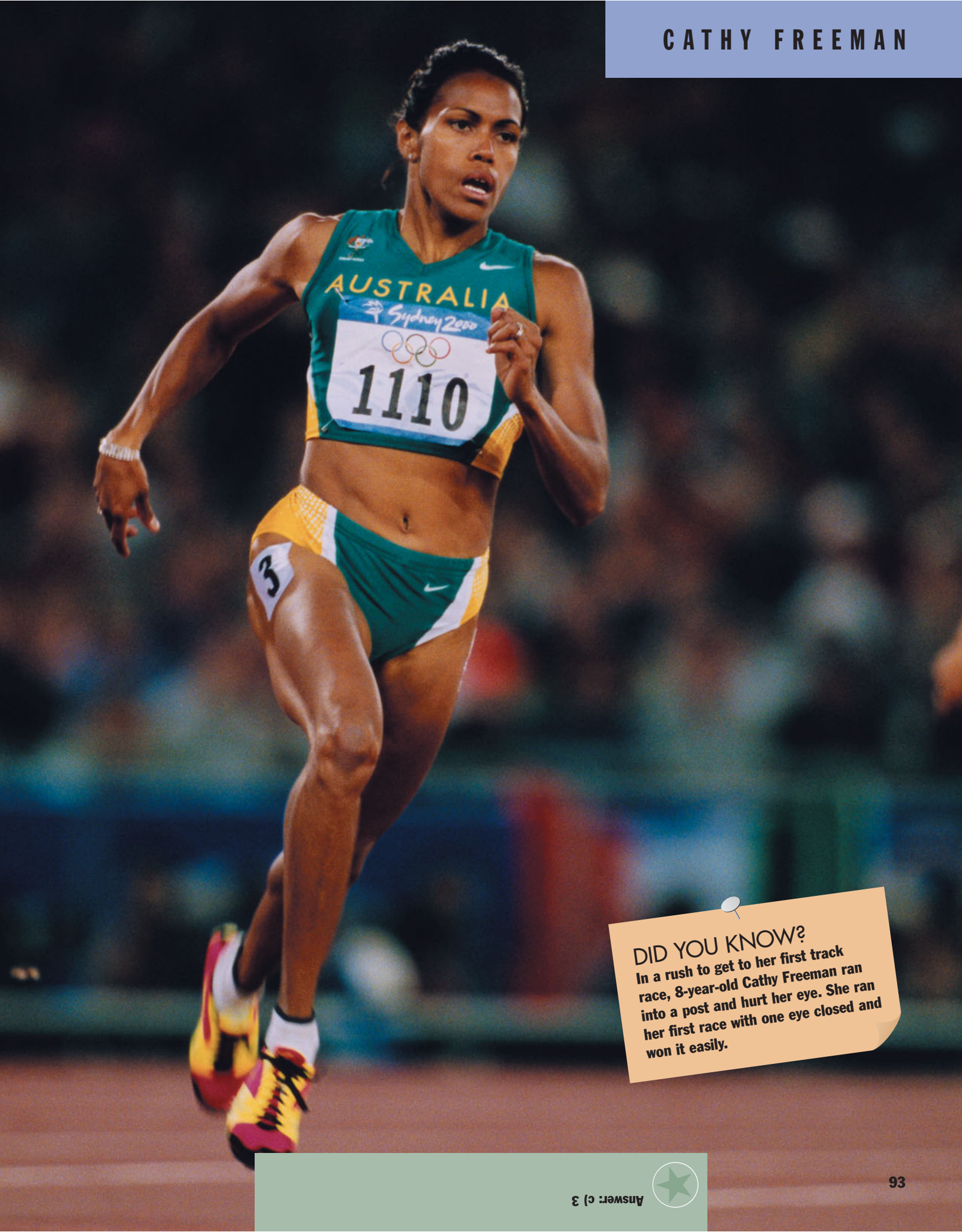
While Freeman was growing up in Queensland, her father encouraged her to start running. By the time she was 17, Freeman had won a gold medal at the 1990 Commonwealth Games and been named Young Australian of the Year. In 1992 she was the first Australian Aboriginal woman to compete in the Olympic Games.

At the 1994 Commonwealth Games, Freeman took home gold medals in the 400-meter and 200-meter races. Her win in the 200-meter race set a national record. Perhaps Freeman's greatest race was at the 1996 Olympic Games in Atlanta, Georgia, U.S. She ran against the world record holder, Marie-José Pérec of France. The two champions raced neck and neck. Finally, it was Pérec who shot ahead to the finish line.

In 1997 Freeman was named Australian of the Year. A year later, however, she injured her foot and had to withdraw from the Commonwealth Games. Freeman didn't let the injury stop her, and in 1999 she was running again. She came back and successfully defended her 400-meter world championship title. At the Sydney Olympics in 2000, Freeman had the great honor of lighting the Olympic torch. A week later her dream of Olympic gold came true when she won the 400-meter race in front of her fellow Australians. Again she took her victory lap proudly carrying both the Australian and Aboriginal flags.

LEARN MORE! READ THESE ARTICLES…
AUSTRALIA (VOLUME 7) • PELÉ (VOLUME 4) • KATH WALKER (VOLUME 3)

Cathy Freeman was the first Aboriginal to win an individual medal in an Olympic event. She won the 400-meter race at the 2000 Olympics in Sydney, Australia.
© Duomo/Corbis



DID YOU KNOW?

In a rush to get to her first track race, 8-year-old Cathy Freeman ran into a post and hurt her eye. She ran her first race with one eye closed and won it easily.

Answer: c) 3



SEARCH LIGHT

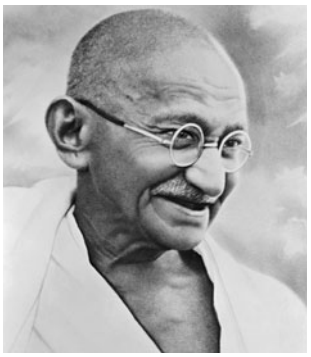
True or false? Gandhi's real name was Mahatma.

Salt and Empires

In March of 1930, a 61-year-old Indian man started out on a long walk to the ocean. When people asked where he was going, Mohandas ("Mahatma") Gandhi replied, "I am going to the ocean to get some salt." Soon thousands joined him in a trip that lasted a month and became known as the Salt March.

DID YOU KNOW?
In the Hindi language, Gandhi's principle of nonviolence is known as *satyagraha*. The word means "truth force."

Mohandas K. Gandhi was a Hindu Indian who had studied law in London. India was controlled by Britain, and when Gandhi returned home he was angered by the poverty and inequality he saw in his country. Rather than fight the British with guns or bombs, Gandhi believed in simply refusing to obey unjust laws. For example, he urged Indians to make their own clothing so they wouldn't have to buy British goods. Hindus began to call Gandhi "Mahatma," which means "great soul."



Mahatma Gandhi.
© Bettmann/Corbis

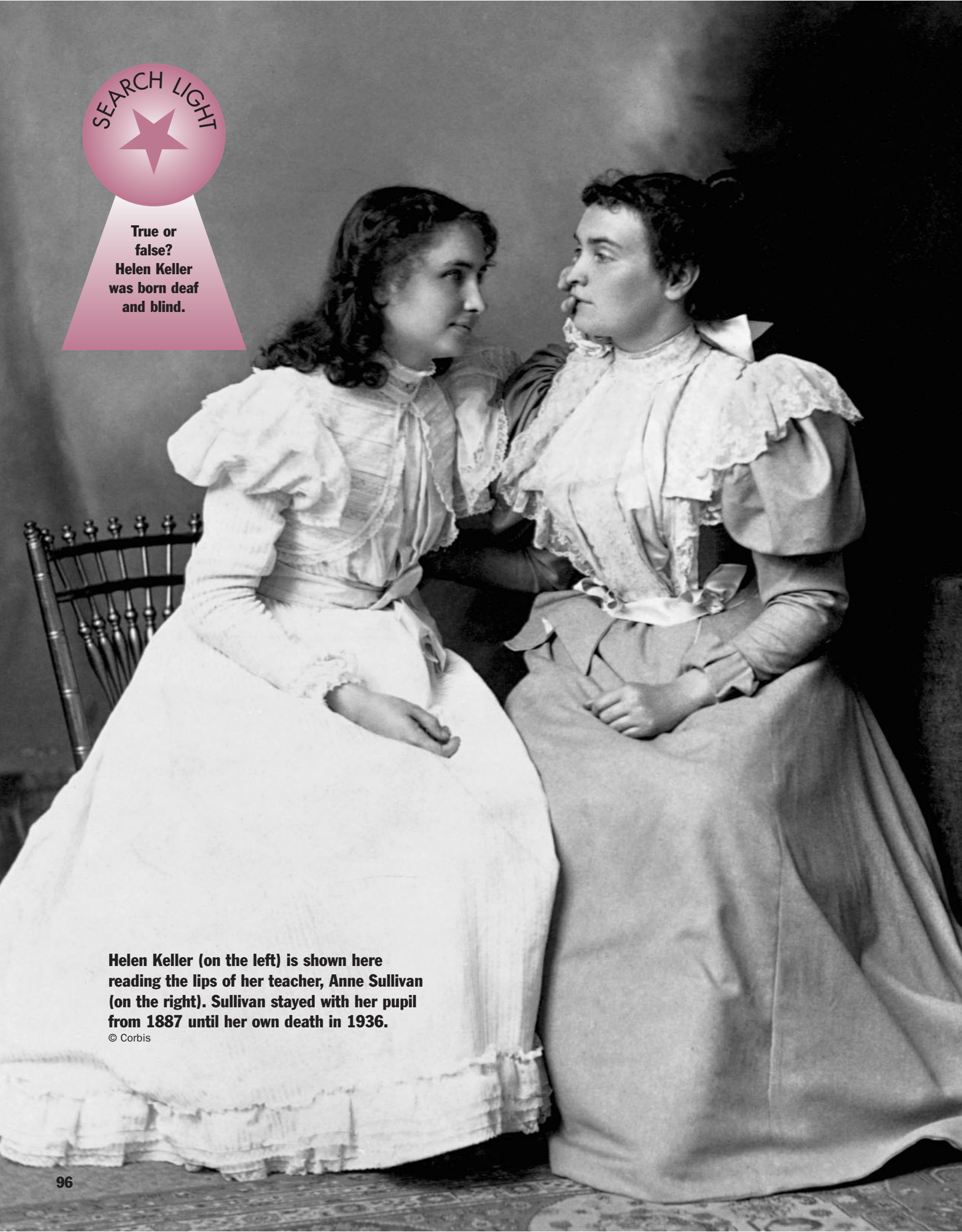
Most Indians could not afford to buy expensive British salt, but it was against the law for them to make their own. So Gandhi walked 200 miles to the ocean to make salt from seawater. After the Salt March, the British put Gandhi in jail. It wasn't the first or the last time he was jailed for leading nonviolent protests. Gandhi went to jail cheerfully. When he came out, he went back to teaching Indians how to get back control of their country by peaceful actions. India finally won independence from Britain in 1947.

After India became independent, there was violence between the country's Hindu and Muslim populations. During the last year of his life, Gandhi worked to build peace between all the peoples of India.

LEARN MORE! READ THESE ARTICLES…
INDIA (VOLUME 7) • MARTIN LUTHER KING, JR. (VOLUME 4)
RABINDRANATH TAGORE (VOLUME 3)

Mahatma Gandhi, leader of the Indian nonviolent protest, marches with supporters to the shore at Dandi to collect salt in violation of the law. Following this action, he was jailed.
© Bettmann/Corbis

Answer: FALSE. Mohandas was his name. Mahatma was a title of respect.



Helen Keller (on the left) is shown here reading the lips of her teacher, Anne Sullivan (on the right). Sullivan stayed with her pupil from 1887 until her own death in 1936.

© Corbis

Woman of Courage

Helen Keller became blind and deaf soon after she was born, but she still managed to learn to read, write, and speak.

Helen was born in Alabama in the United States in 1880. At 19 months old she fell ill, probably with scarlet fever. She recovered, but lost her eyesight and hearing. Since she couldn't hear other people, she didn't learn to speak.



Helen Keller in her later years.
EB Inc.

When Helen was 6 years old, Alexander Graham Bell examined her. He was a doctor for speech correction as well as being the inventor of the telephone. Bell sent a special teacher, Anne Sullivan, to stay with Helen as her **governess**.

Sullivan was herself a remarkable woman. She was very patient and taught Helen that things had names. She taught Helen to finger spell the alphabet. By using finger spelling on Helen's palm, Sullivan helped Helen understand names for things that she could feel.

Helen was a hard worker and soon learned to read a form of the alphabet with her fingers. She started to read by feeling raised letters and words on cardboard. Later she learned **Braille**, a system of writing that many blind people use. Another teacher, Sarah Fuller, taught Helen to speak by having her feel people's lips and throats as they were talking.

Despite her blindness, Helen Keller wrote numerous articles and several books, including *The Story of My Life* and *Helen Keller's Journal*. Her early life with Anne Sullivan is the subject of a well-known play and film called *The Miracle Worker*.

Helen Keller died when she was 88 years old. She is remembered as a woman of great courage and intelligence.

DID YOU KNOW?
As an adult, Helen Keller lectured all over the world. And her efforts to improve the treatment of deaf and blind people helped to stop the practice of putting people with physical disabilities into asylums for the mentally ill.

LEARN MORE! READ THESE ARTICLES…
ELIZABETH BLACKWELL (VOLUME 4)
BRAILLE (VOLUME 2) • SIGHT AND SOUND (VOLUME 2)

Answer: FALSE. Helen Keller became deaf and blind after an illness when she was almost 2 years old.

Civil Rights Leader

On December 1, 1955, in Montgomery, Alabama, U.S., an African American woman named Rosa Parks was arrested. She had refused to give up her seat on a bus to a white man. At that time the law said that black people had to sit only in certain sections of trains and buses and use different bathrooms and even drinking fountains from the ones white people used. Rosa Parks's action sparked protests by black residents of the city. And Martin Luther King, Jr., was chosen to lead the protests.



Martin Luther King, Jr., riding a bus in Montgomery, Alabama, U.S., in 1956.
© Bettmann/Corbis

SEARCH LIGHT

True or false? Martin Luther King, Jr., sparked the Montgomery bus boycott.

King was a Baptist minister and a student of the Indian leader Mahatma Gandhi. He believed that nonviolence was the most powerful way for people to make their point. This meant demanding one's rights through peaceful means, such as **strikes** and protests, not by fighting. The protests he led became known as the Montgomery bus **boycott**. The law was changed after a year of protests.

However, black people still didn't receive the same rights and privileges as white people. In 1963 King and his supporters were jailed because of their protests against this **discrimination**. When he was freed, King and other **civil rights** leaders organized a march on Washington, D.C., the national capital. There, King delivered a powerful speech to hundreds of thousands of people, saying, "I have a dream." His dream was that someday all people would be equal, like brothers.

For his work on civil rights, King was awarded the Nobel Prize for Peace in 1964. Through all his struggles, King used only peaceful methods of protest. But in April 1968, King was shot dead in Memphis, Tennessee, by James Earl Ray.

LEARN MORE! READ THESE ARTICLES…
GWENDOLYN BROOKS (VOLUME 3) • NELSON MANDELA (VOLUME 4)
UNITED STATES: A YOUNG AND POWERFUL NATION (VOLUME 9)

© Bettmann/Corbis

MARTIN LUTHER KING, JR.



Martin Luther King, Jr., led the march on Washington in 1963. His protests helped win important rights for African Americans.

DID YOU KNOW?

In 1977, King was posthumously (after his death) awarded the Presidential Medal of Freedom. This is the U.S. government's highest honor awarded to a person not in the military.

Answer: FALSE. Rosa Parks sparked the boycott when she refused to give up her seat.


DID YOU KNOW?
The Strait of Magellan isn't all that's been named for the famous explorer. Magellan's name remains a popular choice for other things. For instance, the space mission begun in 1989 to explore planet Venus was called Magellan.

Around-the-World Voyager

Hundreds of years ago, only the very brave took the risk of traveling the open seas to reach unknown lands. Ferdinand Magellan was one such man.

Magellan was born to a **noble** family in Portugal in about 1480. At about age 25, he joined the Portuguese navy, where he fought in numerous battles and saw many new places. When the king of Portugal refused to raise his **wages** after a decade of service, Magellan went to work for the Spanish king.

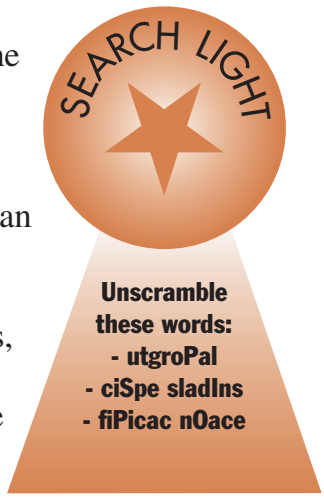


An illustration of Ferdinand Magellan's ship *Victoria*.
Collection of the Bibliotheque Nationale; photo, © Erich Lessing/Art Resource, New York

At that time Portugal controlled the sea route around Africa to the Indian Ocean to reach the rich Spice Islands (now called the East Indies). Magellan decided to avoid that route, and instead he sailed west to find a new way to the islands. He set out in 1519, sailing across the Atlantic Ocean and down the coast of South America. He hoped to discover a passage to the ocean beyond South America. He found it, and it became known as the Strait of Magellan. The ocean on the other side appeared calm and peaceful, so it was named the Pacific, from the Latin word for "peaceful."

After 99 more days, Magellan's ship reached the island now known as Guam. Landing in the islands that became the Philippines, Magellan and his men fought with islanders. Magellan was killed there April 27, 1521.

A crewman, Juan Sebastián de Elcano, took command. The remaining crew sailed to the Spice Islands, loaded up with spices, and returned to Spain. In a voyage of more than three years that saw the death of many sailors, Magellan's expedition became the first to circle the globe.



LEARN MORE! READ THESE ARTICLES…
PACIFIC OCEAN (VOLUME 1) • PHILIPPINES (VOLUME 7) • PORTUGAL (VOLUME 6)

This painting from 1970 shows the Portuguese explorer Ferdinand Magellan. He led an expedition that was the first to travel all the way around the Earth.
The Art Archive/Marine Museum, Lisbon/Dagli Orti

Answer: utgroPal = Portugal
ciSpe sladIns = Spice Islands
fiPicac nOace = Pacific Ocean

Writers, Mathematicians, and Architects

Thousands of years ago there were people who built huge pyramids and temples. They had accurate calendars, did complex mathematics, and developed a writing system. They weren't the Egyptians, however. They were the Maya. They were the only Central Americans of their time to develop writing.



Temple of the Giant Jaguar at Tikal, Guatemala.
© Jan Butchofsky-Houser/Corbis

Mayan **culture** grew up in a region of Mexico and Central America called Mesoamerica. This includes the Yucatán Peninsula, parts of southern Mexico, Guatemala, Belize, and western Honduras and El Salvador.

Between about AD 200 and 900, the Maya built religious centers and cities from the jungles of Guatemala to the dry northern Yucatán in Mexico. These included Tikal, Uaxactún, and Palenque. The cities had populations of 5,000 to 50,000 people.

The Maya worshiped several gods and even offered human **sacrifices**. Many of their buildings are decorated with the face of Chac, the rain god. He was an important god in their farming society. Mayan rulers were considered to be the **descendants** of gods.

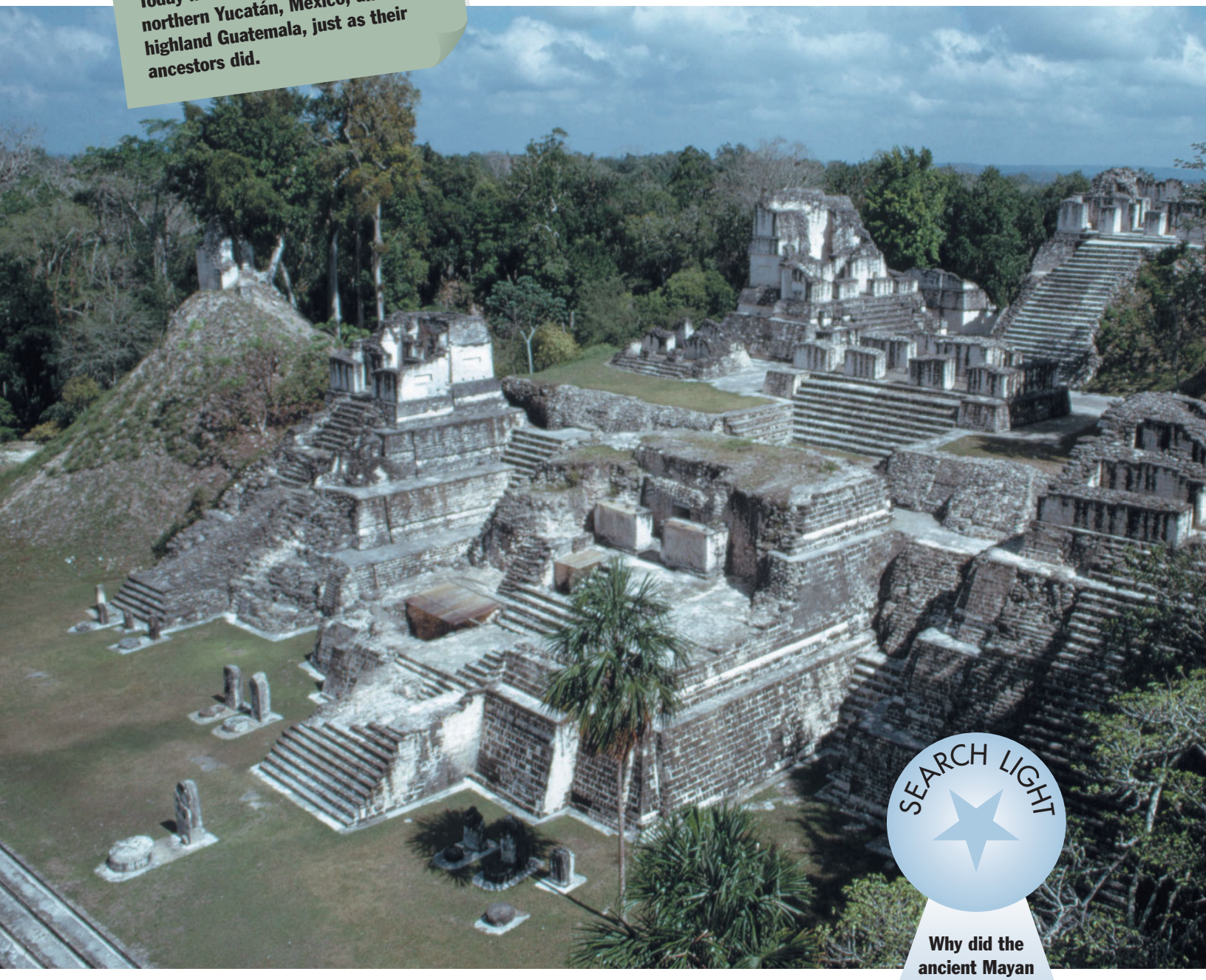
Most of the Maya were corn farmers. The upper classes were artists, writers, and **architects**. They developed a hieroglyphic (picture-based) writing system and a 365-day **solar** calendar. They were good **astronomers,** charting the movements of the planets through the night sky.

No one knows why Mayan culture faded. The cities began emptying out after AD 900, and they were entirely empty by the time the Spaniards arrived in the 16th century. They stood overgrown by jungle until they were rediscovered in the 19th century. The decline may have been because of overuse of the farmland, overpopulation, weather changes, disease, or war—or a combination of these things.

LEARN MORE! READ THESE ARTICLES…
AMERICAN INDIANS (VOLUME 4) • CENTRAL AMERICA (VOLUME 9)
MEXICO (VOLUME 9)

DID YOU KNOW?

Today many Maya Indians live in northern Yucatán, Mexico, and in highland Guatemala, just as their ancestors did.



The Mayan civilization had more than 40 cities at the height of its power. Those cities were all abandoned by the early 16th century. Their remains can be seen in the jungles of Guatemala.
© Charles and Josette Lenars/Corbis

SEARCH LIGHT

Why did the ancient Mayan civilization fade?

Answer: No one is really sure. However, it may have been because of overuse of farmland, overpopulation, climate changes, disease, or war—or perhaps a combination of these.

Football Star



More than any other player, Pelé helped make association football, also known as soccer, popular over the whole world. Pelé, whose real name is Edson Arantes do Nascimento, was born in 1940 in Brazil.

Pelé made his **debut** with the Santos Football Club in 1956. With him playing forward, the team won several South American cups. In 1962 the team won the first world club championship. Pelé also played on Brazil's national team and helped it win the World Cup championship in 1958, 1962, and 1970.



Pelé holding international football award for "Footballer of the Century."
© AFP/Corbis

Pelé was a brilliant player who possessed great speed and balance. He could guess the moves of other players and had good control of the ball. In addition to all this, he could powerfully shoot a ball straight into the goal with either foot or with his head.

Pelé scored a career total of 1,281 goals in 1,363 matches, with 139 in one year alone. He scored his thousandth goal in 1969. Pelé's career made him a national hero in Brazil. His fans called him Pérola Negra, meaning "Black Pearl."

Although Pelé retired in 1974, he made a comeback the next year with a New York team, the Cosmos. He said he returned to "make soccer truly popular in the United States." He succeeded, becoming a star in the United States as well.

Pelé's skills did not stop with football. He also wrote best-selling **autobiographies**, starred in several films, and composed music, including the whole soundtrack to the 1977 film *Pelé*.

LEARN MORE! READ THESE ARTICLES…
BRAZIL (VOLUME 9) • CATHY FREEMAN (VOLUME 4) • TENZING NORGAY (VOLUME 4)



Pelé in action was so magical to watch that once two armies stopped fighting just to watch him play.
© AFP/Corbis

DID YOU KNOW?

When Pelé first tried out for the top football teams in Brazil, he was turned down repeatedly.

Answer: a) Brazil



Mother of the Poor and Dying

During her lifetime Mother Teresa became known worldwide for her kindness and her **charitable** work.

Mother Teresa was born Agnes Gonxha Bojaxhiu in Macedonia in 1910. When she was 18 years old, she decided to become a nun in the Roman Catholic church. She traveled to Ireland, and there she entered the Institute of the Blessed Virgin Mary. She took **vows** promising to live a simple life and not to marry, and she became Sister Teresa.

SEARCH LIGHT

Was Mother Teresa Indian by birth?

The Institute had charity missions in India, and soon Sister Teresa sailed to the country to work as a teacher. Over the next 17 years, she taught in two schools in India, one of which was in Calcutta (now Kolkata). She saw firsthand the poverty and suffering of the people. She often said that she was inspired to make two important decisions in her life. One was to become a nun, and in 1946 the other was to devote her life to helping the sick and the poor.

As soon as her studies in nursing were finished, she began working with the people living in Calcutta's slums. She became an Indian citizen. And she became Mother Teresa when she founded the Missionaries of Charity. This was a new **order** of Roman Catholic nuns who wanted to help the sick, especially the dying and disabled.

Under Mother Teresa's guidance, the Missionaries of Charity opened centers all over the world. In these centers anyone could receive care, no matter what their religion. In 1979 Mother Teresa was awarded the Nobel Prize for Peace. Soon after her death, in 1997, the Roman Catholic church began the process to have Mother Teresa declared a saint.

LEARN MORE! READ THESE ARTICLES…
ELIZABETH BLACKWELL (VOLUME 4)
INDIA (VOLUME 7) • MEDICINE (VOLUME 2)

Mother Teresa lived in poverty with some of India's poorest people. She made it her life's work to care for the country's poor and dying.
© Bettmann/Corbis

DID YOU KNOW?

When Mother Teresa founded her religious order, the Missionaries of Charity, her Indian nuns adopted the *sari* as their habit, or official dress. The *sari* is a garment worn by most women of India, Pakistan, and Bangladesh.

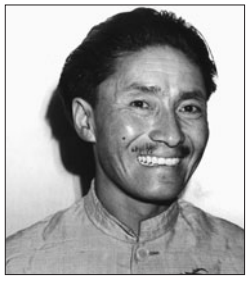
Answer: No. Mother Teresa was born in Macedonia, near Greece. But she lived and worked in India and became an Indian citizen.

On Top of the World

On May 29, 1953, at 11:30 AM, Tenzing Norgay and Edmund Hillary became the first people to reach the **summit** of the highest mountain on Earth, Mount Everest.

> **DID YOU KNOW?**
> **Tenzing Norgay was the first man to be photographed on the summit of Everest. Since Tenzing could not operate a camera, Edmund Hillary took the photograph.**

Tenzing Norgay was born in 1914 in Tibet (a region of China). He later moved to Nepal and lived with the Sherpa people. Sherpas, who moved from Tibet to Nepal hundreds of years ago, have lived in high mountains for hundreds of years. Not far from Tenzing's adopted village rises the majestic Everest. It is part of the Himalaya Mountains and lies on the border between Nepal and Tibet. When Europeans go to Nepal to climb mountains, they often hire Sherpas to carry supplies and to show them the way up the mountains. Because of their experience living in high mountains, the Sherpas have proved to be excellent guides and **mountaineers**.



Tenzing Norgay.
UPI—EB Inc.

At age 18 Tenzing moved to Darjeeling (now spelled Darjiling), India. He hoped to make his fortune carrying loads of supplies for mountaineering expeditions. Three years later he accompanied a survey team on an expedition to Mount Everest as a **porter**. In the next few years, he took part in more Everest expeditions than any other climber.

Working with so many different people, Tenzing learned to speak seven languages. Later he became a *sirdar*, or an organizer of porters. He continued to guide expeditions to Everest and inspired many mountaineers.

During their historic climb of Mount Everest in 1953, Edmund Hillary lost his footing and nearly died. Tenzing did not panic. He held the rope line tightly and planted his ax firmly in the ice. Later he simply said, "Mountain climbers always help one another."

For his courage and heroism and for having been one of the first people to scale Mount Everest, Tenzing was awarded the British George Cross and the Star of Nepal.

LEARN MORE! READ THESE ARTICLES…
FERDINAND MAGELLAN (VOLUME 4) • MOUNTAINS (VOLUME 1) • NEPAL (VOLUME 7)

Here, Edmund Hillary (on the left) and Tenzing Norgay prepare for one part of their climb to the top of Mount Everest.
Royal Geographical Society; photo, Alfred Gregory



SEARCH LIGHT

Fill in the blank: Someone who organizes porters for mountain climbing in the Himalayas is called a _____.

Answer: Someone who organizes porters for mountain climbing in the Himalayas is called a *sirdar*.

GLOSSARY

agent something that produces an effect

architect person who designs buildings and advises in their construction

aristocratic having to do with the upper social classes

aspect part, feature, or quality of something

astronomy the science of the heavenly bodies and of their sizes, motions, and composition

autobiography life story written by the person it is about

betray to lie to or go back on one's word

biologist person who studies living organisms and life processes

bond connection or friendship

boycott the refusal to deal with a person, group, or country, usually in order to show disapproval or to force a change in behavior

Braille a system of writing for the blind in which letters are represented by raised dots

campaign planned activities designed to lead to a particular result

captive one who has been taken or held in a cage or as a prisoner

chairman person who leads a meeting or an organization

charitable done to serve the needs of the poor or sick

chemist scientist who studies the makeup and properties of physical substances and the changes that they go through

civil rights the social and personal rights of a citizen

commoner person who is not of the noble or upper classes

communism system of government in which all property is owned by the state or community and all citizens are supposed to have a share in the total wealth

conflict disagreement, struggle, or fighting

constitution document containing the basic beliefs and laws of a nation, state, or social group

controversial causing division or disagreement

crown prince (feminine: crown princess) the prince next in line for a crown or throne

culture the ways of life, traditions, and behaviors of a specific group of people

debut first formal public appearance

descendant member of a recent age group of a family or similar division that began years earlier

dictator person who rules with total power, often in a cruel or brutal way

diplomat person who works to keep up friendly relations between the governments of different countries

discrimination the treatment of some individuals or groups differently from others without any fair or proper reason

dynasty series of rulers of the same family

edict law or order given by a ruler or leader

element in science, one of the basic unique substances that make up all matter

emperor (feminine: empress) the ruler of an empire

evolution the process of changing, especially over time

exile (noun) banishment or official separation

extremist person who holds unusually strong opinions or beliefs

foundation the support on which something rests; also, the base from which an idea or creation grows

geometric based on straight lines, curves, and simple shapes such as circles and squares

gory violent and bloody

governess woman who teaches and trains a child in a private home

guerrilla person who is part of an independent fighting force that makes surprise raids behind enemy lines

gymnastics difficult physical exercises, often performed as a sport in competitions

immortal living or lasting forever

imperial having to do with an empire or emperor

inspiration something that causes a particular thought, feeling, or idea

lens (plural: lenses) curved piece of glass that concentrates rays of light

liberation freedom

marginal lying at or near the outer edge (margin) of some larger place, object, or group

mesa flat-topped hill or small upland with steep sides

metropolitan having to do with a city and its heavily populated surrounding areas

migration movement from one country or place to another

monarchy form of government in which the ruler inherits the position and rules for life; monarchs include kings, queens, emperors, and tsars

mountaineer mountain climber

nature inborn or instinctive way of behaving or thinking

negotiate to discuss and bargain with another in order to reach an agreement

noble of upper-class birth or rank

nonfiction literature that is based on fact rather than imagination

nuclear weapon explosive device that produces enormous power by splitting apart the centers of the tiny particles called "atoms"

pagan (adjective) non-religious; *especially*, used disapprovingly to describe a form of worship very different from a familiar and socially acceptable religion

parliament the lawmaking division of some governments

particle tiny bit or piece

persecute to treat cruelly or harmfully for an extended period of time; *especially*, to make a person or group suffer because of their beliefs

photoelectric effect electrical effect produced when light strikes a metal surface

physics the science that deals with matter and energy and the way they interact

plot the main story of a work of literature

pollen very fine dusty substance that comes from flowers; it is important in reproduction of other plants

pope the leader of the Roman Catholic church

porter person who carries baggage

prime minister the chief officer of the government in some countries

prism piece of many-sided clear crystal

pyramid structure with a square base and four sloping triangle sides that meet in a point at the top

rebel person who fights against an existing power or way of doing things

reign the time during which a ruler is in power

republic form of government in which citizens who are allowed to vote elect officials and representatives responsible for governing by law

rhythm regular pattern of sound

ruthless without pity

sabotage damage or destruction of property that interferes with an enemy's use of it

sacrifice valuable offering made to a god; *especially*, a human or animal victim killed on an altar

skyline outline of buildings or other large objects against the background of the sky

solar having to do with the Sun

sophisticated complicated or stylish

Soviet Union country of eastern Europe and northern Asia that existed from 1922 to 1991 and consisted of Russia and 14 other republics

species group of living things that have certain characteristics in common and share a name

strike temporary stopping of normal activities in protest against an act or condition

summit top or highest point

tapestry heavy cloth that has designs or pictures woven into it and is often used as a wall hanging

technique special way of doing something; *especially*, the way a skilled individual handles the details of an art or craft

theory in science, an idea or reasoned explanation for why things are as they are or why things happen as they do

troupe company or group; *especially*, a working group of stage performers

vow solemn promise or statement

wages payment for work or services

I N D E X

Allende, Isabel (Chilean writer) *page* **7**

American Indians, *also called* First Nations, *or* Native Americans *page* **87**
LEARN MORE *look under* Mayan civilization

Antony, Mark (Roman official)
Cleopatra *page* **43**

Arafat, Yasir (Palestinian leader) *page* **30**

architecture: *look under* Pei, I. M.

Ashoka (emperor of India) *page* **32**

astronomy (science)
Mayan civilization *page* **103**
LEARN MORE *look under* Copernicus, Nicolaus; Galileo Galilei; Kepler, Johannes

athletes: *look under* Freeman, Cathy; Pelé

Australian Aboriginals (people)
Cathy Freeman *page* **92**

bacteria
Louis Pasteur *page* **85**

ballet (dance): *look under* Elssler, Fanny

Basie, Count, *also called* William Basie (American musician) *page* **9**

Begin, Menachem (Israeli leader) *page* **35**
Anwar el-Sadat *page* **59**

Bell, Alexander Graham (American inventor)
Helen Keller *page* **97**

Blackwell, Elizabeth (American doctor) *page* **65**

blindness
Helen Keller *page* **97**

Bojaxhiu, Agnes Gonxha (nun): *look under* Teresa, Mother

Bolívar, Simón (Latin American leader) *page* **89**

Burbank, Luther (American plant breeder) *page* **66**

Caesar, Julius (Roman leader) *page* **37**
Cleopatra *page* **43**

calendars
Mayan civilization *page* **103**

Castro, Fidel (Cuban leader) *page* **39**

Charlemagne (Holy Roman emperor) *page* **41**

chimpanzees (animals)
Jane Goodall *page* **78,** photograph *page* **79**

civil rights
Martin Luther King *page* **98**
LEARN MORE *look under* Gandhi, Mahatma; Mandela, Nelson

Cixi (empress of China): *look under* Empress of China

Clemens, Samuel Langhorne (American writer): *look under* Twain, Mark

Cleopatra (queen of Egypt) *page* **43**

Columbus, Christopher (Italian explorer)
Did you know? *page* **86**

communism
Fidel Castro *page* **39**
Mao Zedong *page* **54**

Copernicus, Nicolaus (Polish astronomer) *page* **69**

Cubism (art)
Pablo Picasso *page* **20**

Curie, Marie (French scientist) *page* **71**

dance: *look under* Elssler, Fanny

Darwin, Charles (British scientist) *page* **73**

deafness, *also called* hearing impairment
Helen Keller *page* **97**

Dickens, Charles (British writer) *page* **10**

Dragon Empress, The (empress of China): *look under* Empress of China

education
Charlemagne *page* **41**
Socrates *page* **24**

Einstein, Albert (German-American scientist) *page* **74**

Elizabeth I, *also called* Good Queen Bess (queen of England) *page* **44**
LEARN MORE *look under* Shakespeare, William

Elssler, Fanny (Austrian ballerina) *page* **13**

Empress of China, *also called* Cixi, *or* Empress Dowager, *or* The Dragon Lady *page* **47**

Ericson, Leif, *also called* Leif Eriksson (explorer)
Vikings *page* **62**

Everest, Mount, *also called* Sagarmatha (mountain in Asia)
Tenzing Norgay *page* **108,** photograph *page* **109**

evolution (scientific theory)
Charles Darwin *page* **73**

exploration: *look under* Magellan, Ferdinand; Tenzing Norgay; Vikings

Frank, Anne (German diarist) *page* **91**

Freeman, Cathy (Australian athlete) *page* **92**

Galileo Galilei (Italian astronomer, mathematician, and philosopher) *page* **77**

Gandhi, Mahatma, *also called* Mohandas K. Gandhi (Indian leader) *page* **95**

Good Queen Bess (queen of England): *look under* Elizabeth I

Goodall, Jane (British scientist) *page* **78**

Goya, Francisco de (Spanish painter) *page* **14**

grafting (horticulture)
Luther Burbank *page* **66**

gravity
Albert Einstein *page* **74**
Sir Isaac Newton *page* **83**

Hirohito, *also called* Michinomiya Hirohito (emperor of Japan) *page* **49**

Holy Roman Empire (historic empire)
Charlemagne *page* **41**

immunization
Louis Pasteur *page* **85**

Indians (Native Americans): *look under* American Indians

Jinnah, Mohammed Ali (Pakistani leader) *page* **51**

Keller, Helen (American writer) *page* **97**

Kepler, Johannes (German astronomer and mathematician) *page* **81**

King, Martin Luther, Jr. (American civil rights leader) *page* **98**

leaders: *look under* Arafat, Yasir; Ashoka; Begin, Menachem; Bolívar, Simón; Caesar, Julius; Castro, Fidel; Charlemagne; Cleopatra; Elizabeth I; Empress of China; Hirohito; Jinnah, Mohammed Ali; Mandela, Nelson; Mao Zedong; Meir, Golda; Sadat, Anwar el-; Thant, U

literature (art): *look under* Allende, Isabel; Dickens, Charles; Frank, Anne; Keller, Helen; Shakespeare, William; Twain, Mark

Louvre (museum in Paris, France)
I. M. Pei *page* **18,** photograph *page* **18,** photograph *page* **19**

Magellan, Ferdinand (Portuguese explorer) *page* **101**

Mandela, Nelson (South African leader) *page* **53**

Mao Zedong (Chinese leader) *page* **54**

Mayan civilization *page* **103**

medicine (science)
Marie Curie *page* **71**
LEARN MORE *look under* Blackwell, Elizabeth; Pasteur, Louis

Meir, Golda, *also called* Goldie Mabovitch, *or* Goldie Myerson (Israeli leader) *page* **57**

Michinomiya Hirohito (emperor of Japan): *look under* Hirohito

milk (food)
Louis Pasteur *page* **85**

Mozart, Wolfgang Amadeus (Austrian composer) *page* **17**

music: *look under* Basie, Count; Mozart, Wolfgang Amadeus

Nascimento, Edson Arantes do (Brazilian football player): *look under* Pelé

Native Americans: *look under* American Indians

natural selection, *also called* survival of the fittest (biology)
Charles Darwin *page* **73**

Newton, Sir Isaac (English scientist and mathematician) *page* **83**

Nobel Prizes (awards): *look under* Arafat, Yasir; Begin, Menachem; Curie, Marie; King, Martin Luther, Jr.; Mandela, Nelson; Sadat, Anwar el-; Teresa, Mother

nonviolence
Mahatma Gandhi *page* **95**
Martin Luther King *page* **98**

Norgay, Tenzing (Nepalese mountain climber): *look under* Tenzing Norgay

Norsemen: *look under* Vikings

painting (art): *look under* Goya, Francisco de; Picasso, Pablo

Pasteur, Louis (French scientist) *page* **85**

pasteurization
Louis Pasteur *page* **85**

Pei, I. M., *also called* Ieoh Ming Pei (Chinese-American architect) *page* **18**

Pelé, *also called* Edson Arantes do Nascimento (Brazilian athlete) *page* **104**

Picasso, Pablo (Spanish artist) *page* **20**

plants
Luther Burbank *page* **66**

Plato (Greek philosopher)
Socrates *page* **24**

rabies (disease)
Louis Pasteur *page* **85**

radioactivity
Marie Curie *page* **71**

relativity (science)
Albert Einstein *page* **74**

Sadat, Anwar el- (Egyptian leader) *page* **59**
Menachem Begin *page* **35**

science: *look under* Burbank, Luther; Copernicus, Nicolaus; Curie, Marie; Darwin, Charles; Einstein, Albert; Galileo Galilei; Goodall, Jane; Kepler, Johannes; Newton, Sir Isaac; Pasteur, Louis

sculpture: *look under* Picasso, Pablo

Shakespeare, William (English writer) *page* **23**
Did you know? *page* **36,** *page* **43**
LEARN MORE *look under* Elizabeth I

Socrates (Greek philosopher) *page* **24**

solar system
Johannes Kepler *page* **81**
Nicolaus Copernicus *page* **69,** illustration *page* **69**

survival of the fittest (biology): *look under* natural selection

Sutherland, Joan, *also called* "La Stupenda" (Australian opera singer) *page* **27**

telescopes
Galileo Galilei *page* **77,** illustration *page* **76**
Sir Isaac Newton *page* **83,** illustration *page* **83**

Tenzing Norgay (Nepalese mountain climber) *page* **108**

Teresa, Mother, *also called* Agnes Gonxha Bojaxhiu (Roman Catholic nun) *page* **107**

Thant, U (leader of the United Nations) *page* **60**

Twain, Mark, *also called* Samuel Langhorne Clemens (American writer) *page* **29**

United Nations (international organization)
U Thant *page* **60**

universe
Albert Einstein *page* **74**
Kepler's model illustration *page* **81**

Vikings, *also called* Norsemen (Norse people) *page* **62**

World War II
Anne Frank *page* **91**
Hirohito *page* **49**

writing
Mayan civilization *page* **103**

Zionism (nationalistic movement)
Golda Meir *page* **57**
Menachem Begin *page* **35**

Meet the men and women who have changed our lives in PEOPLE IN HISTORY


Volume 1: **The Earth and Earth Sciences**


Volume 2: **Physical Sciences and Technology**


Volume 3: **The Arts**


Volume 4: **People in History**


Volume 5: **Folklore and Religions**


Volume 6: **Europe**


Volume 7: **Asia, Australia, and New Zealand**


Volume 8: **Africa**


Volume 9: **The Americas**


Volume 10: **Plants**


Volume 11: **Birds, Insects, Reptiles, and Aquatic Life**


Volume 12: **Mammals**


Volume 13: **Reference Guide and Index**

ENCYCLOPÆDIA
Britannica®

My First Britannica



Folklore and Religions

5

My First Britannica

Folklore and Religions

5



Chicago London New Delhi Paris Seoul Sydney Taipei Tokyo

© 2008 by Encyclopædia Britannica, Inc.

International Standard Book Number: 978-1-59339-476-9 (set)

No part of this work may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, recording, or by any information storage and retrieval system, without permission in writing from the publisher.

My First Britannica:
Volume 5: Folklore and Religions 2008

Britannica.com may be accessed on the Internet at http://www.britannica.com.

Encyclopædia Britannica, Britannica, and the Thistle logo are registered trademarks of Encyclopædia Britannica, Inc.

Folklore and Religions

TABLE OF CONTENTS

INTRODUCTION 5

Stories the World Tells

Myths and Legends, Folktales and Fables: Stories of Wonders and Everyday Life 6

Dragons: Beasts of Fire and Mist 8

Africa

A Nigerian Folktale: The Monkey Court 10

A Story from Ghana: Ananse and the Wisdom Pot 12

Asia and Australia

A Chinese Cinderella Story: Yeh-Shen 14

A Cambodian Myth: Moni Mekhala and Ream Eyso 16

From the *Kalilah wa Dimnah*:

The Poor Man and the Flask of Oil 18

A Korean Folktale: The Tiger in the Trap 20

An Australian Tale: How Kangaroo Got His Tail 22

Europe

Aesop's Fables: Animal Stories That Teach 24

A Greek Legend: Odysseus and the Cyclops 26

Atlas: The Bearer of the World 28

A Jewish Legend: The Golem of Prague 30

A British Legend:

King Arthur's Knights of the Round Table 32

The Americas

An Inuit Tale: How Crow Brought Daylight to the World . . 34

A Cherokee Story: Why Possum's Tail Is Bare 36

Paul Bunyan: The Tale of a Lumberjack 38

A Mayan Story: Rabbit Throws Away His Sandal 40

Religions of the World

Religion: Belief in a Higher Power 42

God: One World, Many Beliefs 44

Monasticism: A Life Apart 46

Middle Eastern Origins

Zoroastrianism: Eternal Battle of Good and Evil 48

Judaism: Religion of Israel 50

Abraham: Father of Many Nations 52

Moses: Yahweh's Messenger 54

Christianity: Following Jesus Christ 56

Jesus Christ: The Son of God 58

Mary: Mother of Jesus 60

Bible: Jewish and Christian Scriptures 62

Islam: The Religion of Muhammad 64

Muhammad: Islam's Prophet 66

Koran: Holy Book of Islam 68

Baha'i: A Simple Faith 70

Asian Teachings

Confucius: Teacher of Great Wisdom 72

Daoism: The Religion of Laozi 74

Shinto: A Very Japanese Religion 76

Hinduism: Ancient Religion of South Asia 78

Buddhism: The Teachings of the Buddha 80

Buddha: The Enlightened One 82

Dalai Lama: Tibet's Great Teacher 84

Jainism: Teaching Nonviolence 86

Sikhism: A South Asian Religion 88

Spirit Forces

Shamanism: The Spirit World 90

Vodun: Religion of Magic and Spirits 92

GLOSSARY 94

INDEX 95



Golden Buddha at Thiksey Monastery, Ladakh, India
© Stephanie Colasanti/Corbis

Cover photo (top): Golden Buddha at Thiksey Monastery, Ladakh, India, © Stephanie Colasanti/Corbis; (center): illustration by Joseph Taylor; (bottom): illustration by Joseph Taylor

Folklore and Religions

I N T R O D U C T I O N

What was Excalibur? Who stabbed a one-eyed man-eating giant?
Where was Buddha born?
What happened when Moses approached the Red Sea?

In Volume 5, ***Folklore and Religions,*** you'll discover answers to these questions and many more. Through pictures, articles, and fun facts, you'll learn about the many legends, myths, fables, and beliefs long cherished throughout the world.

To help you on your journey, we've provided the following guideposts in *Folklore and Religions*:

■ **Subject Tabs—**The colored box in the upper corner of each right-hand page will quickly tell you the article subject.

■ **Search Lights—**Try these mini-quizzes before and after you read the article and see how much—*and how quickly*—you can learn. You can even make this a game with a reading partner. (Answers are upside down at the bottom of one of the pages.)

■ **Did You Know?—**Check out these fun facts about the article subject. With these surprising "factoids," you can entertain your friends, impress your teachers, and amaze your parents.

■ **Picture Captions—**Read the captions that go with the photos. They provide useful information about the article subject.

■ **Vocabulary—**New or difficult words are in **bold type**. You'll find them explained in the Glossary at the back of this volume. And there's a complete listing of all Glossary terms in the set in the ***Reference Guide and Index***, Volume 13.

■ **Learn More!—**Follow these pointers to related articles throughout the set.

And don't forget: If you're not sure where to start, where you saw something before, or where to go next, the Index at the back of this volume and the ***Reference Guide and Index*** (Volume 13) will point the way.

Have a great trip!

MY FIRST BRITANNICA

Stories of Wonders and Everyday Life





DID YOU KNOW?

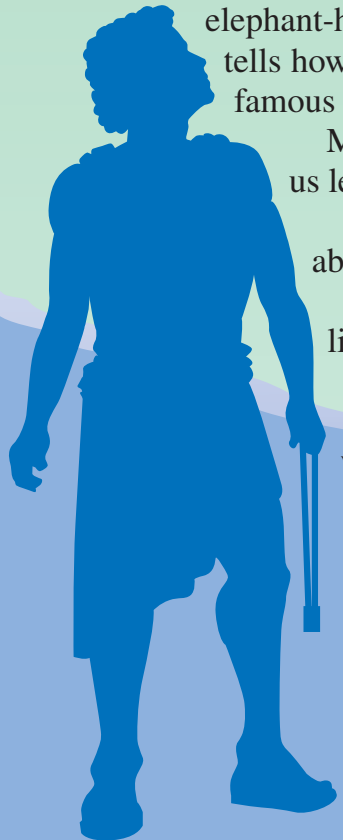
Your school probably has its own legend. Most likely it's about a former student or teacher known for his or her unusual or amazing behavior. Check with your classroom teacher to see if he or she knows about a school legend.

In very ancient times, people needed help to explain the mysteries of life. They didn't have scientists or other experts to tell them why different things happened. So the way they grew to understand these mysteries was through stories called "myths."

Today when we call something a myth, we usually mean that it isn't true. But that's often because we don't believe the very old stories. People used to believe in myths very strongly.

Some of the most familiar European myths come from ancient Greece. The gods and goddesses of Greek religion all had stories about them that explained just why things were the way they were.

World religions today have their own mythologies. Hinduism, for example, is filled with wondrous tales of gods and heroes, such as the elephant-headed god Ganesha, who represents good luck. One Bible story tells how Moses led the original Jews out of slavery in Egypt. And the famous stories of Jesus stand as examples to Christians of a perfect life.



Myths are closely related to several other kinds of stories that teach us lessons. These include folktales, legends, fables, and fairy tales.

Folktales are very much like myths, though they are usually about ordinary characters in unusual situations.

Legends resemble folktales and myths, but they're usually linked to a particular place or person, real or imaginary.

Fables teach lessons by telling stories with animal characters.

Fairy tales sometimes carry a message about right and wrong. But often they're simply exciting, magical stories.

LEARN MORE! READ THESE ARTICLES…
FOLK MUSIC (VOLUME 3)
A GREEK LEGEND: ODYSSEUS AND THE CYCLOPS (VOLUME 5)
RELIGION (VOLUME 5)

Answer: c) folktale


DID YOU KNOW?
There are some real dragons alive today. They're the giant Komodo dragons, 10-foot-long lizards that live in Indonesia.
SEARCH LIGHT
Which of the following does the article not say dragons breathed?
a) ice
b) fire
c) mist

Beasts of Fire and Mist



According to a popular story, there once lived a terrible dragon in a city where many people lived. It had huge wings like a bat. The flapping of its wings could be heard for miles. It could kill an ox with a single blow. Its eyes flashed. And it breathed fire.

Every year, the people of the city had to offer it a girl to eat, or it would kill everyone. One year it was the turn of Princess Sabra to face the dragon. George, the youngest and the bravest of the champions who protected the Christian church, came forward to save her. He wounded the dragon with his magic sword, Ascalon. The princess threw her sash around the dragon's neck and pulled the beast to the marketplace, where George killed it with a single blow. George later became the **patron saint** of England.

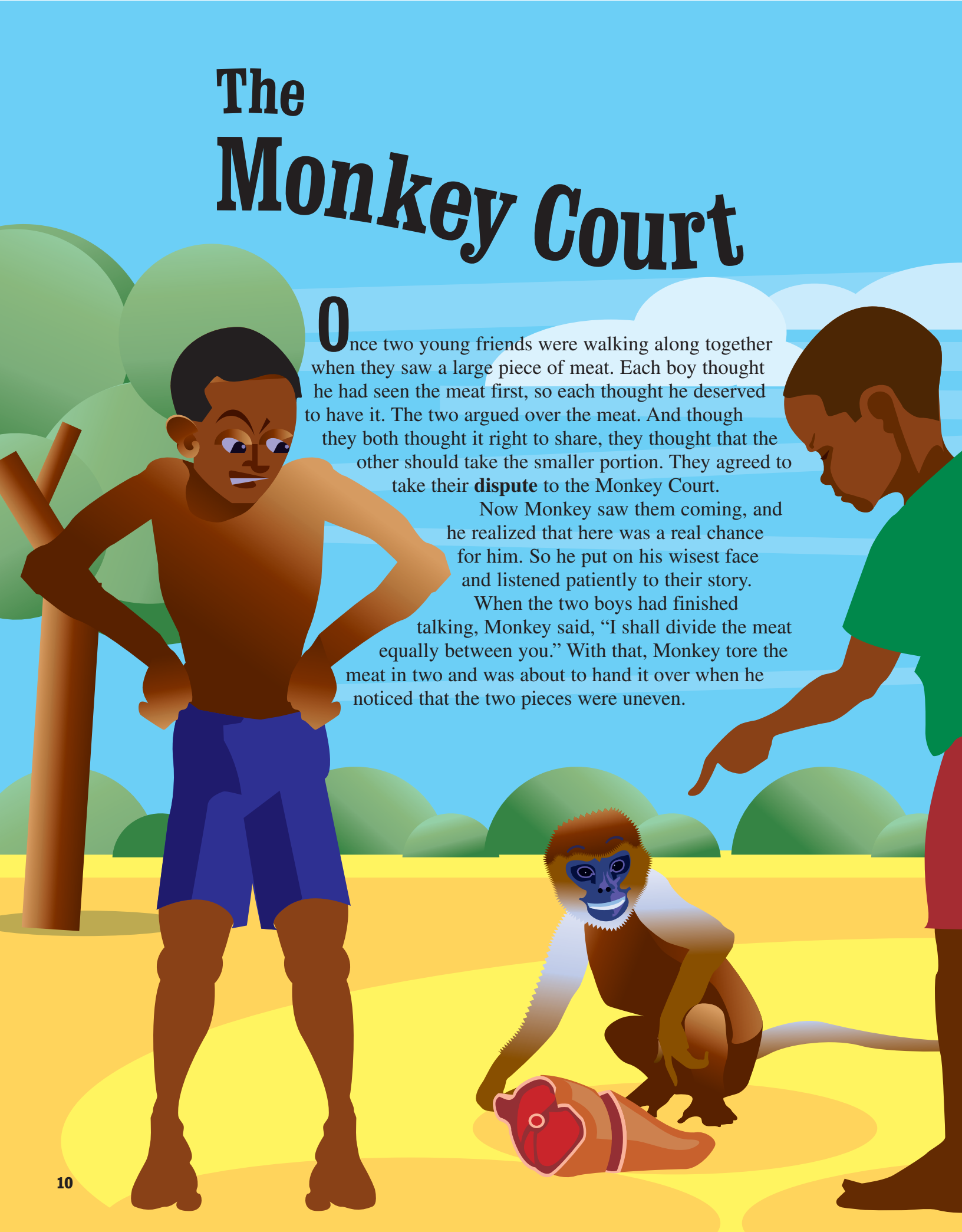
People used to believe in all kinds of dragons. For some people dragons were scary creatures like the one in the story about Saint George.

In China and other Asian countries, on the other hand, the dragon, or *long*, is considered good, lucky, and a powerful protector of human beings. The Chinese emperors adopted the dragon as their symbol. Dragons are linked with water, and they breathe out mist and clouds instead of smoke and fire. You can see immense colorful paper dragons being carried during Chinese New Year and other celebrations. Maybe stories of dragons started because people found dinosaur bones and didn't know what they were. The bones would have looked like they came from a monster.

LEARN MORE! READ THESE ARTICLES…
DINOSAURS: GIANTS OF THE PAST (VOLUME 1)
EMPRESS OF CHINA (VOLUME 4) • LIZARDS (VOLUME 11)

Answer: a) ice

The Monkey Court



Once two young friends were walking along together when they saw a large piece of meat. Each boy thought he had seen the meat first, so each thought he deserved to have it. The two argued over the meat. And though they both thought it right to share, they thought that the other should take the smaller portion. They agreed to take their **dispute** to the Monkey Court.

Now Monkey saw them coming, and he realized that here was a real chance for him. So he put on his wisest face and listened patiently to their story.

When the two boys had finished talking, Monkey said, "I shall divide the meat equally between you." With that, Monkey tore the meat in two and was about to hand it over when he noticed that the two pieces were uneven.

SEARCH LIGHT

Why do you think the two boys expected Monkey to solve problems for them?

"I will fix this so that each of you gets the same amount of meat," said Monkey. And with that, he took a bite from the larger piece of meat. But once more he noticed that the two pieces were uneven. And no matter how carefully Monkey bit the pieces of meat, one piece always ended up being bigger. Finally there were only two small pieces of meat.

At that point Monkey said, "It is time for me to take my fee for being your judge. These two tiny pieces of meat will do just fine." And with that, he sent the two hungry, and wiser, boys on their way.

LEARN MORE! READ THESE ARTICLES…
A KOREAN FOLKTALE: THE TIGER IN THE TRAP (VOLUME 5)
MONKEYS (VOLUME 12) • NIGERIA (VOLUME 8)

DID YOU KNOW?

In many African tales, the monkey and several other animals are clever, and the human beings are shown to be usually foolish.

Answer: Monkey had a reputation for being clever, as you see from the story. So the boys expected that he could solve their problems. But instead, he outsmarted them while also teaching a lesson about being greedy.


SEARCH LIGHT
Who is Ntikume?
DID YOU KNOW?
The West African character Ananse (or Anansi) also appears in Jamaican tales. This shows how folktales traveled from Africa with the slave trade to the West Indies.

Ananse and the Wisdom Pot

Ananse the spider was far and wide considered to be the wisest of all animals, and many animals came to him with their problems and questions.

After a while, Ananse grew tired of answering so many questions and decided he would have to do something to regain his peace and quiet. So he put all of his wisdom into a giant pot. He strapped the pot to his belly. He planned to carry the pot to a branch of a tall tree where all the animals could go to get their own answers to their questions.

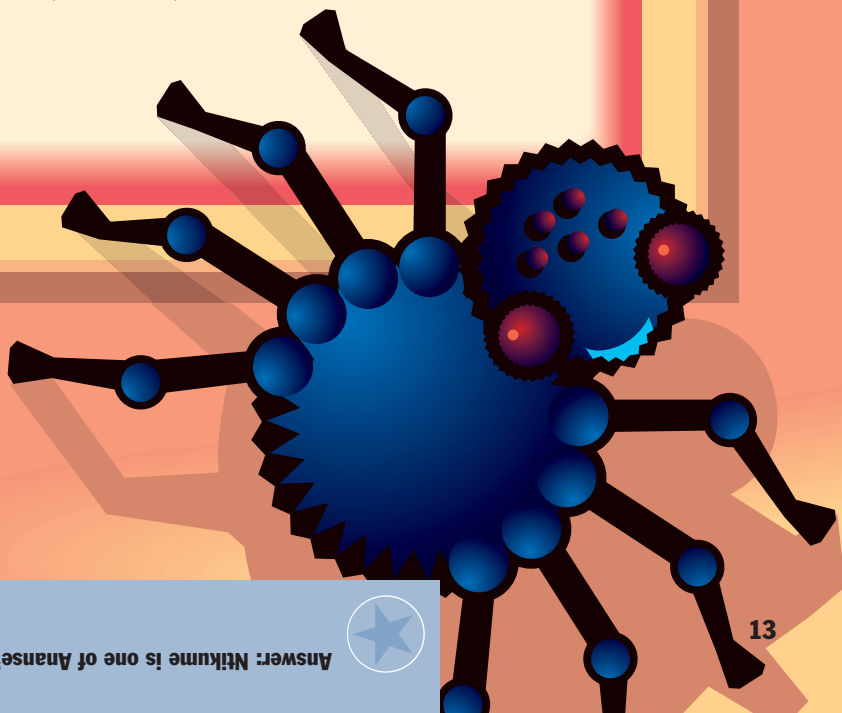
But as he was climbing the tree, the pot kept getting in the way of his legs and slowed him down. Ntikume, one of Ananse's many sons, saw this and suggested that Ananse strap the pot to his back instead, where it wouldn't be in his way.

When Ananse heard this he was furious. He couldn't **tolerate** the thought that his son could have a better idea than his own. So Ananse grabbed the pot and flung it to the ground, where it shattered into a thousand pieces.

Ever since then, wisdom has been scattered all over the world for many people to find.

LEARN MORE! READ THESE ARTICLES…
AFRICA (VOLUME 8)
AN INUIT TALE: HOW CROW BROUGHT DAYLIGHT TO THE WORLD (VOLUME 5)
SPIDERS (VOLUME 11)







Answer: Ntikume is one of Ananse's many sons.

Yeh-Shen

Once there lived a man with a beautiful daughter named Yeh-Shen. **Alas**, before the girl grew up, her father died. So Yeh-Shen was raised by her stepmother.

Now the stepmother already had a daughter of her own. So the stepmother gave Yeh-Shen all the hardest jobs. Yeh-Shen had no friends other than a golden fish, a carp. Yeh-Shen always shared what she had with her friend the carp.

One day the stepmother discovered Yeh-Shen's secret friend. She caught the fish and cooked it for breakfast. As Yeh-Shen gathered up the bones of the fish, the skeleton told her that it could grant wishes.

Yeh-Shen was eager to go to the Spring Festival. But Yeh-Shen's stepmother refused to let her go. She was afraid that pretty Yeh-Shen would get all the attention and her own daughter none. So Yeh-Shen asked the bones for help. As soon as she said the words, she was dressed in a gown of peacock feathers. On her feet were beautiful gold slippers.

At the festival Yeh-Shen danced and danced and had a wonderful time. But when she saw her stepmother approaching, she was frightened and ran away, leaving behind one golden slipper.

The next morning everyone was talking about the beautiful stranger.

SEARCH LIGHT

Fill in the blanks: Instead of a fairy godmother, such as Cinderella had, Yeh-Shen had a _____ _____ to help her.

DID YOU KNOW?

A 9th-century AD Chinese version of this classic story is one of the earliest known. There are hundreds of different variations of the Cinderella story.

The **magistrate** announced that his son intended to marry the woman whose foot fit the slipper. But though many tried it on, no one's foot fit.

When the magistrate saw Yeh-Shen, he asked her to try the slipper on. The slipper fit perfectly. Yeh-Shen and the magistrate's son were married and lived happily together all their days.

LEARN MORE! READ THESE ARTICLES…
MYTHS AND LEGENDS, FOLKTALES AND FABLES (VOLUME 5)
CARP (VOLUME 11) • CHINA (VOLUME 7)



Answer: Instead of a fairy godmother, such as Cinderella had, Yeh-Shen had a magic skeleton [or fish skeleton] to help her.

Moni Mekhala and Ream Eyso

At one time both the goddess Moni Mekhala and the giant Ream Eyso were studying with the same teacher. This teacher was very wise.

After a few years of teaching the two, the wise teacher decided to hold a contest for her students. She asked both of them to bring her a full glass of dew the next morning. Whoever brought her a glass full of dew first would win a prize, a magic ball.

Both got up very early and went to gather their glasses of dew.

Ream Eyso was quite pleased with himself. "Surely my idea of pouring the dew off of leaves is brilliant," he said.

Moni Mekhala had actually started the night before by laying a scarf on the grass. "This worked beautifully," she said as she wrung the scarf out into a cup.

The goddess won the magic ball, and the giant was given a magic ax as a second-place prize. Ream Eyso was jealous of Moni Mekhala. So he took his ax and threw it at the goddess. It made a terrible rumble as it flew through the air.

Moni Mekhala heard the noise and drew forth her magic ball. She caused the ball to strike the giant with great jagged sparks of fire. The fire made him so hot that he dripped large drops of sweat all over the ground.

Even today you can hear the rumble and see the sparks as Ream Eyso's sweat falls to the ground.

SEARCH LIGHT

What natural occurrence does this story explain?

LEARN MORE! READ THESE ARTICLES…
ANGKOR WAT (VOLUME 7) • DEW (VOLUME 1)
THUNDER AND LIGHTNING (VOLUME 1)

DID YOU KNOW?

In North American Indian mythology, a spirit called the Thunderbird watered the Earth. Lightning was believed to flash from its beak, and rolling thunder came from the beating of its wings.



Answer: This story explains the source of thunder, lightning, and rain.

The Poor Man and the Flask of Oil



About the 8th century, the writer Ibn al-Muqaffa made a famous Arabic translation of the South Asian stories known as tales of Bidpai. The translation was called the *Kalilah wa Dimnah* (after the two jackals in the book's first story, Kalilah and Dimnah). It provided a treasure of tales and parables that would appear throughout Islamic literature. This is one of those well-known tales.

A poor man lived next to a rich man who sold oil for a living. The poor man envied his neighbor's wealth and riches and often talked about them. So the rich man gave the poor man a **flask** of oil as a gift.

The poor man was delighted. "I could sell the oil," thought the poor man. "Then I would have enough money to buy five goats."

Later he thought some more. "With five goats," he said to himself, "a man would be rich enough to have a wife." He liked this thought so much he added to it. "Of course, my wife would be beautiful and give me a fine son."

But then the poor man had a thought that worried him. "What if my son is lazy because his father is a wealthy man? What if he refuses to obey me and disgraces me?"

This thought made the poor man so angry that he began stomping around his hut, swinging his staff. "Why, if my son refuses to obey me, then I'll teach him a lesson. I'll beat him with my **staff**."

DID YOU KNOW?

Oil merchants are still quite wealthy even today. Of course, now they sell the kind of oil used to make gasoline.

SEARCH LIGHT

Why, in the olden days, would a man who sold oil be wealthy?

As the staff swung about, it nudged the flask of oil off its shelf. The flask crashed to the ground and broke, spilling its contents on the dirt. The man looked at the shards of the flask, realizing that his dreams were now just as broken. And once more he was just a poor man living next to a wealthy neighbor.



LEARN MORE! READ THESE ARTICLES…
ASIA (VOLUME 7) • OIL (VOLUME 2)

Answer: Oil has long been used as a fuel for lamps and was very valuable when there wasn't yet any electricity.


SEARCH LIGHT
Why did the tiger want to eat the man?

The Tiger in the Trap

Once there was a traveler just getting ready to stop for the night when he heard a low moaning. He found a tiger caught in a deep pit.

The tiger saw the man and begged, "Please free me from this trap, and I will be grateful to you for the rest of your life."

The traveler agreed and lowered a large branch into the pit for the tiger to climb. As soon as the tiger was free, he fell upon the man.

"Wait!" said the traveler. "I thought you were going to be grateful to me."

"It was men who trapped me," answered the tiger. "So a man should suffer for it."

Just then a **hare** hopped by and asked what was happening. The tiger told it and then asked if the hare agreed with him.

"First I have to see the pit. Where were you?" the hare asked the tiger.

"Down here," the tiger replied and jumped into the pit.

"Was the branch there too?" asked the hare.

"No," said the tiger. And so the hare took the branch away.

Then the hare turned to the traveler and told him to be on his way.

The tiger cried out in **dismay** as the man walked off down the trail. "How could you betray me?"

"I judge each according to his own and not by his fellows," answered the hare. "You have the fate you deserve, and so does the man."

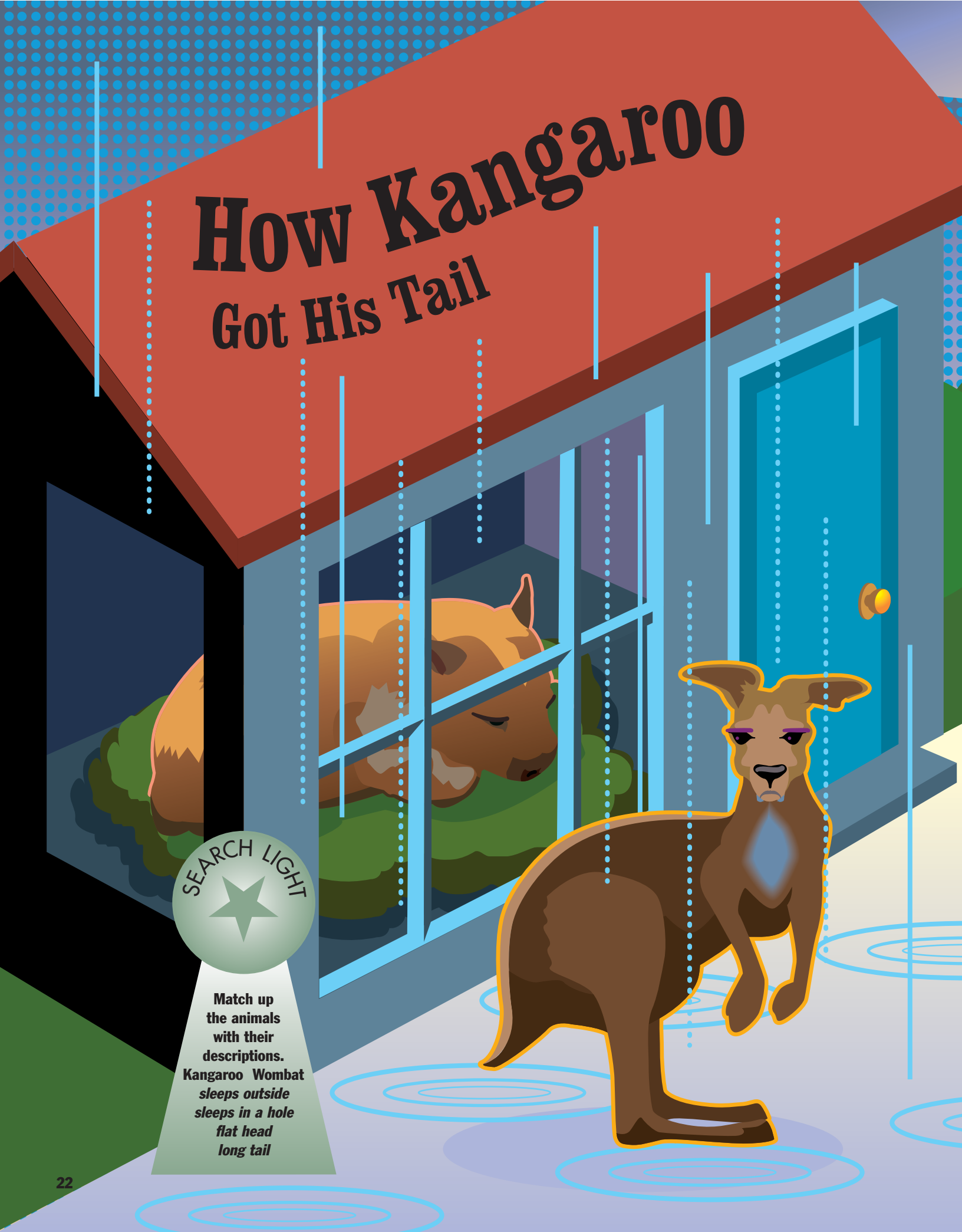
LEARN MORE! READ THESE ARTICLES…
KOREAN PENINSULA (VOLUME 7)
A NIGERIAN FOLKTALE: THE MONKEY COURT (VOLUME 5)
TIGER (VOLUME 12)

DID YOU KNOW?

Despite the many stories, tigers seldom eat people. Usually, a tiger will attack a person only if it is sick or is unable to hunt for its natural prey.

Answer: It was men who had trapped the tiger, so the tiger thought this man should pay for it.

How Kangaroo Got His Tail



SEARCH LIGHT

Match up the animals with their descriptions.

Kangaroo Wombat

sleeps outside

sleeps in a hole

flat head

long tail



DID YOU KNOW?

Not all kangaroos sleep on the ground. Tree kangaroos sleep and spend much time in trees rather than on the ground. And when they *are* on the ground, they walk rather than hop.

Long ago, before kangaroos had long tails and before wombats had flat heads, the animals played and lived together. Kangaroo and Wombat were great friends and spent every day together. But at night each one liked to sleep a different way. Wombat liked to sleep indoors, warm and snug. Kangaroo liked to sleep outdoors beneath the stars. Each thought his way of sleeping was the best.

Then one night a terrible storm cracked open the sky, and harsh winds and rain **scoured** the land. Kangaroo was outside and was miserable in the cold, wet night. He knocked on Wombat's house and called to Wombat to let him come in and warm up. But Wombat thought of how much room Kangaroo would take up, so he refused to let him in.

Kangaroo was very angry about being locked out in the storm. He picked up a big rock and dropped it through the roof of Wombat's house.

"There," Kangaroo shouted. "Now your house will be damp all the time."

The rock landed on Wombat's head and flattened his brow. Wombat grabbed a spear and threw it as hard as he could at Kangaroo. The spear landed right on Kangaroo's back end.

No matter how hard Kangaroo pulled, the spear wouldn't come out, and his tail just stretched longer and longer.

Since that day, Kangaroo and Wombat have not been friends. Kangaroo still has a big tail and sleeps outside. And Wombat still has a flat head and sleeps in a hole.

LEARN MORE! READ THESE ARTICLES…
AUSTRALIA (VOLUME 7)
A CHEROKEE STORY: WHY POSSUM'S TAIL IS BARE (VOLUME 5)
KANGAROOS (VOLUME 12)

Answer: Kangaroo—*sleeps outside, long tail;* Wombat—*sleeps in a hole, flat head*

Animal Stories That Teach

Aesop's fables are animal stories that were told in Greece almost 2,500 years ago. These are stories about animals or birds that speak and act like people. Each of these stories tells us a useful truth about everyday life. These truths are called "morals."

One of Aesop's fables is about a greedy dog:

A dog had a piece of meat in his mouth and was carrying it home. On the way the dog looked into a pond and saw his own reflection. It looked like another dog with a second piece of meat. "Why should *he* eat such good meat?" thought the dog. "I want that piece too."

The dog opened his mouth to grab the other piece of meat, and his piece dropped into the water and disappeared. When the greedy dog saw the meat disappear, he put his tail between his legs and slunk away.

The moral of this fable is "Be careful, or you may lose what you have by grabbing for what isn't there."

Here is another fable, about a fox:

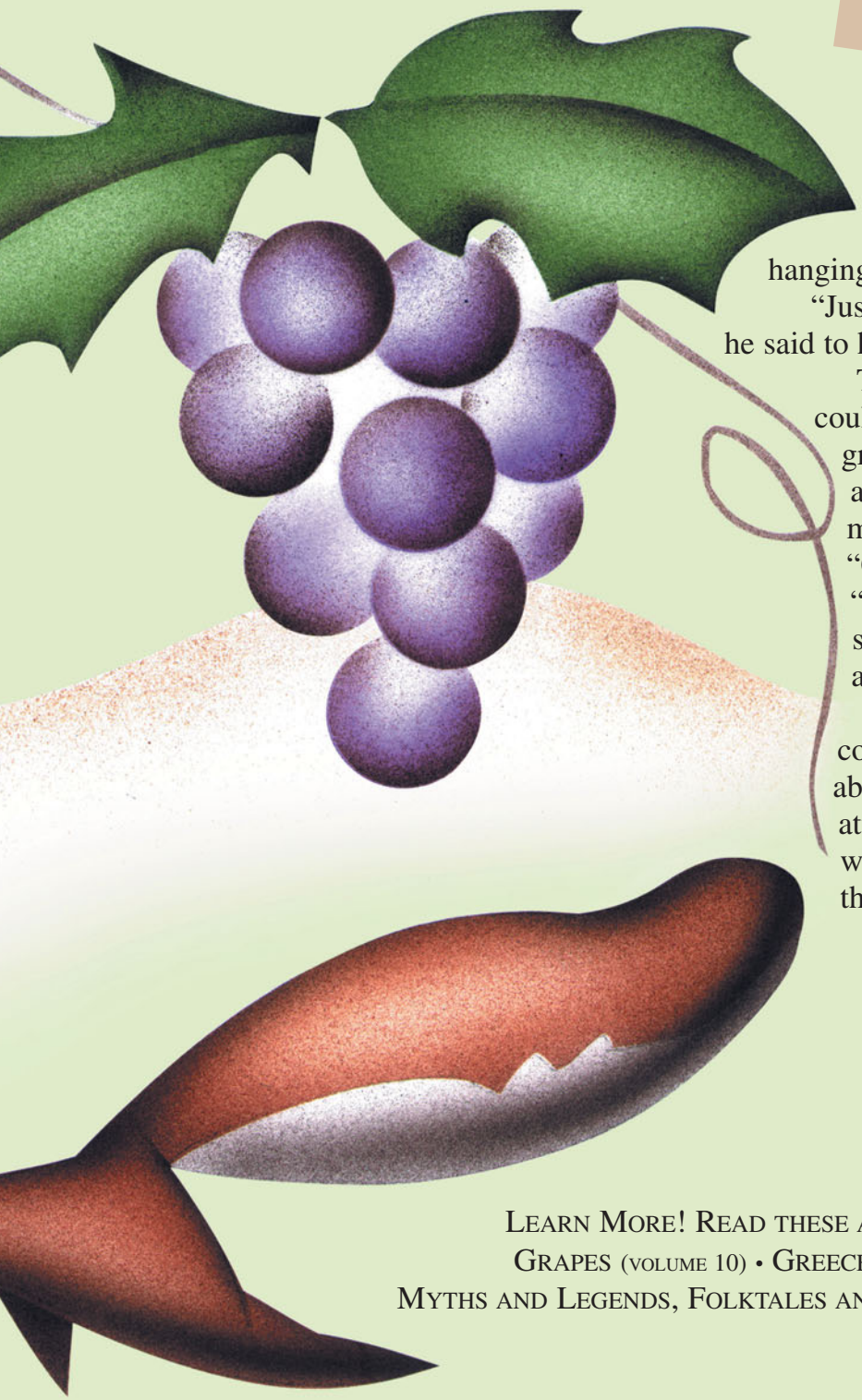


SEARCH LIGHT

True or false? The dog lost his meat because he was hungry.

DID YOU KNOW?

The next time someone says something is "fabulous," you can tell the person that that word comes from the word "fable." It means "amazing" or "larger-than-life"—or even "imaginary," like a fable.



Strolling through the woods one day, a fox saw a juicy bunch of grapes hanging from a high vine.

"Just the thing for a thirsty fox," he said to himself.

The fox jumped as high as he could, but he could not reach the grapes. He tried again and again. Each time he just missed the tasty-looking fruit. "Oh, well," he thought. "Those grapes are probably sour anyway." And he went away without the grapes.

The term "sour grapes" comes from Aesop's fable about the fox. It refers to the attitude some people show when they sneer at something that they can't have.

LEARN MORE! READ THESE ARTICLES…
GRAPES (VOLUME 10) • GREECE (VOLUME 6)
MYTHS AND LEGENDS, FOLKTALES AND FABLES (VOLUME 5)

Answer: FALSE. He lost his meat because he was greedy.


SEARCH LIGHT
How many eyes does the Cyclops have?
a) a gazillion
b) ten
c) one
DID YOU KNOW?
Some scientists think the legend of Cyclops might have developed when people found elephant bones and didn't know what they were. The elephant skull has a large hole that looks like a single eye socket.

Odysseus and the Cyclops

Long ago, the Greek king Odysseus was sailing home from war with his men. Along the way, they stopped at an island where one-eyed man-eating giants called Cyclopes lived.

Odysseus and his men wandered into a cave belonging to the Cyclops Polyphemus. At **twilight** Polyphemus returned with his flocks of sheep. When all the sheep were inside, he picked up a huge stone and closed the mouth of the cave. Odysseus and his men were trapped!

Polyphemus ate up two of Odysseus' men and fell fast asleep. In the morning he ate two more men and, after blocking the mouth of the cave, went off with his sheep. The stone was too heavy for the men to move. Odysseus, however, thought of a plan. He sharpened a branch of an olive tree.

When Polyphemus came home that night, Odysseus offered him wine. The Cyclops drank it and asked Odysseus what his name was.

Odysseus answered, "People call me Nobody."

"Your gift, Nobody, is that I shall eat you last," said Polyphemus. And, drunk with wine, he fell fast asleep.

Odysseus then took the great sharp branch and drove it into the sleeping giant's eye, blinding him. When Polyphemus cried out for help, the other Cyclopes shouted, "Who is hurting you?"

"Nobody," screamed Polyphemus.

"Well, then you don't need any help from us," said the other giants.

Meanwhile, Odysseus and his men each **lashed** together three sheep. Under the middle sheep, a man clung to the **fleece**. Finally everybody was hidden.

Polyphemus did not think of feeling under the bellies of the sheep. And so the men escaped to their ship and continued their long journey home.

LEARN MORE! READ THESE ARTICLES…
GREECE (VOLUME 6) • MYTHS AND LEGENDS, FOLKTALES AND FABLES (VOLUME 5)
SHIPS (VOLUME 2)

Answer: c) one



The Bearer of the World

Long, long ago Zeus, the king of the ancient Greek gods, was very angry with Atlas, one of the Titans (children of Heaven and Earth). He was angry because Atlas had tried to fight with him. So Zeus ordered Atlas to stand forever holding all the heavens and Earth on his shoulders!

Atlas wanted to get rid of his tiresome job. He almost managed to do it when the Greek hero Hercules came to ask for his help. Hercules was supposed to get three golden apples that were guarded by a dragon in a garden. Atlas agreed to get the apples if Hercules would hold the heavens and Earth on his shoulders while he was gone.

When Atlas returned, he told Hercules to keep the job. Hercules agreed. But he asked Atlas to hold the world for just a minute while he got a shoulder pad for himself. As soon as Atlas lifted the world to his shoulders, Hercules picked up the golden apples and ran away. Some stories say that thunder is Atlas shouting after Hercules to come back. Most pictures of Atlas show him carrying the world.

This is an ancient Greek story. But today when we want to learn about the world, we look into a book called an "atlas." We can see the shapes of countries, see which river flows in which country, and see which continent is where.

SEARCH LIGHT

Find and correct the errors in the following sentence: Hercules agreed to get three golden apples for Atlas if Atlas would hold the heavens and Earth on his shoulders for a while.

LEARN MORE! READ THESE ARTICLES…
GRAVITY (VOLUME 2) • GREECE (VOLUME 6)
A GREEK LEGEND: ODYSSEUS AND THE CYCLOPS (VOLUME 5)

DID YOU KNOW?

Atlas is also the name of a range of mountains in northwestern Africa. In one story, Atlas was the king of that area. But he was a bad host to the Greek hero Perseus. Perseus punished Atlas by showing him the head of the evil monster Medusa. Looking at the head of Medusa turned men to stone.

Answer: Atlas agreed to get three golden apples for Hercules if Hercules would hold the heavens and Earth on his shoulders for a while.

The Golem of Prague

Many hundreds of years ago, there lived many Jewish families in the city of Prague. Although they worked hard, many people in Prague didn't like them. Sometimes Jewish businesses were looted. Sometimes their homes were burned. And sometimes they were killed.

In that time there was a wise rabbi, a great teacher, living in Prague. His name was Rabbi Loew. He knew a way to help his people. He would build a man of clay. He would make the Golem.

Rabbi Loew shaped clay into the form of a man's body. And when he was done, he walked around the clay man seven times, chanting, "Shanti, Shanti, Dahat, Dahat." The Golem then opened his eyes and sat up.

"Golem," said Rabbi Loew. "I've made you so you can help and protect my people." The Golem nodded.

"Every day I'll tell you what to do," continued Rabbi Loew.

At first the Golem was a great gift to the Jewish families of Prague. He helped them in their work and protected them. But the Golem wanted more. So Rabbi Loew taught him to read. But reading about people made him want even more. He wanted to be human.

Rabbi Loew couldn't make the Golem human. The Golem became angry and began to attack the people he had earlier helped. He became a monster.

Rabbi Loew had no choice but to chase the Golem from Prague. No one knows what happened to the Golem. And no one knows where he is today.

LEARN MORE! READ THESE ARTICLES…
DRAGONS: BEASTS OF FIRE AND MIST (VOLUME 5)
JUDAISM (VOLUME 5) • PRAGUE (VOLUME 6)

DID YOU KNOW?

Modern-day horror films have used the idea of man-made monsters. One famous one is the American monster movie *Frankenstein*.



Answer: b) clay man.

King Arthur's Knights of the Round Table



It is said that long ago the British people needed a king. One day, the legend goes, there appeared a rock with a sword caught in it.

A sign said, "Whoever Can Pull This Sword from This Rock Will Be Rightful King of the Britons."

The strongest men in the kingdom tried to pull the sword out of the rock. It would not move. Then along came a young boy named Arthur. He had not heard about the sword in the rock. Thinking he would borrow the sword for his stepbrother, who was off to war, Arthur stepped up to the rock. He pulled. The sword slid out easily.

Merlin the magician had placed the sword in the rock. He had kept it there by magic. Only Arthur could remove it. The sword was called Excalibur. Merlin had been Arthur's teacher. He knew that Arthur would be the best king for Britain.

As king, Arthur needed people to help him rule wisely. He decided he would ask the strongest and bravest men to help him. He sent messengers to look for these strong and brave men.

Many men came to help Arthur. He asked them to promise to be fair, to keep their word, and to protect the weak. They became Arthur's Knights of the Round Table. Lancelot would become the greatest of all the Knights of the Round Table. But Arthur made the table round for a reason. It meant that everyone seated was equal there, and no one could sit at the "head" of the table.

King Arthur's legend also says that if Britain is ever in danger, he will come back and save the people once again.



SEARCH LIGHT

Find and correct the error in the following sentence: The name of Arthur's famous sword was Lancelot.

LEARN MORE! READ THESE ARTICLES…
ELIZABETH I (VOLUME 4) • ENGLAND (VOLUME 6)
MYTHS AND LEGENDS, FOLKTALES AND FABLES (VOLUME 5)

DID YOU KNOW?

Although the Arthur story is a legend, there might really have been a 6th-century military leader who led the British against invaders.

Answer: The name of Arthur's famous sword was Excalibur. (Lancelot was a famous Knight of the Round Table.)

How Crow Brought Daylight to the World

There was a time when the world of the north was always in darkness. The people wished for light, and Crow told them he had seen daylight on one of his many travels.

"Please bring us some daylight," the people begged Crow.

Crow flew for many miles. Just as he thought he couldn't fly any longer, he saw daylight ahead of him.

When he reached daylight, he landed in a tree to rest. While Crow was resting, the chief's daughter came along. Crow turned himself into a speck of dust and landed on the girl's **parka**. Then Crow heard a baby crying.

"What's wrong?" the girl asked her young brother.

Crow drifted into the baby's ear and whispered, "Tell her you want a ball of daylight to play with."

The chief's daughter tied a string to a ball of daylight and gave it to her brother to play with. As soon as the girl carried her brother and the ball of daylight outside, Crow turned back into a bird, grabbed the ball by its string, and flew away.

When he made it back to the home of the people, they were overjoyed. "We have daylight!" they cheered. "We can see the whole world."

But Crow warned them, "It is just a small ball of daylight. It will need to rest every once in a while, so you won't have daylight the whole year through."

And that is why the people of the frozen north have half a year of daylight and half a year of darkness.

LEARN MORE! READ THESE ARTICLES…
AKLAVIK (VOLUME 9) • BIRDS (VOLUME 11) • SOLAR SYSTEM (VOLUME 2)



SEARCH LIGHT

Fill in the blanks: This story explains why there is daylight only

___ ___ ___

in the far north.

DID YOU KNOW?

Crow is a popular figure because of his wisdom and appears in many Native American myths.

Answer: This story explains why there is daylight only half the year in the far north.

Why Possum's Tail Is Bare



Possum once had a bushy tail covered with thick, lush fur. In conversation he always managed to mention his tail. "When I was brushing my beautiful tail yesterday, you'll never guess what I saw..."

The other animals were tired of hearing about Possum's tail. But Rabbit said, "Don't worry. I have a plan."

The next day Rabbit announced that there was going to be a grand dance. "We'll want to do something special with your tail," he said to Possum.

"First," said Rabbit, "we need to wash and comb your tail."

So they wet Possum's tail in the river, and then Rabbit pulled a pine cone through Possum's tail fur.

"Ouch!" cried Possum. "You're hurting me."

"I can stop if you want me to," replied Rabbit.

"No, no," said Possum. "Keep working on my tail."

So Rabbit kept pulling the pine cone sharply over Possum's tail.

"Now we'll just wrap your tail in this red ribbon," Rabbit told him.

SEARCH LIGHT

This story also explains why possums
a) play dead.
b) climb trees.
c) carry their babies.

Possum was so excited. As soon as he reached the dance, Possum unwrapped the ribbon. And as he did so, all the other animals started to laugh.

"What's so funny?" shouted Possum. Then he looked at his tail. It was as bare and smooth as Snake's back. Rabbit had pulled out all of Possum's tail fur!

"Oh, oh!" wailed Possum, and he fainted onto his back.

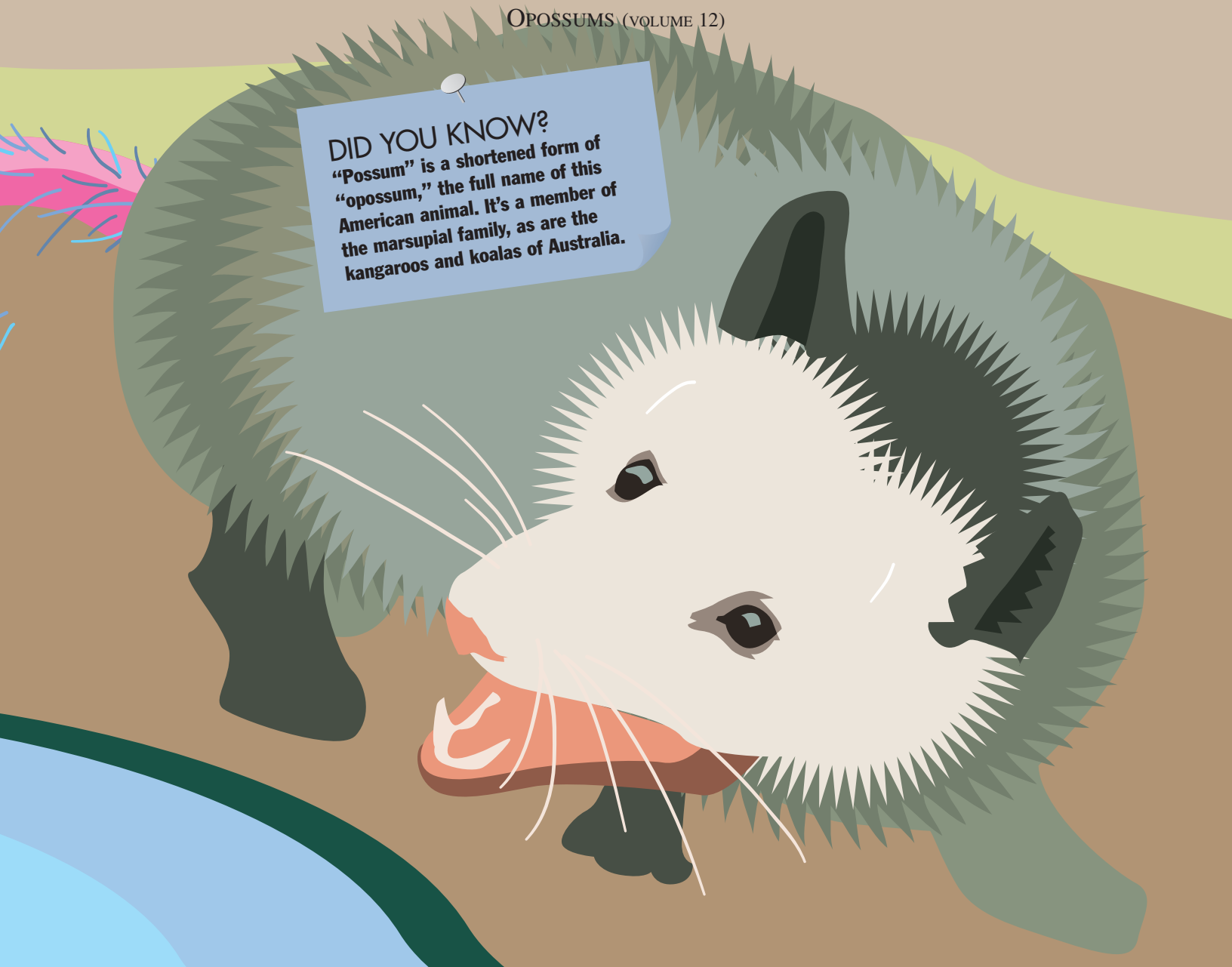
And that's why today when you see Possum, his tail is bare, and if you scare him, he rolls over on his back.

LEARN MORE! READ THESE ARTICLES…

AMERICAN INDIANS (VOLUME 4)

AN AUSTRALIAN TALE: HOW KANGAROO GOT HIS TAIL (VOLUME 5)

OPOSSUMS (VOLUME 12)



Answer: a) play dead.


SEARCH LIGHT
True or false? Paul Bunyan was a real man.
DID YOU KNOW?
The legend of Paul Bunyan may have come from stories that real lumberjacks told around the fire on cold evenings.

The Tale of a Lumberjack

If somebody told you that a giant woodsman had created a 100-mile-long inlet to float logs to a mill, would you believe it? Probably not, but it makes a good story.

Stories like that are called "tall tales," and an imaginary giant lumberjack named Paul Bunyan figures in many American tall tales. A lumberjack is a man who earns his living by cutting down trees. Paul was so big and powerful that he could make hills, lakes, and rivers whenever he wanted to. In fact, he's supposed to have created the Grand Canyon and the Great Lakes.

Paul Bunyan was so big that when he sneezed, a whole hillside of pine trees would fall over. Being such a large man, Paul would get very hungry. He was especially fond of pancakes. The frying pan for making them was so big that people would skate around it with slabs of bacon tied to their feet to grease it.

Paul had a famous helper that he found during the "blue winter." People called it the "blue winter" because the snow that fell was all blue! One night Paul heard an animal crying. When he looked outside, he saw a pair of silky blue ears sticking out of the snow. Paul pulled and pulled. Out of the blue snow came a baby blue ox!

Paul took the ox home with him and named it Babe. When Babe grew up, he was nearly as big as a small mountain.

One story tells of a road with so many curves in it that people didn't know whether they were coming or going. Paul laughed and picked up one end of the road and tied it to Babe. Babe tugged and pulled all the curves out of the road.

LEARN MORE! READ THESE ARTICLES…
ATLAS: THE BEARER OF THE WORLD (VOLUME 5)
GRAND CANYON (VOLUME 9) • GREAT LAKES (VOLUME 9)

Answer: FALSE. As far as anyone knows, there never was an actual lumberjack named Paul Bunyan.

Rabbit Throws Away His Sandal

Rabbit was the wisest of all the animals, and so he was their mayor. But although he was a good leader, he wasn't well liked because he used his wits to play tricks on the other animals.

One morning all the animals decided they would get rid of their mayor and his tricks. They gathered outside of Rabbit's burrow, planning to grab him and tear him to pieces as soon as he came out.

But Rabbit heard them grumbling. He called back, "I'll be out as soon as I find my sandals."

It was still dark, as the Sun had yet to rise. The animals all began to shout, "Rabbit, hurry up. We need your help."

Rabbit called back, "I've found one sandal, but it's broken, and it'll take time to fix it."



DID YOU KNOW?

Rabbits appear in the folktales of several different cultures. For instance, the Brer ("Brother") Rabbit of African American tales grew out of an African rabbit character. Both of them are clever, like Rabbit in this Mayan story.

SEARCH LIGHT

Which animal is not in the story?
a) dog
b) skunk
c) snake

Jaguar, who was quite impatient, said, "Throw it out here, and I'll fix it while you look for the other sandal."

Jaguar grabbed the object that flew out of the burrow and tossed it into the bushes.

After a while, Skunk said, "What's keeping you, Rabbit?" But no one answered.

Then Vulture said, "Snake, slither into that hole and see what's keeping Rabbit."

Snake did just that, but he could see very quickly that he was alone in the burrow. "There's no one here. Rabbit's disappeared."

Then from the bushes everyone heard Rabbit laugh. They realized he had tricked them once again. They had been so eager while waiting for Rabbit that no one noticed he had thrown himself out instead of his sandal.

LEARN MORE! READ THESE ARTICLES…
A CHEROKEE STORY: WHY POSSUM'S TAIL IS BARE (VOLUME 5)
GUATEMALA (VOLUME 9) • MAYAN CIVILIZATION (VOLUME 4)

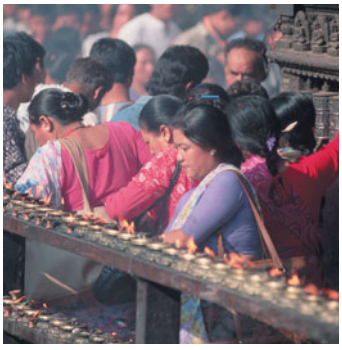


Answer: a) dog

Belief in a Higher Power

There are many people in the world who believe in a god or gods. Others do not use the word "god" but still believe that there are other, greater forces at work in their lives. The way groups of people worship these forces or their gods forms what we call a "religion."

Many different religions are practiced around the world. Major religions today include Christianity, Islam, Judaism, Hinduism, Daoism, Sikhism, and Buddhism. Most religions try to answer the same basic questions: How was the world created? What is the meaning of human life? Why do people die and what happens afterward? Why is there evil? How should people behave?



Worshipers in Nepal celebrate Buddha Jayanti, honoring the Buddha's birth, death, and Enlightenment.
© Macduff Everton/Corbis

Many religions have buildings set aside for worship. In these temples, cathedrals, mosques, and churches, activities such as prayer, **sacrifice**, and other forms of worship take place.

At different times in history, followers of one religion have tried to make others believe in that religion. Sometimes this was done by peaceful means. Often, however, it was done by force—sometimes by "holy wars."

For instance, between 1095 and 1292, European Christians led a number of **crusades** against Muslims. Christians tried to take control of the holy city of Jerusalem and other places they associated with the life of Jesus Christ. Muslims also carried out holy wars, or *jihad*s. At various times they spread into much of the Middle East and parts of Europe and Asia.

Most religions, however, encourage their followers to live peacefully with people of other religions. And, in fact, they share many **aspects** in common. These include **rituals** to perform, prayers to recite, places to visit or avoid, days that are holy, holy books to read and study, and leaders to follow.

DID YOU KNOW?

India is the birthplace of several world religions. Buddhism, Hinduism, Jainism, and Sikhism all began there.

LEARN MORE! READ THESE ARTICLES…
CHARLEMAGNE (VOLUME 4) • GOD (VOLUME 5) • MONASTICISM (VOLUME 5)

Roman Catholics worship together in a service called "mass." Here the mass is being led by Pope John Paul II, world leader of the church, in Saint Peter's Basilica in Rome, Italy.
© Vittoriano Rastelli/Corbis



SEARCH LIGHT

True or false? All religions have a single god.

Answer: FALSE. Some religions have one god. But others have many gods, and some have no god at all.

One World, Many Beliefs

How did the universe come to be? How did life on Earth begin?

For thousands of years people have searched for the answers to such questions. Some look to science to solve these mysteries. But in the earliest times science could not explain natural events such as earthquakes and storms, day and night, and life and death. People believed these things were the work of beings greater and more powerful than humans: the gods.



Stained-glass image showing a Christian artist's idea of God the Father, with angels.
© Royalty-Free/Corbis

Today many people still seek an understanding of life through the worship of a god or gods. They often feel that their faith also helps them live better lives.

Some religions, such as Judaism, Christianity, and Islam, teach that there is only one God, a **supreme** being who made the universe and controls the world. This is called "monotheism," from the Greek words for "one" and "God." The worship of several powerful gods is called "polytheism," because "poly" means "many." Ancient Greeks and Romans believed in many gods, whom we know today from ancient **myths** and art.

People from different places and cultures have their own names for their gods. The God of the ancient Jews was called Yahweh. Muslims use the Arabic word for God, Allah. Hindus believe in a large number of gods and goddesses (female gods). Each has a different personality and controls a different **aspect** of life. They believe these gods are forms of one supreme god. One popular Hindu god is the elephant-headed Ganesha. Many Hindus appeal to Ganesha when they begin an important new project.

The behavior of a god can vary from religion to religion. Some religions may see their god or gods as unforgiving and cruel. Others consider their god to be merciful and kind. But all gods play a part in helping people understand their world.

DID YOU KNOW?
Not only did the ancient Egyptians believe in a large family of gods, but they also believed that their pharaoh, or king, was a god.

LEARN MORE! READ THESE ARTICLES…
MYTHS AND LEGENDS, FOLKTALES AND FABLES (VOLUME 5) • RELIGION (VOLUME 5)
UNIVERSE (VOLUME 2)

SEARCH LIGHT

Fill in the blank: The Hindu god of successful beginnings is _____.



In many world religions, worshipers like this woman in Hong Kong burn incense to honor their gods.
© Royalty-Free/Corbis

Answer: The Hindu god of successful beginnings is Ganesha.

A Life Apart

Most major world religions have a tradition of monasticism. Monasticism comes from the Greek word for "living alone." So monks—men who practice monasticism—are people who choose to live apart from society. This allows them to devote themselves to a religious life. Women who choose this way of life are called "nuns."

Not all monks and nuns live entirely by themselves. Many live in communities with other monks or nuns. These community homes are usually called "monasteries" or, for nuns, "convents." Life in a religious community generally focuses on prayer, **meditation**, and religious works. Monks and nuns may concentrate on building a personal relationship with God. They may work to purify their thought and reach spiritual perfection.

Some monks do live all by themselves as **hermits**. And some wander from place to place their whole lives. But whether they live

SEARCH LIGHT

True or false? Only Christians can be monks.



DID YOU KNOW?

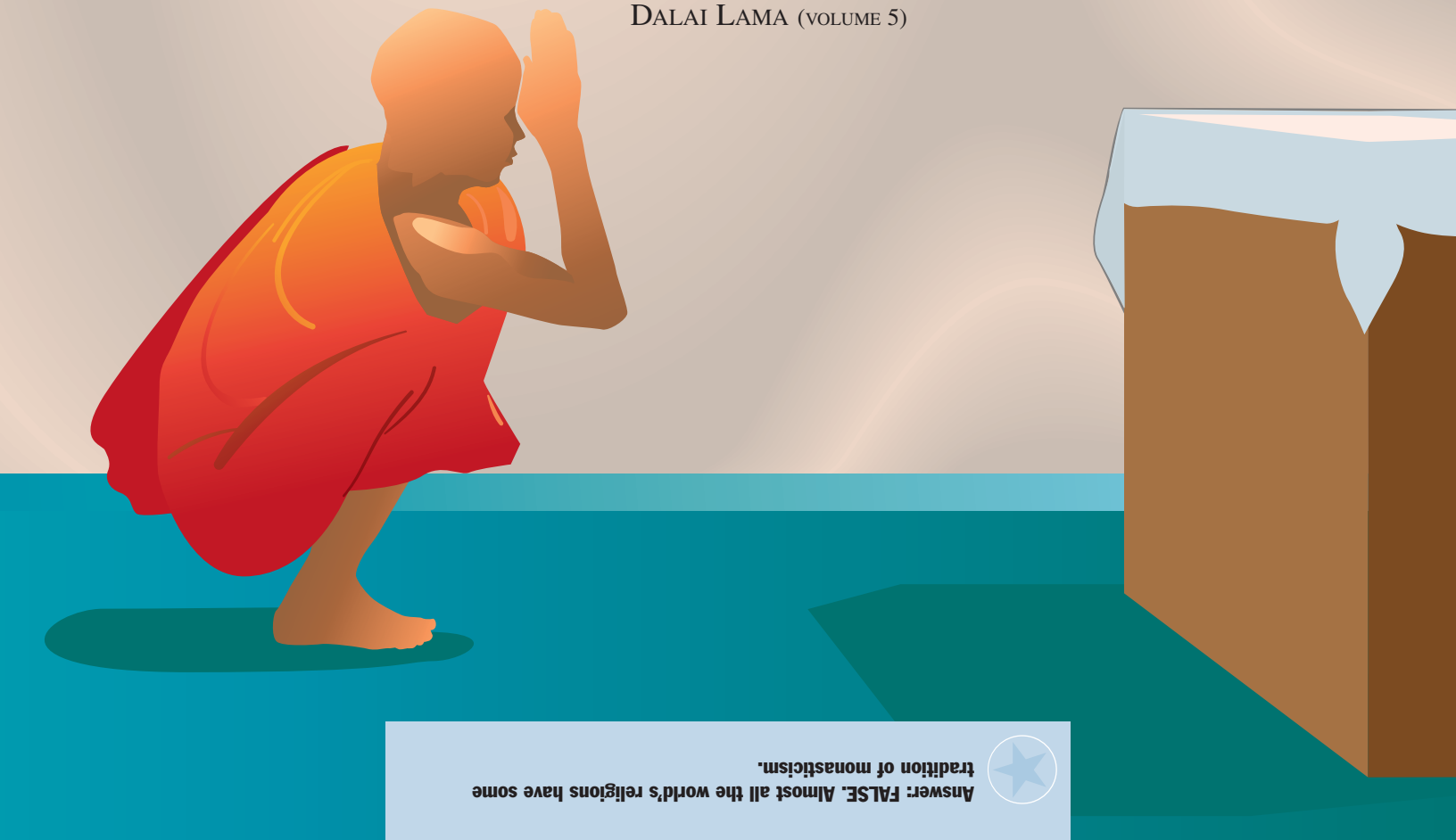
One Christian monastery in the United States specializes in training dogs. The monks there feel that the connection between dogs and humans, as well as the focus on discipline and responsibility, helps them spiritually.

in a community or by themselves, all monks and nuns give up certain of life's pleasures. Many don't own property or have any money. Others force themselves to face certain challenges, such as **fasting** or other physical discomforts.

Monks and nuns choose to live apart so that they won't be distracted by life. Usually, they are unmarried, since having a family requires great dedication and time. The monastic life allows people to focus as much of themselves as possible on God and on the **salvation** their religion promises.

Many monks and nuns do still take part in the world around them. For example, they may serve as teachers, social workers, missionaries, or nurses. In earlier times monks were often among the few people who could read and write. So they're responsible for having preserved much of written world history and culture.

LEARN MORE! READ THESE ARTICLES…
BUDDHISM (VOLUME 5) • CHRISTIANITY (VOLUME 5)
DALAI LAMA (VOLUME 5)



Answer: FALSE. Almost all the world's religions have some tradition of monasticism.



Eternal Battle of Good and Evil

Over 2,700 years ago, a man named Zoroaster lived in Persia (modern Iran). At that time people worshiped many gods. Zoroaster's beliefs opposed this way of thinking.

Zoroaster denied the power of lesser gods and honored one god as supreme—Ahura Mazda, also called Ormazd. The power of evil he named Ahriman. Zoroaster preached that a struggle between the two resulted in the creation of the world. Since its creation, the whole world has been involved in the battle between good and evil, light and darkness. Each human being struggles between good and evil. After a person dies, the soul crosses a bridge and passes into either heaven or hell.

SEARCH LIGHT

Who represents good in Zoroastrianism, Ahura Mazda or Ahriman?

Zoroastrians also believe that the history of the world is a vast drama divided into four periods of 3,000 years each. At the end of the first 3,000 years, the creation of the world takes place. At the end of the second, Ahriman arrives to corrupt the creation. In the third period, he triumphs but finds himself trapped in creation and doomed to cause his own destruction. In the fourth period, religion comes to Earth through the birth of Zoroaster.

Each 1,000 years thereafter, a new **prophet** will appear. The last of these will bring the final judgment and a new world.

Islamic armies invaded Iran about 1,400 years ago. Eventually, most Zoroastrians left Iran and settled in India around Bombay (now called Mumbai). These people came to be known as Parsis. The Parsis grew into a rich and highly educated community.

The holy book of the Zoroastrians is the *Avesta*. The central feature of their temples is a sacred fire that burns night and day and is never allowed to die out.

DID YOU KNOW?

Zoroaster is sometimes credited with having created the practice of astrology. Astrologers "read" the heavens in order to predict events and determine people's characters.

LEARN MORE! READ THESE ARTICLES…
GOD (VOLUME 5) • IRAN (VOLUME 7) • RELIGION (VOLUME 5)

Between the ages of 7 and 11, children are initiated into the Zoroastrian religion in a ceremony called *navjote*. Here, priests oversee this young Parsi (Indian Zoroastrian) boy's *navjote*.

© Tim Page/Corbis

Answer: Ahura Mazda represents good in Zoroastrianism.

Religion of Israel

According to Jewish holy writings, the one God promised Abraham, the father of all Jews, "I will make of thee a great nation." In return, that nation was to obey God forever. Abraham's son Isaac and grandson Jacob are also considered fathers of the Jewish people. The nation of Jewish people became known as Israel after God gave Jacob that name.

Later, when the people of Israel were enslaved in Egypt, a leader named Moses freed them and led the Jews to a new home. While going there, they made an agreement with God to follow the **commandments**, God's laws.



Lighting the menorah in celebration of the Jewish festival of Hanukkah.
© Richard T. Nowitz/Corbis

All of this is written in the Hebrew Bible (known as the Old Testament to Christians). The most important section of the Hebrew Bible is the Torah—also called the Five Books of Moses, or Pentateuch.

When a Jewish boy turns 13, he must read from the Torah in public. This makes him a Bar Mitzvah, or "son of the commandments." Girls celebrate their Bas Mitzvah, or Bat Mitzvah, after their 12th birthday.

Jews worship in synagogues, where services include the reading of the Scriptures, praying, and offering blessings and thanks to God. Major Jewish holidays are Yom Kippur, Rosh Hoshanah, Hanukkah, and Passover.

Judaism has kept many of the same traditions and **rituals** for thousands of years. When a new country was formed in 1948 as a homeland for the Jewish people it even took the ancient name of Israel. But today there are different groups within Judaism. **Orthodox** Jews dress, eat, live, and worship very much like their ancestors did. **Conservative** Jews worship much like Orthodox Jews but live by more relaxed rules. Reform Jews worship in more modern ways, with even fewer rules about how they live their daily lives.

SEARCH LIGHT

Correct the error in the following sentence: The most important part of the Jewish Bible is called the Bat Mitzvah.

LEARN MORE! READ THESE ARTICLES…
BIBLE (VOLUME 5) • ISRAEL (VOLUME 7)
A JEWISH LEGEND: THE GOLEM OF PRAGUE (VOLUME 5)



Young Jewish boys all over the world celebrate their Bar Mitzvah. This young man carries the Torah at the Western Wall in Jerusalem as part of his celebration.
© Richard T. Nowitz/Corbis

DID YOU KNOW?
Many Jews "keep kosher," which means they observe special laws about the food they eat. There are strict rules for how food is prepared and whether certain foods can be eaten in combination or at all.

Answer: The most important part of the Jewish Bible is called the Torah.

Father of Many Nations

The first book of the Bible tells the story of Abraham. This honored leader is important in the major religious **traditions** of the Jews, Christians, and Muslims.

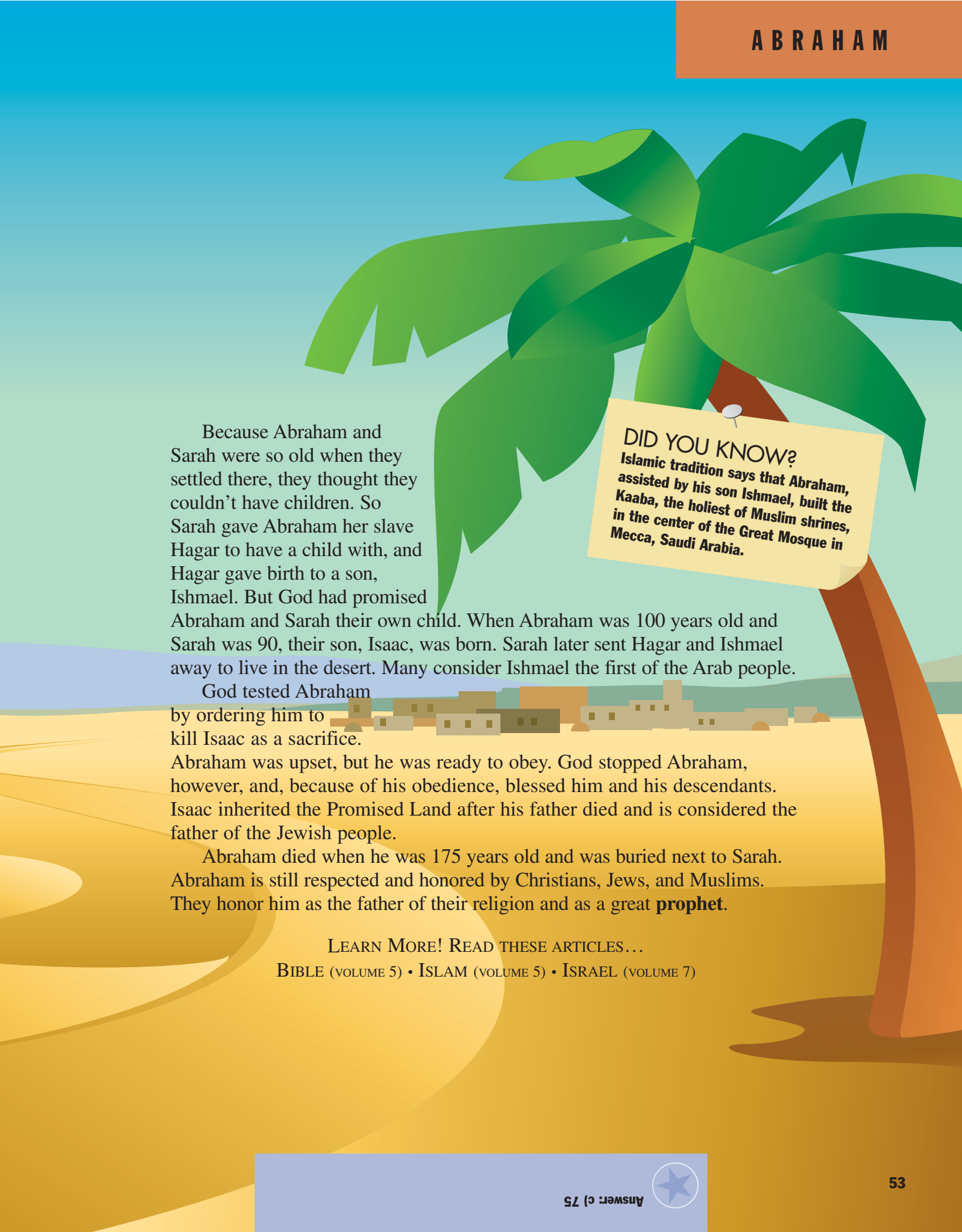
According to the Bible's account, God came to Abraham one day and told him, "I will make of thee a great nation." God commanded him to leave his home in Mesopotamia (modern Iraq) for an unknown land, which would belong to Abraham and his descendants.

At the age of 75, Abraham started on this journey, bringing his wife, Sarah, and some other companions. They reached the "**Promised Land**," then known as Canaan, in what is now Israel.



SEARCH LIGHT

How old was Abraham when he took his journey to Canaan?
a) 175
b) 100
c) 75



Because Abraham and Sarah were so old when they settled there, they thought they couldn't have children. So Sarah gave Abraham her slave Hagar to have a child with, and Hagar gave birth to a son, Ishmael. But God had promised Abraham and Sarah their own child. When Abraham was 100 years old and Sarah was 90, their son, Isaac, was born. Sarah later sent Hagar and Ishmael away to live in the desert. Many consider Ishmael the first of the Arab people.

God tested Abraham by ordering him to kill Isaac as a sacrifice. Abraham was upset, but he was ready to obey. God stopped Abraham, however, and, because of his obedience, blessed him and his descendants. Isaac inherited the Promised Land after his father died and is considered the father of the Jewish people.

Abraham died when he was 175 years old and was buried next to Sarah. Abraham is still respected and honored by Christians, Jews, and Muslims. They honor him as the father of their religion and as a great **prophet**.

DID YOU KNOW?

Islamic tradition says that Abraham, assisted by his son Ishmael, built the Kaaba, the holiest of Muslim shrines, in the center of the Great Mosque in Mecca, Saudi Arabia.

LEARN MORE! READ THESE ARTICLES…
BIBLE (VOLUME 5) • ISLAM (VOLUME 5) • ISRAEL (VOLUME 7)

Answer: c) 75

Yahweh's Messenger

According to the Jewish Bible, the Hebrew people first went to Egypt in search of food during a great **famine**. Eventually, the Egyptians came to fear the Hebrews and enslaved them. At one point the pharaoh, the ruler of Egypt, ordered that all newborn male Hebrews be killed. Moses was born about this time, more than 3,000 years ago.

SEARCH LIGHT

True or false? Moses grew up in the Egyptian court of the pharaoh.

According to the Bible, Moses' mother set him afloat on the Nile River in a reed basket. The pharaoh's daughter found the child while she was bathing. Moses thus grew up in the Egyptian court. One day he learned that he was a Hebrew. He went out to visit his people and saw the hard life they led. Moses saw an Egyptian **overseer** beating a Hebrew slave, and he killed the overseer. He realized that he would have to flee.

Moses found shelter with a priest, married the priest's daughter, and became a shepherd. While looking after the flock, Moses heard God for the first time. God spoke to him from a burning bush on Mount Sinai, identifying himself as Yahweh. He told Moses to go back to Egypt and demand that the pharaoh set the Hebrews free.

Moses tried. But when the pharaoh refused, Yahweh punished the Egyptians with ten plagues. The tenth took the life of the pharaoh's eldest son, so the pharaoh ordered the Hebrews to leave. Through much hardship, Moses led his people toward the Promised Land of Canaan. At Mount Sinai, Yahweh told Moses to go up the mountain. There Moses received the Ten **Commandments**. These laws and others told the Hebrews how to live. They became part of the Torah, the first five books of the Bible, and bound Jews to God.

DID YOU KNOW?

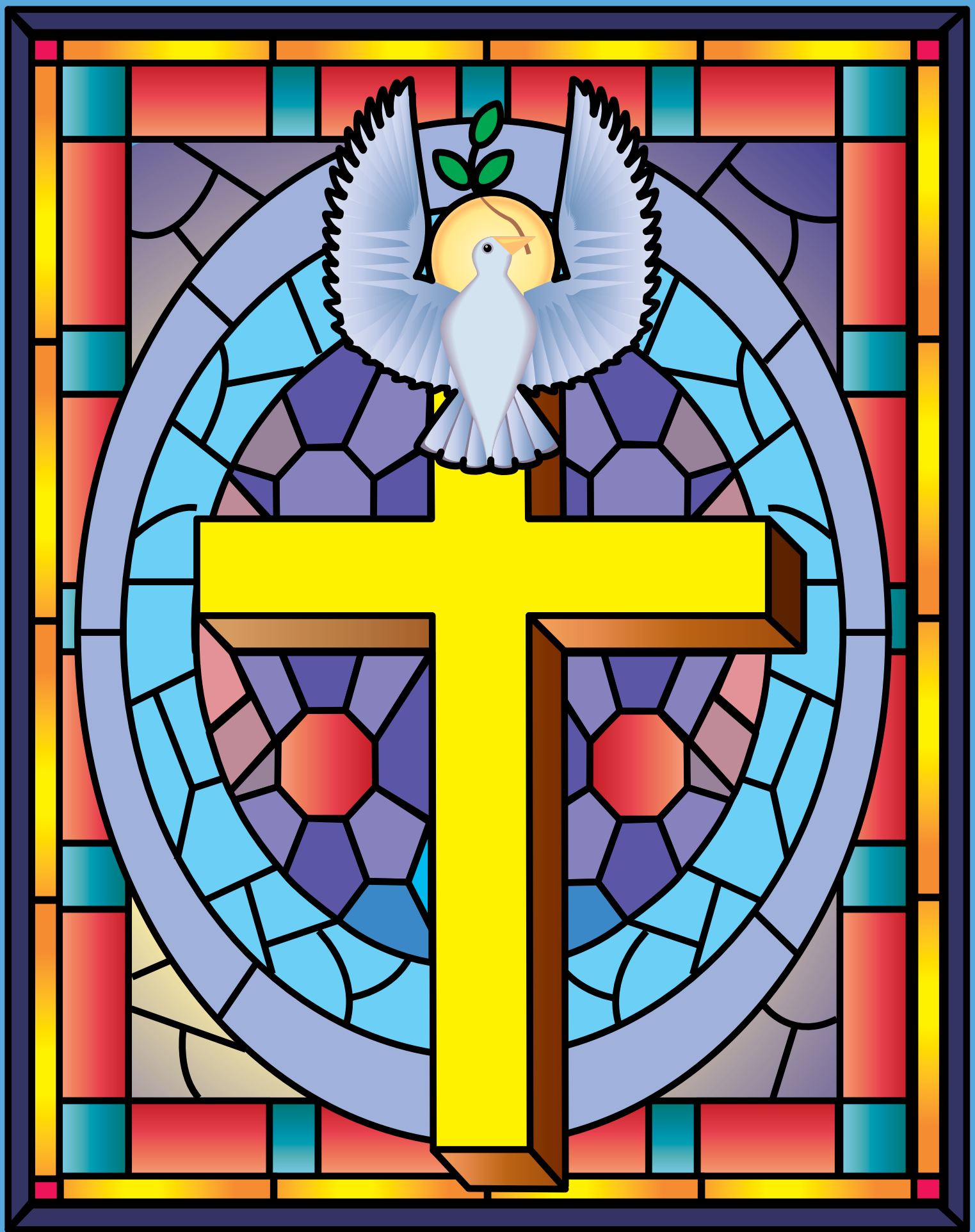
The Bible says that as Moses and the Hebrews fled the Egyptian soldiers chasing them, they came to a body of water believed to be the Red Sea. Yahweh created a dry path for the Hebrews to cross, but he drowned the Egyptian soldiers who followed.

LEARN MORE! READ THESE ARTICLES…
BIBLE (VOLUME 5) • EGYPT (VOLUME 7)
JUDAISM (VOLUME 5)

Very little is known about the life of Moses. This illustration of one of the Bible stories about him shows the pharaoh's daughter holding the baby Moses after she found him floating on the Nile River in a basket.
© Historical Picture Archive/Corbis

MOSES

Answer: TRUE.



Following Jesus Christ

SEARCH LIGHT

Christians celebrate Christmas to honor Jesus Christ's
a) birth.
b) death.
c) resurrection.

More than two billion people around the world follow the teachings of Jesus Christ. They call themselves Christians. And their religion, Christianity, is the world's most widespread religion.

Christianity grew from Judaism about 2,000 years ago. Over the years it has split into many groups. This is because, at various times, Christians disagreed among themselves about some of their beliefs. The major branches of Christianity include the Roman Catholic church, Protestant churches, and the Eastern Orthodox church.

Despite the divisions, there are many things these groups agree on. They all have the same holy book, the Bible. The Christian Bible is divided into the Old Testament and the New Testament, which is about the life and teachings of Jesus Christ. Nearly all Christian churches have leaders, or clergy. In different churches they may be called priests, ministers, or pastors, among other titles. Clergy give their church members guidance and perform official duties at **worship** services.

Most Christians believe in the Trinity as well. The word comes from Latin and means "three." It describes the three individual **aspects** of the one God. The three are God the Father, who created everything; God the Son (Jesus Christ), who died to save humankind; and God the Holy Spirit, who inspires people's thoughts and actions.

And all Christians celebrate certain holy days. Christmas marks the birth of Jesus, and Easter honors Jesus' resurrection, when he rose from the dead. The Friday before Easter is called Good Friday. It is the anniversary of Jesus' death.

LEARN MORE! READ THESE ARTICLES…
CHARLEMAGNE (VOLUME 4) • JESUS CHRIST (VOLUME 5)
JUDAISM (VOLUME 5)

DID YOU KNOW?
Although Christianity is widespread today, its followers were pursued and tormented in the religion's early days. If they were discovered to be Christians, they might be killed.

Answer: a) birth.

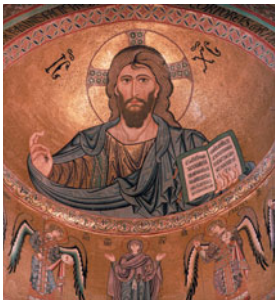
The Son of God

Almost everything we know about Jesus Christ comes from the Christian Bible. Jesus was a Jew, born to Mary more than 2,000 years ago in Bethlehem. Christians believe that Jesus was the son of God. The New Testament **Gospels** of the Christian Bible tell the story of Jesus' life and teachings.

DID YOU KNOW?

"Christ" was originally a title that came from the Greek word *christos*. *Christos* translates the Hebrew term *meshiah* (or Messiah), meaning "the anointed one," and refers to the king whom the Jews expected to come.

Jesus grew up in Nazareth, in what is now Israel. When he was 12, his parents took him to Jerusalem for the feast of Passover. Suddenly, they discovered that he was missing. They finally found Jesus talking in the Temple with the learned men, who were amazed at how wise he was.



Mosaic picture of Jesus Christ in the cathedral in Cefalù, Sicily, Italy.
© Mimmo Jodice/Corbis

Like his earthly father, Joseph, he became a carpenter. When Jesus was about 30 years old, he began **preaching** about God. He is also said to have begun performing miracles. In one miracle Jesus fed 5,000 people with just five loaves of bread and two fish.

Jesus was kind to the poor and the sick. He was also kind to people others didn't like. He taught that all people should love one another just as they love their families and themselves. Jesus taught about the kingdom of God. Some people thought this meant that Jesus would try to rule a kingdom here on earth. So the rulers of the land accused him of trying to grab power from them. So at age 33 Jesus was arrested, killed on a cross, and buried. But visitors to his tomb found it empty.

According to the Gospels, Jesus rose from the dead and was taken back up to heaven. First, though, he appeared many times to his followers. His followers became known as Christians, and their religion is called Christianity. They see Jesus' death as a **sacrifice** for all people.

SEARCH LIGHT

Fill in the blank: Jesus taught that people should love each other as much as they love their family and _____.

LEARN MORE! READ THESE ARTICLES…
BUDDHA (VOLUME 5) • CHRISTIANITY (VOLUME 5)
JERUSALEM (VOLUME 7)

This stained-glass window in a church in Palo Alto, California, U.S., shows one of Jesus' miracles. This and other major events from Jesus' life are often subjects of Christian art.
© Steve Skjold/Photo Edit



Answer: Jesus taught that people should love each other as much as they love their family and themselves.

JESUS CHRIST



DID YOU KNOW?

Throughout the history of Christianity, many people have claimed to have seen Mary. One of the most famous visions was reported in 1917 by three children at Fatima, Portugal.

Mother of Jesus

Christians worldwide honor Mary, the mother of Jesus. She is known as Saint Mary and the Virgin Mary. But not much is known about Mary's life. What we do know comes from the New Testament of the Christian Bible.

The Bible first mentions Mary as a young girl living in Nazareth, a town north of Jerusalem in Palestine (now in Israel). She was engaged to marry Joseph, a local carpenter. One day an angel came to her and told her that she had been chosen to give birth to God's son. When Mary's son, Jesus, was born, King Herod heard that a newborn baby would one day become king of the Jews in Herod's own kingdom. Herod ordered all babies under the age of 2 to be killed. Joseph was warned by an angel in a dream, and he fled with Mary and Jesus to Egypt.



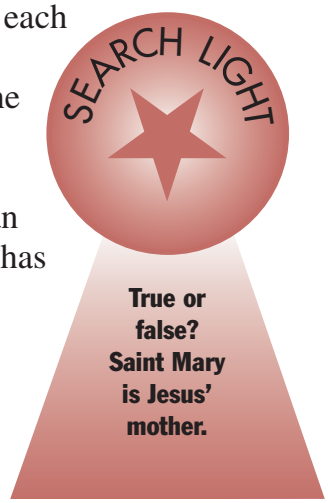
A Pietà (image of the Virgin Mary and the dead Christ), by Luis de Morales.
© Archivo Iconografico, S.A./Corbis

Mary appears again at the wedding at Cana, where Jesus performed his first miracle. She was also one of the few followers who did not run away in fear when Jesus Christ died on the cross. The New Testament Book of John describes how Jesus spoke to John and to Mary from the cross, telling them to look after each other. After that, Mary is mentioned as one of the people who devoted themselves to prayer after Jesus arose into heaven. She also took part in the early growth of the church.

But over the centuries, the mother of Jesus has become recognized as a holy person second only to Jesus in the Roman Catholic, Eastern Orthodox, and other churches. Her position has also influenced the lives of women in Christian cultures.

LEARN MORE! READ THESE ARTICLES…
ISRAEL (VOLUME 7) • JESUS CHRIST (VOLUME 5)
MOTHER TERESA (VOLUME 4)

Mary, often called the Madonna ("Lady"), has been a favorite subject of artists for centuries. Images of Mary and the baby Jesus are a frequent theme, as in Fra Angelico's "Madonna of Humility," seen here.
© Francis G. Mayer/Corbis



Answer: TRUE.



The Bible was the one of the first books printed by Johannes Gutenberg on the first printing press. This is one of the few remaining copies.
© David Young-Wolff/Photo Edit

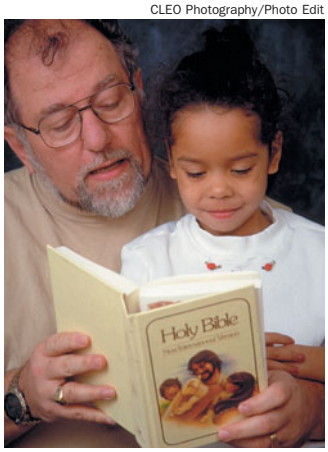
DID YOU KNOW?

In 1947 a young shepherd found the first of the documents called the Dead Sea Scrolls in a cave in Judaea (now in Israel). These documents come from about Jesus' time. They hold versions of some biblical writings, as well as many texts never before seen.

Jewish and Christian Scriptures

Jews and Christians call their scriptures, or holy books, the Bible. But their Bibles are not the same. What Jews call the Bible forms what Christians call the Old Testament. The Christian Bible also contains the New Testament. Both the Old Testament and the New are collections of shorter sections called "books."

CLEO Photography/Photo Edit



© Richard T. Nowitz/Corbis



(Left) Family shares the Bible. (Right) Torah scrolls in the main synagogue in Jerusalem.

The Jewish Bible tells the history of Israel. It is grouped into three sections: the Law, the Prophets, and the Writings. The first five books, the Law, are also known to Jews as the Torah. The Law describes how the world and people came to be and how Israel was founded. It contains the story of Moses, the Ten Commandments (instructions for life and worship), and other teachings. The Prophets contains the later history of Israel as well as messages passed from God to the Jewish people. The Writings include history, songs and hymns, **psalms**, poetry, stories, and wise sayings.

The New Testament of Christianity tells the story of Jesus Christ and his followers. It is shorter than the Old Testament. There are four sections in the New Testament: the Gospels, the Acts, the Epistles, and Revelation. The Gospels describe Christ's life, death, and resurrection (raising from the dead). In the Acts of the Apostles, the story and teachings of Jesus' disciples, or followers, is carried on. The Epistles are letters from leaders of the early Christian church. The Book of Revelation talks about the end of the world and what will happen before the end comes.

None of the original Bible manuscripts still exist. The Bible **texts** are copies of copies handed down over many generations.

LEARN MORE! READ THESE ARTICLES…
CHRISTIANITY (VOLUME 5) • ISRAEL (VOLUME 7) • PRINTING (VOLUME 2)



Correct the error in the following sentence: The founding of Israel is described in the New Testament.

Answer: The founding of Israel is described in the Old Testament.

The Religion of Muhammad

Islam is a major world religion. It was founded in Arabia about 1,400 years ago by a man named Muhammad. Followers of Islam are called Muslims. There are more than a billion Muslims in the world.

Muslims believe that the archangel Gabriel brought Muhammad many messages from God (Allah in Arabic). Most people in Arabia at that time believed in many gods. But the messages told Muhammad that there was only one God. Muslims believe Muhammad was the last of God's prophets, in a line that began with Adam and continued through Abraham, Moses, and Jesus.

SEARCH LIGHT

Which of the following is not one of the five Pillars of Islam?
a) fasting
b) prayer
c) faith
d) pilgrimage
e) singing
f) giving to the poor

The messages to Muhammad were collected in a book called the Koran, or Qur'an. The Koran says that God is stern but forgiving and asks everyone to worship only him. Muslims believe that when they die, they are judged according to their actions.



Palestinian Muslim women pray during Ramadan outside the Dome of the Rock, in Jerusalem.
© AFP/Corbis

Islam has five duties that every Muslim should perform. These five Pillars of Islam instruct Muslims to make known their faith in God, pray daily, give to the poor, **fast**, and make a **pilgrimage** to the holy city of Mecca once during their lifetime if possible.

A Muslim must pray five times a day, either alone or with others in a mosque, the Muslim place of worship. Special group prayers are said in mosques every Friday. Fasting takes place during Ramadan, the holy month during which God is said to have revealed the Koran. During fasting, Muslims may not eat or drink between dawn and sunset.

Mecca is the holy city of Islam where Muhammad was born and where Abraham built a shrine called the Kaaba. Only Muslims may enter Mecca. The yearly pilgrimage to Mecca is called the *hajj*. At the end of the *hajj*, Muslims celebrate the festival of Id al-Adha.

LEARN MORE! READ THESE ARTICLES…
KORAN (VOLUME 5) • MECCA, SAUDI ARABIA (VOLUME 7) • MUHAMMAD (VOLUME 5)

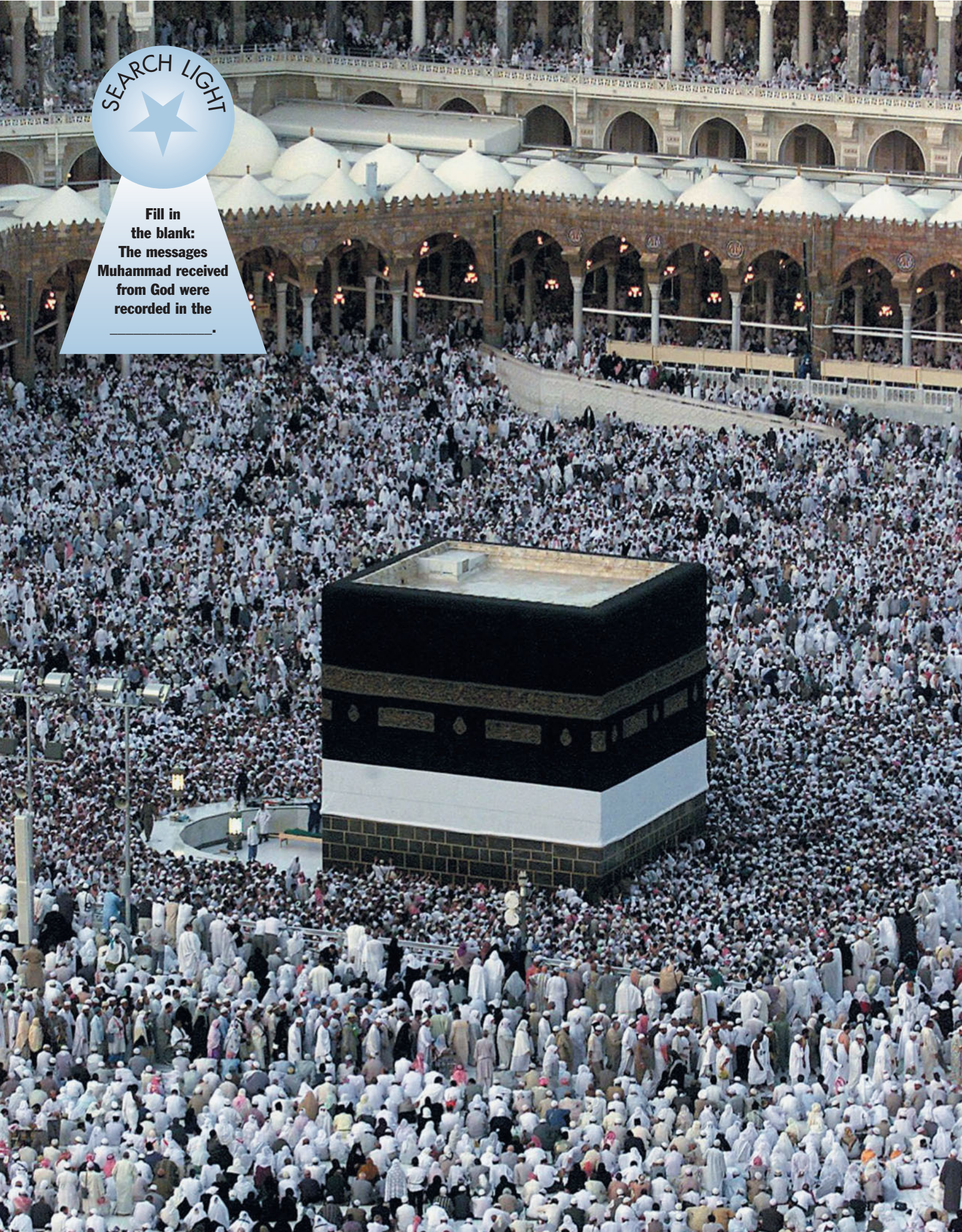
Islam has spread throughout the world, as Muhammad had intended. These Muslims are praying together in a mosque in Sarajevo, in Bosnia and Herzegovina.
© Dean Conger/Corbis



DID YOU KNOW?

Medina, in Saudi Arabia, is celebrated as the first Muslim community. From there, Islam spread throughout Arabia. Only Muslims are allowed to enter the city.

Answer: e) singing


SEARCH LIGHT
Fill in the blank: The messages Muhammad received from God were recorded in the _____.

Islam's Prophet

Muhammad was born in Mecca about 1,400 years ago. During his life he established Islam, one of the world's major religions.

Mecca was a **prosperous** and important center of trade. Muhammad was a merchant and married a wealthy widow. When he was older, he spent many nights praying in a cave in a hill near Mecca. Muslims believe that on one such night he was visited by the archangel Gabriel, who brought him God's message.

DID YOU KNOW?
All Muslims try to make a journey to Mecca at least once in their lifetime.

Muhammad believed that God wanted him to deliver God's teachings to the Arab people. These teachings are recorded in Islam's holy book, the Koran. His family and friends accepted Muhammad as the last of a series of **prophets** of God that began with Adam and continued through Abraham, Moses, and Jesus. He then began to **preach** publicly in Mecca. His religion came to be called Islam, which means "submission to God." The believers were called Muslims, which means "those who have submitted."

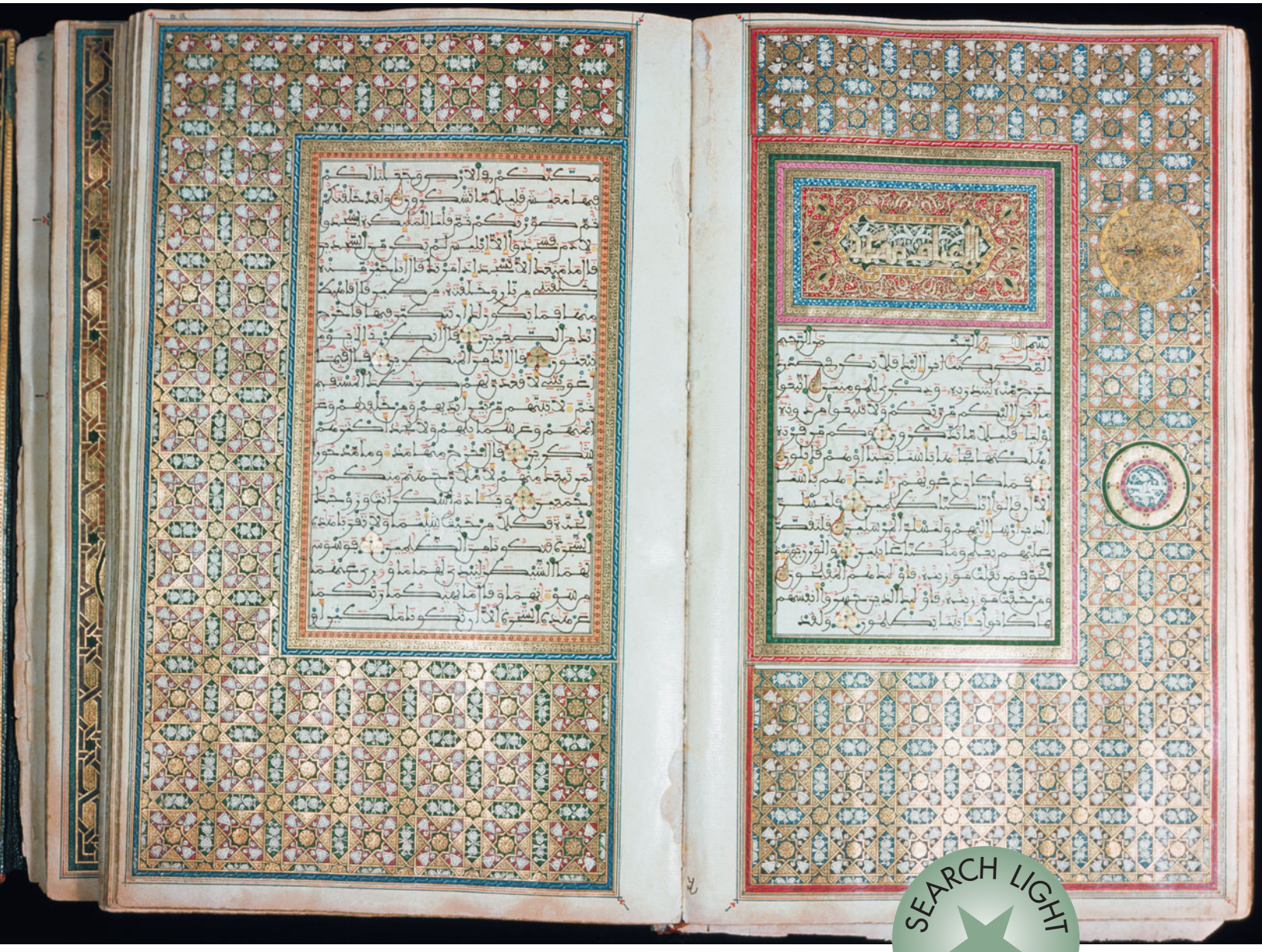
Muhammad said there was only one God, called Allah in the Arabic language. At that time most Arabs worshiped many different gods. Some people disliked Muhammad's idea and planned to kill him, so he moved to the city of Medina. In his new home he began **converting** people to Islam. After fighting a war with his enemies, Muhammad returned to Mecca and convinced all there to become Muslims. Many Arabs then became Muslims, and gradually Muhammad became the leader of Arabia.

Eventually, Islam split into different branches. All Muslims, however, look upon Muhammad as an ideal human. They honor three cities connected with him: Mecca (his birthplace), Medina (the first Muslim community), and Jerusalem (which he supposedly visited on a journey to heaven).

LEARN MORE! READ THESE ARTICLES…
GOD (VOLUME 5) • ISLAM (VOLUME 5) • MECCA (VOLUME 7)

The shrine known as the Kaaba, in the holy city of Mecca, is considered by Muslims to be the holiest place on Earth. The yearly *hajj* (or pilgrimage to Mecca) is undertaken by over a million worshipers. Daily prayers are said in the direction of Mecca and the Kaaba.
© AFP/Corbis

Answer: The messages Muhammad received from God were recorded in the Koran.



This beautifully illuminated (decorated) copy of the Koran was made in the 18th century for the sultan of Morocco.
© Corbis

SEARCH LIGHT

True or false? Muhammad wrote down the entire Koran.

Holy Book of Islam

Followers of the religion called Islam believe that the Prophet Muhammad, like earlier prophets, received messages from God, who is called Allah in Arabic. Muhammad received these messages for about 20 years. He recited them to his followers, who memorized them and wrote them down with Muhammad's guidance. Altogether the messages are called the Koran, or Qur'an, which means "**recitation**" or "reading" in Arabic.



© Paul Almasy/Corbis



© Reuters NewMedia Inc./Corbis

(Top) Young Nigerian girl reads the Koran with other students. (Bottom) Students in Islamabad, Pakistan, at a *madrasah* (Islamic school).

After Muhammad's death, Muslims were afraid the knowledge in the Koran would be lost because many of the people who had memorized the messages had also died. So under Uthman, the third caliph (Islamic ruler), the messages that make up the Koran were gathered into a single, official version.

The Koran's 114 chapters are not presented in the order they were revealed to Muhammad. The chapters are called *surah*s. All but one begin with a prayer and are written in a poetic tone.

According to the Koran, there is only one God and all Muslims should obey God and his word. The Koran also reflects a belief in the **resurrection** from the dead, in angels, in prophets, and in heaven and hell. The book also says that God's message to Muhammad is both a warning and a promise. It is a warning to those who refuse to believe in the one God. But it also promises spiritual rewards to those who believe in God and do his will.

For Muslims, the Koran is the true word of God and the final word in all matters of law and religion. It is considered to be without any error in what it teaches.

DID YOU KNOW?

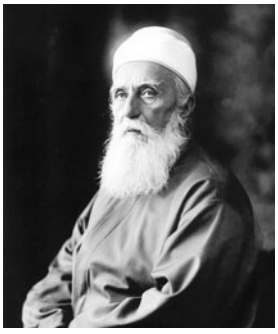
Many inside and outside parts of the Taj Mahal in India are inlaid with verses of the Koran. Calligraphy (artistic lettering) is a major Islamic art form.

LEARN MORE! READ THESE ARTICLES…
BIBLE (VOLUME 5) • CAIRO, EGYPT (VOLUME 8)
MUHAMMAD (VOLUME 5)

Answer: FALSE. Muhammad received many holy messages and recited them to his followers. The followers wrote them down and eventually collected them in one official version.

A Simple Faith

The Baha'i faith is a fairly new religion, with followers throughout the world. It grew out of Islam, the religion founded by Muhammad. After Muhammad's death, the Islamic religion split into two groups, Sunnites and Shiites. Some Muslims (as followers of Islam are called) used the title of "bab" (Arabic for "gateway") for their religious leaders. The most famous use of the term was by a Persian (Iranian) Shiite named Mirza Ali Mohammad, who declared himself "the Bab" in 1844.



Abd ol-Baha (Abdul Baha), first leader of the Baha'i faith, who is called the "Center of the Covenant" and "Architect of the Administrative Order."
Baha'i World Centre

One of the Bab's earliest followers was Mirza Hoseyn Ali Nuri, who took the name Baha Ullah. In 1863 he declared himself to be the messenger of God whom the Bab had predicted would come. Most of the Bab's followers believed him. Baha Ullah later founded the Baha'i faith. He made his eldest son, Abd ol-Baha (Abdul Baha), the leader of the Baha'i community.

The Baha'i faith teaches that a person's purpose in life is to worship God through prayer and meditation and seeks to unite all people in one religion. Those who follow this faith believe that people must also work to end racial, class, and religious unfairness. They believe that the founders of the world's great religions are all messengers of God. These messengers include Moses, the Buddha, Jesus, Muhammad, and Baha Ullah. They also believe there will be more messengers of God in the future. Followers of this religion do not drink alcohol, and they must seek permission from parents to marry.

Baha'i followers attend local spiritual assemblies to worship. There are also several impressive Baha'i temples located around the world. Baha'i services are extremely simple. There is no preaching. Instead, there are readings from the scriptures.

DID YOU KNOW?
Most Baha'i temples are nine-sided domes. These features suggest both the differences and the unity of all people.

LEARN MORE! READ THESE ARTICLES…
ARCHITECTURE (VOLUME 3) • IRAN (VOLUME 7)
ISLAM (VOLUME 5)

The Baha'i House of Worship in Wilmette, Illinois, U.S., is one of only seven throughout the world.
© Richard Hamilton Smith/Corbis



SEARCH LIGHT

Fill in the blanks:

_____ _____ was the founder of the Baha'i faith.

Answer: Baha Ullah was the founder of the Baha'i faith.

Teacher of Great Wisdom

Confucius was a Chinese teacher and thinker. He believed in learning and in people's ability to improve themselves. In China, Confucius' ideas have been important for thousands of years. There he is known as Kongzi, which means "Master Kong."

Confucianism is often called a religion, but it is really a system of **values** for living a good life. Confucius spoke more about goodness than about God. His teaching focused on how people could make themselves better in their lifetimes. He also taught about the importance of honoring one's parents and ruler.

Confucius was born to a poor family in 551 BC, more than 2,500 years ago. His father died when he was 3 years old. He was first educated by his mother at home. Later he found teachers to help him learn many subjects, including music, arithmetic, chariot riding, calligraphy (the art of handwriting), and shooting with a bow and arrow.

Confucius also studied Chinese poetry and history. All these things helped Confucius become a good teacher.

In China during Confucius' time, parents sometimes hired special **tutors** to educate their children.

SEARCH LIGHT

Confucius was mostly concerned with
a) learning and money.
b) learning and self-improvement.
c) animals and learning.



Only the wealthy could afford tutors, and poor children had fewer chances for education. Confucius wanted to make education available to all because he believed everyone needed to acquire knowledge and build character. He believed education was the best way to understand oneself and improve the world.

Confucius spent his whole life learning and teaching so that he could change society for the better. Many of his wise sayings were collected in a work called the Analects. Today many East Asian countries celebrate Confucius' birthday as a holiday.



LEARN MORE! READ THESE ARTICLES…
CHINA (VOLUME 7) • DALAI LAMA (VOLUME 5)
SOCRATES (VOLUME 4)

DID YOU KNOW?

You may have heard of one of Confucius' famous sayings: "Even in a group of three people, I can be sure of learning from at least one." What do you think he meant by that?

Answer: b) learning and self-improvement.

The Religion of Laozi

Over 2,500 years ago, there lived a wise **philosopher** in China. His name was Laozi. Laozi (also spelled Lao-tzu) lived in a time of battles and great social troubles. His teachings offered a way to bring nature and human life into harmony.

The teachings of Laozi became the basis of the religion known as Daoism (or Taoism). According to Daoist tradition, Laozi wrote a book on Daoism known as *Daodejing*, or "Classic of the Way of Power." The main purpose of this book was to advise the king on how to rule his kingdom.



EB Inc.

The *Yin* and *Yang* symbol, suggesting the way opposites join to make up the wholeness of life.

Today Laozi is honored as a saint by his followers in mainland China, Taiwan, Vietnam, Japan, and Korea. The followers of Daoism believe in the Dao (meaning "way"), which is understood as a natural force and the source of all things in the universe. In Daoism death is a natural process and results in a person's returning to his or her source, the Dao.

Daoism states that a human being is part of a universe based on the principles of *Yin* and *Yang*. *Yin* and *Yang* mean the "dark side" and "sunny side" of a hill. Together they create the wholeness of nature. A human being carries both *Yin* and *Yang* in his or her body and must balance them in daily activities through personal discipline.



Daoism began in
a) China.
b) Vietnam.
c) Korea.

While Daoism teaches the freedom of the individual, it also stresses the duties of the community toward its people and the duties of government toward its citizens. This is just one more example of the balance of *Yin* and *Yang*.

Daoism and Confucianism are very different systems. But together, for thousands of years, they have been major influences on Chinese culture.

LEARN MORE! READ THESE ARTICLES…
BUDDHISM (VOLUME 5) • CHINA (VOLUME 7) • CONFUCIUS (VOLUME 5)

During the Chinese New Year celebration, Daoists in Kowloon pray and make offerings at the Wong Tai Sin temple.
© Dave G. Houser/Corbis



DID YOU KNOW?

In Daoist belief, *Yin* is thought of as earth, female, and dark. It is represented by the tiger, the color orange, and a broken line. *Yang* is thought of as heaven, male, and light. It is represented by the dragon, the color azure, and an unbroken line.

Answer: a) China.



In Shinto tradition, Inari is the god of rice cultivation and merchants. The Fushimi Inari shrine near Kyoto, Japan, is one of the most famous of many Inari shrines.
© David Samuel Robbins/Corbis

SEARCH LIGHT

True or false? In Shinto, forces of nature may be worshiped.

A Very Japanese Religion

Nearly all the followers of the Shinto religion are natives of a single country: Japan. There is no clear indication when Shinto began. It is basically as ancient as the Japanese people themselves.

Shinto is a loose set of beliefs and attitudes held by most Japanese about themselves, their families, and their ancestors. Shinto has no central holy book, and no single group or individual created the religion. But its beliefs were strongly influenced by several Eastern religions. These include Confucianism, Daoism, and Buddhism. In fact, most of Shinto followers are also active Buddhists.



Shinto monk visits shrine on Mount Haguro in Japan.
© Chris Rainier/Corbis

Shintoists honor and worship powers called *kami*. These may be gods, forces of mercy, certain ancestors, or other powers considered to be **divine**. *Kami* can't be known or explained. But they are believed to be the source of human life. And they guide people to live in harmony with the truth.

Each family or community has a specific *kami* that acts as the group's guardian. Many *kami* are connected to objects and creatures of nature, as well as to particular areas and family groups. Believers' own ancestors are also deeply honored and worshiped.

Unlike many religions, Shinto has no regularly scheduled services or meetings for worship. Worshipers may visit their *kami*'s **shrines** (or others) anytime they want to—some go every day. Several festivals and ceremonies during the year bring believers together. Shintoists celebrate births and weddings in special ceremonies.

The major Shinto celebrations are the Spring Festival, the Autumn Festival (a kind of harvest festival), and the Annual Festival (New Year celebration) with a Divine Procession, or parade. Each grand festival has a specific order of **rituals** to be performed.

DID YOU KNOW?
In Shinto mythology, the sun goddess Amaterasu has long held a special place. She is the guardian *kami* of the Japanese royal house.

LEARN MORE! READ THESE ARTICLES…
BUDDHISM (VOLUME 5) • CONFUCIUS (VOLUME 5)
JAPAN: MODERN NATION OF ANCIENT TRADITIONS (VOLUME 7)

Answer: TRUE.



DID YOU KNOW?

The Hindus consider the Ganges River, or Ganga, a holy place. Hundreds of thousands of people bathe in the Ganges during a festival called *Kumbh Mela*.

Ancient Religion of South Asia

Hinduism is a religion, but it is also a culture and a way of life. More than 800 million people, mostly in India and Nepal, practice Hinduism.

The roots of Hinduism go back more than 3,000 years. Since that time it has grown into many different sects. The beliefs of one Hindu might not be the same as those of another. But Hinduism is generally very accepting of differences between these subgroups.



Hindu devotees pray as they bathe in the holy Ganges River.
© AFP/Corbis

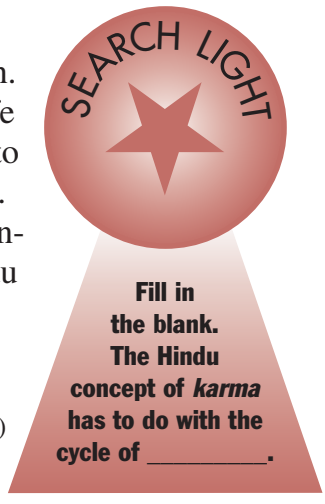
Brahman is the one supreme power in Hinduism, but most Hindus believe there are many gods. Most important among these gods are Vishnu, Shiva, Brahma, and Shakti. Each of the different gods has influence over a different part of life. For example, the elephant-headed god Ganesha helps remove difficulties. Lakshmi is the goddess of wealth. Shiva is one of the main and most complex Hindu gods. He both destroys things and rebuilds them.

Meditation is a very important part of Hinduism. It encourages a relaxation and concentration that frees the mind. Other forms of worship include chanting hymns and performing small **sacrifices** to the gods. There are also many holy books in Hinduism. The most famous and important one is the Bhagavadgita.

Most Hindus believe that human souls are reborn after death. The Hindu law of *karma* says that what a person does in one life affects his or her future life. In Hinduism the purpose of life is to do good things in order to free oneself from the cycle of rebirth.

Another important Hindu view is *ahimsa*, which means "non-injury" to all living things. This has led to the well-known Hindu respect for the cow.

LEARN MORE! READ THESE ARTICLES…
MAHATMA GANDHI (VOLUME 4) • INDIA (VOLUME 7) • JAINISM (VOLUME 5)

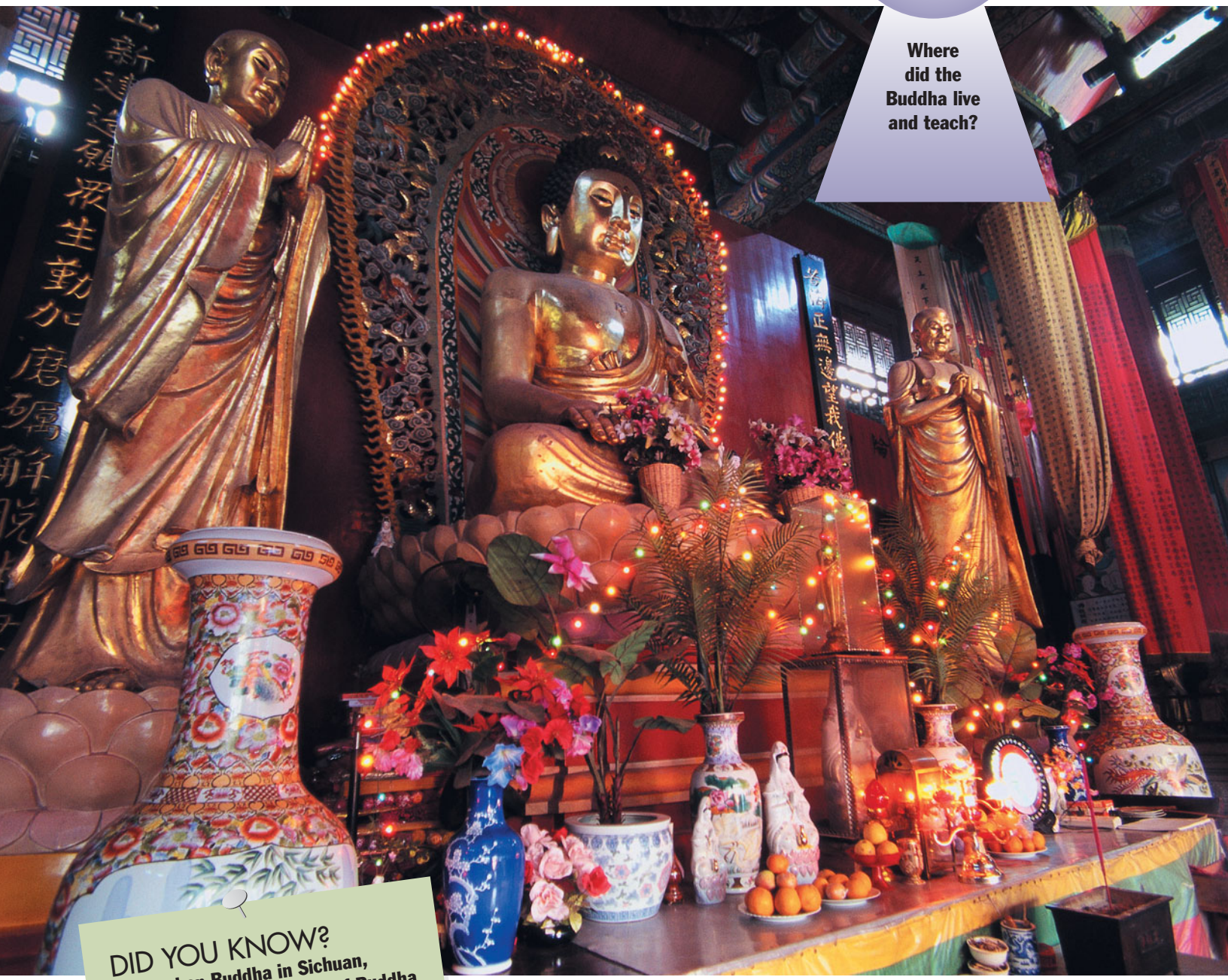


The major Hindu goddess Kali is shown here in the Sri Veeramakaliamman Temple in Singapore. Like many Hindu gods and goddesses, Kali is described as having opposing qualities. For instance, Kali is linked with both violence and motherly love.
© Ted Streshinsky/Corbis

Answer: The Hindu concept of *karma* has to do with the cycle of rebirth.

SEARCH LIGHT

Where did the Buddha live and teach?



DID YOU KNOW?

The Leshan Buddha in Sichuan, China, is the tallest statue of Buddha in the world, even though it is in a seated position. It is over 233 feet tall. More than 100 people can stand on one of the statue's feet.

In southwestern China, Buddhists may worship at temples such as this one in Kunming, in Yunnan province.
© Royalty-Free/Corbis

The Teachings of the Buddha

The religion that developed in ancient India around the teachings of Siddhartha Gautama, the Buddha, is called Buddhism. His teachings offered a way to achieve **Enlightenment**, and he attracted many followers. After his death, temples were built in his honor, and his religion spread through much of Asia, especially China, Korea, and Japan. It has spread to Western countries too.

The Buddha taught about the Four Noble Truths, which became the basis of Buddhism. The First Noble Truth is that life is made up of pain and suffering. The Second Noble Truth is that all suffering is caused by a person's desires, by wanting. The Third Noble Truth is that a person can be free of these self-centered desires. The freedom from desire is called Nirvana, or Enlightenment. The Fourth Noble Truth is called the Eightfold Path.

© Alison Wright/Corbis



© Richard Bickel/Corbis



(Top) Buddhist nuns in Dharmshala, India, where Tibet's Dalai Lama and others fled from their homeland in 1959. (Bottom) Student monks holding bowls to receive alms (offerings) in Bagan, Myanmar.

Following the Eightfold Path means that a person follows a Middle Way, between a life of luxury and a life of unnecessary poverty. Following this path eventually leads to a life free of suffering. The eight parts of the Path are: right understanding (of the Four Noble Truths), right thought, right speech, right action (including nonviolence), right way of living (occupations in line with Buddhist beliefs), right effort, right mindfulness (attention), and right concentration (**meditation**).

The Buddha's teachings weren't written down until 300 years after his death. By then the religion had split into a number of groups, each with a different understanding of the Buddha's teachings. And today Buddhist monks, nuns, and priests carry the teachings forward as they understand them.

LEARN MORE! READ THESE ARTICLES…
BASHO (VOLUME 3) • KATHMANDU (VOLUME 7) • SHINTO (VOLUME 5)

Answer: The Buddha lived and taught in ancient India.

The Enlightened One

The term "buddha" means "**enlightened** one"—one who understands truths beyond the everyday world. It is not a name but rather a title of respect. "The Buddha" or the name Gautama refers to the founder of the religion called Buddhism. If you see an image of him, he looks peaceful, wise, and full of love.

DID YOU KNOW?
The teachings of the world's great religious leaders often overlap. The Buddha taught that people should "consider others as yourself." Similarly, Jesus Christ taught that people should "do unto others as you would have others do unto you."

Gautama was the son of a king. He was born long ago near what's now the border of Nepal and India. His personal name was Siddhartha. Before his birth, his mother had a strange dream about a beautiful white elephant. The holy men predicted that the queen would have a son who would grow up to be either a king or a buddha.

When he was 29 years old, Siddhartha saw four sights that left him thinking about the purpose of life. He saw a weak old man with a walking stick. Another day he saw a sick man, and another day a dead body. Then Siddhartha saw a holy man looking very calm.

Siddhartha decided to give up the life of a prince. He left his home in search of truth. At one point he decided to sit under a tree until he became enlightened. He wanted to understand the truth about the spirit and about life. Finally, at the age of 35, Siddhartha reached enlightenment. He became the Buddha. The tree he sat under is called the *bodhi* ("enlightenment") tree.

Buddha spent the rest of his life teaching people a way of thought and living that involved **meditation** and a freedom from suffering. While he did not claim to be a god, some people do pray to him. Many people live their lives according to Buddhist teachings.

SEARCH LIGHT

Fill in the blanks. The word "buddha" means "_____ _____."

LEARN MORE! READ THESE ARTICLES…
ASHOKA (VOLUME 4) • BUDDHISM (VOLUME 5) • INDIA (VOLUME 7)

BUDDHA

Answer: The word "buddha" means "enlightened one."



DID YOU KNOW?

In 1989 the present Dalai Lama was awarded the Nobel Prize for Peace. This honored his nonviolent efforts to end Chinese domination of Tibet.

SEARCH LIGHT

Which of the following seems a good translation of the title Dalai Lama?
a) religious leader
b) yellow teacher
c) wisest teacher

Tibet's Great Teacher

The word *lama* means "teacher" in the Tibetan language. Lamas are religious leaders who are usually great teachers or heads of **monasteries**. In the Mongolian language *dalai* means "ocean" and stands for a vast "sea of wisdom." The Dalai Lama is head of the leading Tibetan Buddhist group called the Yellow Hat order. He's also the religious leader of Tibet. Until 1959 the Dalai Lama was the head of the Tibetan government as well.



Children observing the 14th Dalai Lama as he visits Sarnath, Uttar Pradesh, India, in January 2003.
AP/Wide World

Tibetans believe that some lamas are reborn as other lamas. The Dalai Lama is considered the human form of Avalokiteshvara. Avalokiteshvara is a *bodhisattva* (a Buddha-to-be) known especially for kindness and mercy toward humans. The first Dalai Lama was Dge-'dun-grub-pa. All the following Dalai Lamas are believed to be his reincarnations (rebirths).

How do the Tibetans know that the Dalai Lama has been reborn? The rebirth may happen days or even years after a Dalai Lama has died. Special attention is paid to a dying Dalai Lama's words and to any unusual signs during his death. Also, one special priest is believed to have visions and other **mystical** knowledge about a newly reborn Dalai Lama. A careful search based on these clues takes place. Often two or more boys may be examined before the new Dalai Lama is finally announced. The new Dalai Lama is trained at a monastery from an early age. A chosen adult rules the state until the young Dalai Lama has been educated.

Since 1959 the present (14th) Dalai Lama has lived in **exile** in Dharmshala, India. He and some followers left after a failed rebellion by the Tibetan people against the Chinese government, whose army had entered Tibet in 1950. Since then the Dalai Lama has worked hard but peacefully for Tibet's independence.

LEARN MORE! READ THESE ARTICLES…
BUDDHISM (VOLUME 5) • CHINA (VOLUME 7) • MONASTICISM (VOLUME 5)

The present Dalai Lama teaches, lectures, and speaks to thousands of people worldwide. If he had not been exiled from Tibet, he would have led a quiet and protected life. But today he is a popular and well-spoken representative of the Buddhist religion and Tibetan independence.
AP/Wide World

Answer: c) wisest teacher



DID YOU KNOW?

Jain nonviolence includes insects. Many monks own nothing but a small broom to sweep insects from their paths and a mouth-and-nose covering to prevent them from swallowing or inhaling small insects.

Teaching Nonviolence

SEARCH LIGHT

True or false? Jains are vegetarians.

Jainism is one of three major ancient religions of India, along with Buddhism and Hinduism.

The term Jainism comes from the word Jina, which means "conqueror." Jains believe that it is possible to fight earthly desires and physical needs to reach a stage of perfect understanding and purity. A person who reaches this stage is called a Jina. Jinas make a path for others to follow to reach **perfection**, or salvation. They do this by teaching the true knowledge, faith, and practice. Another name for a Jina is a Tirthankara. Jains believe that the religion started with 24 Tirthankaras. The last was Mahavira. He probably lived about 2,500 years ago, at the same time as Siddhartha Gautama, who founded Buddhism.

In Jainism all living things have value. Jains believe in *ahimsa*, or nonviolence, which means they cannot harm any living creature. As a result of this belief, Jains are **vegetarians**.

Jainism has both **lay** followers (regular believers) and monks and nuns. All Jains are forbidden to lie, steal, and eat meals at night. But Jain monks and nuns also follow other very strict rules as they try to achieve a perfect inner state. They do not marry, and they keep few or no possessions. Most Jains are lay followers. They may marry, but they are expected to avoid certain foods and to keep few possessions. They are also expected to avoid unnecessary travel and pleasure, to **fast**, and to serve their fellow Jains, especially the monks and nuns and the poor.



Jain worshiper pouring milk offering on huge Indian statue of Bahubali, first human of this world-age to gain perfection and release from worldly needs.
© Chris Lisle/Corbis

Many lay followers also worship or make offerings to past Jinas and to various gods and goddesses. There are about 4 million followers of Jainism today in India and 100,000 in other countries.

LEARN MORE! READ THESE ARTICLES…
ASIA (VOLUME 7) • BUDDHISM (VOLUME 5) • INDIA (VOLUME 7)

Each of the 24 Jinas has a special symbol, or sign. A statue of Mahavira displays his sign, which is the lion.
© Dinodia Photo Library

Answer: TRUE. Jains do not eat meat.

A South Asian Religion

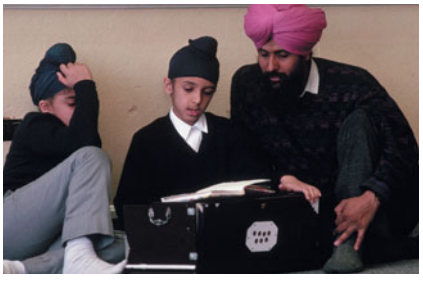
Sikhism is a religion founded by Guru Nanak in the late 15th century in India. The word "guru" means "teacher." The word "Sikh" means "disciple" or "learner."

Guru Nanak was the first Sikh guru. There were nine gurus after him. The fifth Sikh guru, Arjan, wrote down his own **hymns** and those of the earlier gurus. The last guru, Gobind Singh (originally called Gobind Rai), added his own hymns. He said that after his death the book in which the hymns were written would take the place of the Sikh guru. This became the holy book of the Sikhs, called the *Adi Granth*, or *Granth Sahib*.

SEARCH LIGHT

Which of the following is the holy book of the Sikhs?
a) Guru Nanek
b) *Adi Granth*
c) Amritsar

Sikhs call their places of worship *gurdwara*s ("gateways to the guru"). The chief *gurdwara* is the Golden Temple in Amritsar, India. Sikhs eat together in the *gurdwara* as a sign of the equality of all kinds of people.



Teacher helping two Sikh boys with lessons.
© Annie Griffiths Belt/Corbis

Sikhism includes **aspects** of Hinduism. From Hinduism comes belief in a cycle of birth, death, and rebirth. Another Hindu feature is the concept of *karma*, which says that a person's previous life affects the present one. Sikhism also has beliefs that differ from Hinduism. Sikhism teaches that God is the One, the Truth, the Creator, immortal, formless, and ever-present.

Most Sikh boys and girls will become part of the Khalsa, the Sikh brotherhood that swears special devotion to the guru. After that, men must not cut their hair, must wear short pants (even under their longer outer pants) and a steel bracelet, and must carry a comb and a sword. Sikhs are not permitted to use liquor, tobacco, or drugs.

LEARN MORE! READ THESE ARTICLES…
HINDUISM (VOLUME 5) • INDIA (VOLUME 7) • ISLAM (VOLUME 5)

DID YOU KNOW?

Sikhs treat their holy book, the *Adi Granth*, as a living guru. The book is awakened in the morning and draped in fine things. Followers place offerings before it. It is put to rest in the evening.



Much of Sikh worship is an individual activity. This woman—part of a Sikh settlement in New Mexico, U.S.—is meditating in her home.
© Buddy Mays/Corbis

Answer: b) *Adi Granth*



DID YOU KNOW?

Dance and drama play an important part in the activities of a shaman. The north Asian shaman becomes a fascinating sight, with his cloak floating in the light of a fire. He becomes actor, dancer, singer, and storyteller.

The Spirit World

A shaman is a person thought to have extraordinary powers. "Shaman" means "he who knows." It is believed that a shaman can predict what's going to happen in the future. A shaman goes into a trance to enter the spirit world and performs special rituals to cure sick people. Because of this, the shaman acts as the people's doctor and priest.

Religious beliefs in which the shaman plays a major role are called "shamanism." The believers don't refer to their belief this way, however. Shamanism is simply a term that groups together certain religious beliefs.



Shamans from Goshal village in northern India being greeted by Manali village elder (left) during festival.
© Lindsay Hebberd/Corbis

In general, followers of shamanism believe that everyone has a soul. A person falls ill when the soul leaves the body for some reason. It then becomes the job of the shaman to enter the world of spirits, get hold of the runaway soul, and bring it back to the body of the sick person.

It is believed that the spirits choose the man or woman who is to act as a shaman. The spirits first tell the person in a dream that he or she has been chosen. If the person refuses to become a shaman, he or she is made sick by the spirit until he or she gives in. People chosen as shamans typically have some unusual feature. For example, they might have an extra tooth or an extra finger.

People in very different parts of the world practice shamanism or have religions with very similar features. These include groups in North and South America, India, Australia, the Pacific Islands, and China. The greatest number of people who practice a pure shamanism live in northern Asia, mostly in the Russian region of Siberia.

LEARN MORE! READ THESE ARTICLES…
AMERICAN INDIANS (VOLUME 4) • RUSSIA (VOLUME 6) • VODUN (VOLUME 5)

SEARCH LIGHT

True or false? Shamans often have an unusual physical feature.

On the Southeast Asian island of Borneo, some people practice shamanistic traditional religions. Here a ceremonial dance is performed by a shaman of the Dayak people.
© Charles & Josette Lenars/Corbis

Answer: TRUE.

Religion of Magic and Spirits

Many people in Haiti believe in the religion known as Vodun or, among most outsiders, Voodoo. Vodun came to Haiti more than 300 years ago when large numbers of people from Africa were taken there to work as slaves. As time passed, the beliefs of the African slaves mingled with those of Haiti's French plantation owners, who were mostly Roman Catholics.

SEARCH LIGHT

Vodun is a mixture of African beliefs and what other religion?
a) Judaism
b) Hinduism
c) Roman Catholicism

Those who practice Vodun believe that there is one god and many kinds of spirits, called *loa*. The purpose of Vodun is to serve these spirits and keep their goodwill. The spirits serve as a link between people and the god whom the Haitians call Bondye.

During ceremonies the *loa* may take control of (possess) a believer. That person then may do **ritual** dances, accept animal **sacrifice** for the spirit, and offer important advice to others. Otherwise, the *loa* is a combination guardian angel and **patron saint**.

A Vodun priest is called a *houngan*, and a priestess (female priest) is called a *mambo*. They lead ceremonies in which people play drums, sing, dance, pray, prepare food, and sacrifice animals. The leaders also act as counselors, healers, and expert protectors against sorcery or witchcraft. Important Vodun spirits are honored on feast days of different Roman Catholic saints, and the spirits of ancestors are honored on All Saint's Day and All Souls' Day.

Many Haitians believe in zombis. A zombi is either a dead person's bodiless soul that is used for magical purposes or a dead body raised magically from the grave to be a slave.

DID YOU KNOW?
Hollywood horror movies did much to create misunderstandings about "Voodoo" and fear of its followers. It has often been shown as an evil and terrifying religion.

LEARN MORE! READ THESE ARTICLES…
CHRISTIANITY (VOLUME 5)
SHAMANISM (VOLUME 5) • WEST INDIES (VOLUME 9)

These women in Togo, in West Africa, are being received into the Vodun tradition in a secret ritual ceremony. Many people were taken as slaves from Togo to the West Indies, where Vodun is also a major religious tradition.
© Caroline Penn/Corbis

Answer: c) Roman Catholicism

GLOSSARY

alas unfortunately or sadly

aspect part, feature, or quality of something

commandment law or rule for living

conservative tending to safeguard existing views, conditions, or traditions

convert to win over to a new or different belief

crusade campaign or cause taken up with passion and belief

dismay sadness or disappointment

dispute argue with

divine holy, godlike, or concerning God

Enlightenment remarkably clear state of awareness, understanding, and inner peace

exile (noun) banishment or official separation

famine drastic food shortage, often ending in starvation for many

fast (noun) period of time when a person gives up or limits eating, often for religious reasons

flask container for liquid

fleece wool of an animal such as a sheep or a goat

Gospel one of the first four New Testament books, telling of the life, death, and resurrection (raising from the dead) of Jesus Christ

hare rabbit-like animal

hermit person who has withdrawn from society to live alone

hymn song of joy or praise, often to a god

lash tie or attach

layperson (adjective: lay) person who belongs to a religious group but is not part of its official clergy (as a priest or minister is)

magistrate official who looks after the laws of a particular area

meditation a quiet focused concentration, meant to calm and clear the mind; sometimes used to reach a spiritual awareness

monastery a house for people who have taken religious vows, especially for monks

mystical having to do with a person's direct spiritual connection with a god or other supernatural power

myth story that unfolds part of the world view of a people or is used to explain a belief or natural event

order religious community, usually requiring that its members take solemn vows promising duty and faithfulness

orthodox strictly obeying traditional rules, customs, or beliefs

overseer person in charge of others who are carrying out a task

parka hooded heavy jacket for very cold weather

patron saint holy person who is chosen to specially protect a group or place

perfection state of being without flaw or error

philosopher thinker or seeker after truth and understanding of basic concepts

pilgrimage journey made to a holy place to worship there

preach to deliver a sermon; to urge to accept an idea or course of action

Promised Land in Judaism, the land of Canaan, which God promised to Abraham and Moses if the Hebrew people promised to worship only him

prophet a holy person who acts as a messenger between God and people; also, a gifted person with the ability to accurately predict future events

prosperous wealthy

psalm a sacred song or poem used in worship; especially, one of the biblical poems collected in the Book of Psalms

recitation act of speaking or reading a piece of literature aloud

resurrection raising from the dead

ritual the required form for a ceremony

sacrifice an act of offering something of value to save or make up for something else

salvation rescue from the power and effects of sin

scour scrub hard

shrine place where honor or worship is offered to a saint or deity

staff wooden walking stick

supreme highest, best, and without limit

text written work

tolerate put up with

tradition custom; habit of belief or of living

tutor a private teacher

twilight the light between the end of day and the beginning of night; also, the name for that time of day

values morals or ideals

vegetarian a person who does not eat meat

worship (verb) to honor and show surrender and obedience to a god or supernatural power



I N D E X

Abraham (biblical person) *page* **52**

Aesop's fables *page* **24**

ahimsa (religion)
Hinduism *page* **79**
Jainism *page* **87**
LEARN MORE *look under* nonviolence

Allah (name for God)
Islam *page* **64**
Koran *page* **69**
Muhammad *page* **67**

"Ananse and the Wisdom Pot" (folktale from Ghana) *page* **13**

Arthur (legendary king)
Knights of the Round Table *page* **33**

astrology
Did you know? *page* **49**

Atlas (Greek myth) *page* **29**

Baha'i (religion) *page* **70**

Bible (holy book) *page* **63**
Did you know? *page* **54**
Jesus Christ *page* **58**
Mary *page* **61**
myths *page* **7**
LEARN MORE *look under* Abraham; Jesus Christ; Koran; Mary; Moses

brahman (Hinduism)
Hinduism *page* **79**

Buddha, *also called* Gautama, *or* Siddhartha (founder of Buddhism) *page* **82**
religion photograph *page* **42**
LEARN MORE *look under* Buddhism; Dalai Lama; monasticism

Buddhism (religion) *page* **81**
Shinto *page* **77**
LEARN MORE *look under* Buddha; Dalai Lama; monasticism

Bunyan, Paul (legendary person) *page* **39**

Christ: *look under* Jesus Christ

Christianity (religion) *page* **57**
God *page* **44,** photograph *page* **44**
LEARN MORE *look under* Abraham; Bible; Jesus Christ; Mary; monasticism; Moses

Christmas (holiday)
Christianity *page* **57**

Confucius, *also called* Kongzi (founder of Confucianism) *page* **72**
Shinto *page* **77**

Crusades (Christianity)
religion *page* **42**

Cyclopes (legendary giants)
legend of Odysseus *page* **27**

Dalai Lama (Tibetan leader) *page* **85**
LEARN MORE *look under* Buddhism; monasticism

Daoism, *also called* Taoism (religion and philosophy) *page* **74**
Shinto *page* **77**

Dead Sea Scrolls
Did you know? *page* **62**

dragons, *also called* long *page* **9**

Easter (holiday)
Christianity *page* **57**

Enlightenment, *also called* Nirvana (religion)
Buddha *page* **82**
Buddhism *page* **81**

evil: *look under* good and evil

Excalibur (legendary sword)
Knights of the Round Table *page* **33**

fables *page* **7**
LEARN MORE *look under* Aesop's fable

fairy tales
myths *page* **7**

fasting (religious practice)
Islam *page* **64**

folktales *page* **7**
LEARN MORE *look under* "Ananse and the Wisdom Pot"; "How Kangaroo Got His Tail"; "Monkey Court, The"; "Poor Man and the Flask of Oil, The"; "Rabbit Throws Away His Sandal"; "Tiger in the Trap, The"; "Why Possum's Tail Is Bare"; "Yeh-Shen"

God *page* **44**
Abraham *page* **52**
Christianity *page* **57**
Hinduism *page* **79**
Islam *page* **64**
Jesus Christ *page* **58**
Judaism *page* **50**
Koran *page* **69**
Moses *page* **54**
Muhammad *page* **67**
Shinto *page* **77**
Sikhism *page* **88**
Vodun *page* **92**
Zoroastrianism *page* **49**

"Golem of Prague, The" (Jewish legend) *page* **30**

good and evil
Zoroastrianism *page* **49**

Gospels (sacred text)
Bible *page* **63**
Jesus Christ *page* **58**

Greek mythology
myths *page* **7**
LEARN MORE *look under* Atlas; "Odysseus and the Cyclops"

gurdwaras (places of worship)
Sikhism *page* **88**

gurus (teachers)
Sikhism *page* **88**

hajj (Islam)
Islam *page* **64**
Kaaba photograph *page* **66**

Hanukkah (Jewish holiday)
Judaism photograph *page* **50**

Hinduism (religion) *page* **79**
God *page* **44**
myths *page* **7**

holy wars
religion *page* **42**

"How Crow Brought Daylight to the World" (Inuit myth) *page* **34**

"How Kangaroo Got His Tail" (Australian folktale) *page* **23**

Islam (religion) *page* **64**
God *page* **44**
LEARN MORE *look under* Abraham; Koran; Muhammad

Israel, *also called* "Promised Land" (ancient people and kingdom)
Abraham *page* **52**
Bible *page* **63**
Judaism *page* **50**

Jainism (religion) *page* **87**

Jerusalem (city in Israel)
Islam photograph *page* **64**
Judaism photograph *page* **51**
Muhammad *page* **67**

Jesus Christ *page* **58**

jihads (religion): *look under* holy wars

Judaism (religion) *page* **50**
God *page* **44**
LEARN MORE *look under* Abraham; Bible; "Golem of Prague, The"; Moses

karma (religion)
Hinduism *page* **79**
Sikhism *page* **88**

Knights of the Round Table (British legend) *page* **33**

Koran, *also called* Qur'an (holy book) *page* **69**

Islam *page* **64**
LEARN MORE *look under* Bible; Muhammad

kosher (Judaism)
Did you know? *page* **51**

legends *page* **7**
LEARN MORE *look under* Bunyan, Paul; dragons; "Golem of Prague, The"; Knights of the Round Table; "Odysseus and the Cyclops"

life
Buddhism *page* **81**
Confucius *page* **72**
God *page* **44**

Madonna, the (mother of Jesus): *look under* Mary

Mary, *also called* Saint Mary, *or* the Madonna, *or* Virgin Mary (mother of Jesus) *page* **61**

Mecca (city in Saudi Arabia)
Islam *page* **64**
Kaaba photograph *page* **66**
Muhammad *page* **67**

Medina (city in Saudi Arabia)
Did you know? *page* **65**
Muhammad *page* **67**

meditation
Baha'i *page* **70**
Buddhism *page* **81**
Hinduism *page* **79**
monasticism *page* **46**

menorahs (candelabra)
Judaism photograph *page* **50**

Merlin (legendary magician)
Knights of the Round Table *page* **33**

Messiah (religion)
Did you know? *page* **58**

monasticism (religion) *page* **46**
Buddhism photograph *page* **81**
Jainism *page* **87**
Shinto photograph *page* **77**
LEARN MORE *look under* Buddha; Dalai Lama

Moni Mekhala and Ream Eyso (Cambodian myth) *page* **16**

"Monkey Court, The" (Nigerian folktale) *page* **10**

monotheism
God *page* **44**

Moses (biblical person) *page* **54**

mosques (places of worship)
Islam *page* **64,** photograph *page* **65**

Muhammad (prophet of Islam) *page* **67**
Islam *page* **64**

Muslims: *look under* Islam

myths *page* **7**
Did you know? *page* **77**
God *page* **44**
LEARN MORE *look under* Atlas; "How Crow Brought Daylight to the World"; Moni Mekhala and Ream Eyso

New Testament (Bible)
Bible *page* **63**
Christianity *page* **57**
Jesus Christ *page* **58**
Mary *page* **61**

Nirvana (religion): *look under* Enlightenment

nonviolence
Buddhism *page* **81**
Did you know? *page* **84**
Hinduism *page* **79**
Jainism *page* **87**

"Odysseus and the Cyclops" (Greek legend) *page* **27**

Old Testament (Bible)
Bible *page* **63**
Judaism *page* **50**

Pentateuch (sacred text): *look under* Torah

Pillars of Islam
Islam *page* **64**

polytheism
God *page* **44**

"Poor Man and the Flask of Oil, The" (South Asian folktale) *page* **18**

prayer
Islam *page* **64,** photograph *page* **64,** photograph *page* **65**

"Promised Land" (biblical place): *look under* Israel

Qur'an (religious book): *look under* Koran

"Rabbit Throws Away His Sandal" (Mayan folktale) *page* **40**

Ramadan (Islam)
Islam *page* **64,** photograph *page* **64**

reincarnation
Dalai Lama *page* **85**
Hinduism *page* **79**
Sikhism *page* **88**

religion *page* **42**
Did you know? *page* **82**
LEARN MORE *look under* Baha'i; Buddhism; Christianity; Confucius; Daoism; Hinduism; Islam; Jainism; Judaism; shamanism; Shinto; Sikhism; Vodun; Zoroastrianism

resurrection (religion)
Jesus Christ *page* **58**
Koran *page* **69**

Round Table (British legend): *look under* Knights of the Round Table

shamanism (religion) *page* **91**

Shinto (religion) *page* **77**

Sikhism (religion) *page* **88**

soul
shamanism *page* **91**
Zoroastrianism *page* **49**

spirits (religious beings)
shamanism *page* **91**
Vodun *page* **92**

suffering
Buddhism *page* **81**

synagogues (places of worship)
Judaism *page* **50**

Taoism (religion and philosophy): *look under* Daoism

temples (religious buildings)
Baha'i *page* **70,** photograph *page* **71**
Buddhism photograph *page* **80**
Daoism photograph *page* **75**

Ten Commandments (Old Testament)
Judaism *page* **50**
Moses *page* **54**

"Tiger in the Trap, The" (Korean folktale) *page* **21**

Torah, *also called* Five Books of Moses, *or* Law, *or* Pentateuch (sacred text)
Bible *page* **63,** photograph *page* **63**
Judaism *page* **50,** photograph *page* **51**
Moses *page* **54**

Trinity (God)
Christianity *page* **57**

Vodun, *also called* Voodoo (religion) *page* **92**

"Why Possum's Tail Is Bare" (Cherokee folktale) *page* **36**

wisdom
Confucius *page* **72**
LEARN MORE *look under* Aesop's fables; "Ananse and the Wisdom Pot"

worship (religion)
Baha'i *page* **70**
Christianity *page* **57**
Hinduism *page* **79**
Islam *page* **64**
Jainism *page* **87,** photograph *page* **87**
Judaism *page* **50**
Roman Catholicism photograph *page* **43**
Shinto *page* **77**
Sikhism *page* **88,** photograph *page* **89**
LEARN MORE *look under* temples

Yahweh (name for God)
Judaism *page* **50**
Moses *page* **54**

"Yeh-Shen" (Chinese folktale) *page* **14**

Yin and Yang (philosophy)
Daoism *page* **74,** illustration *page* **74**

Zoroastrianism (religion) *page* **49**

Read about the stories, faiths, beliefs, and traditions long cherished around the world in FOLKLORE AND RELIGIONS


Volume 1: The Earth and Earth Sciences


Volume 2: Physical Sciences and Technology


Volume 3: The Arts


Volume 4: People in History


Volume 5: Folklore and Religions


Volume 6: Europe


Volume 7: Asia, Australia, and New Zealand


Volume 8: Africa


Volume 9: The Americas


Volume 10: Plants


Volume 11: Birds, Insects, Reptiles, and Aquatic Life

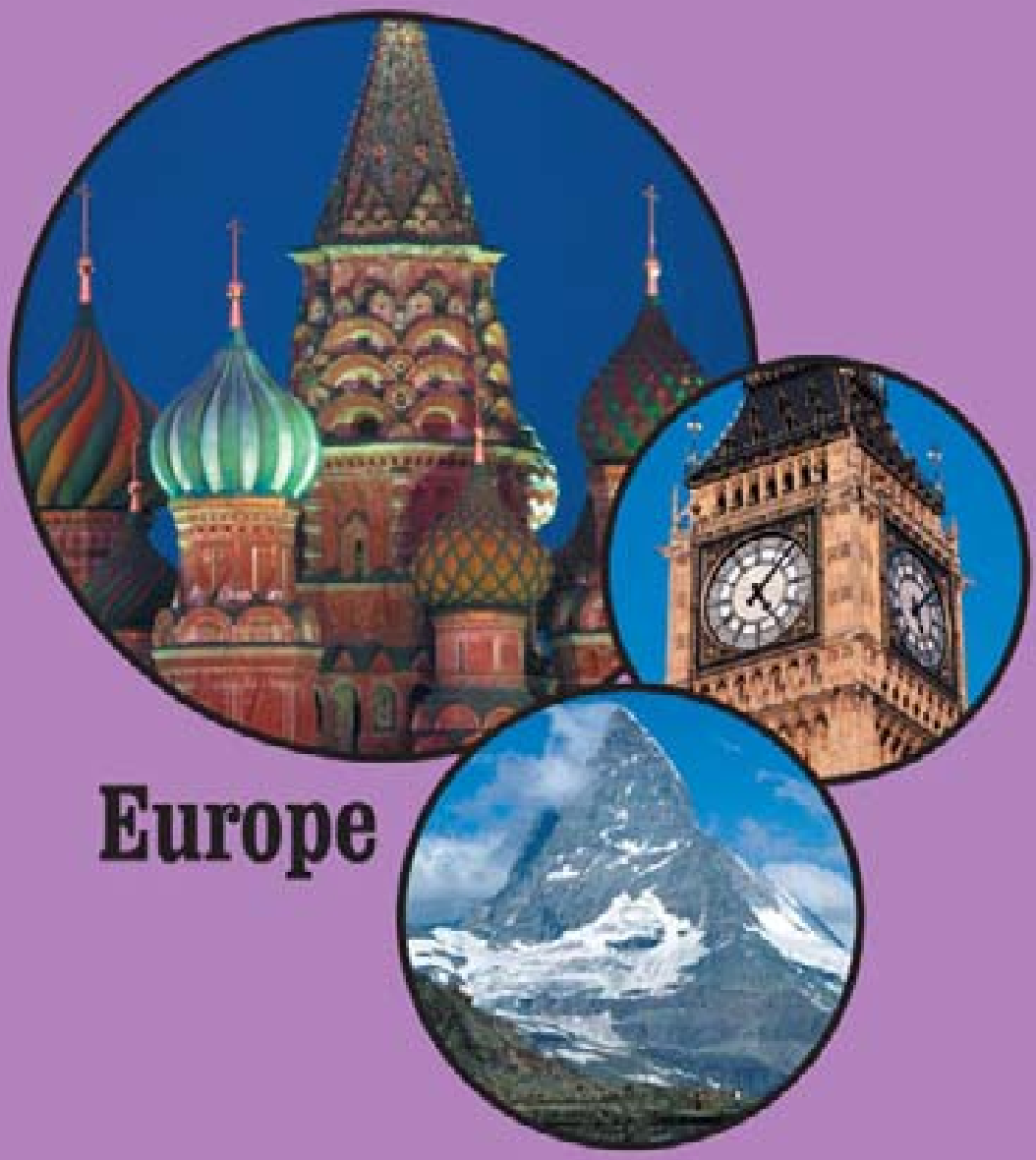

Volume 12: Mammals


Volume 13: Reference Guide and Index



AV

My First Britannica



Europe

6

My First Britannica

Europe

6



Chicago London New Delhi Paris Seoul Sydney Taipei Tokyo

© 2008 by Encyclopædia Britannica, Inc.

International Standard Book Number: 978-1-59339-476-9 (set)

No part of this work may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, recording, or by any information storage and retrieval system, without permission in writing from the publisher.

My First Britannica:
Volume 6: Europe 2008

Britannica.com may be accessed on the Internet at http://www.britannica.com.

Encyclopædia Britannica, Britannica, and the Thistle logo are registered trademarks of Encyclopædia Britannica, Inc.

Europe

TABLE OF CONTENTS

INTRODUCTION 5

Europe: Unity in Diversity 6

Western Europe

Portugal: Life on the Iberian Peninsula 8

Spain: A Distinctive European Country 10

Madrid, Spain: City of *Tauromaquia* 12

England: Heart of a Language and Culture 14

London, England: City on the Thames 16

Stonehenge: Ancient Circle of Stones 18

Scotland: Land of Mountains and Heath 20

Edinburgh, Scotland: Fortress on a Hill 22

Ireland: The Emerald Isle 24

Dublin, Ireland: City on the Liffey River 26

Wales: Land of the Song 28

English Channel:
"The Sleeve" Between England and France 30

France: Country of Castles, Wine, and History 32

Paris, France: Lovely City of Light 34

Brussels, Belgium: Belgium's Beautiful Capital 36

The Netherlands: Country of Windmills and Dikes 38

Amsterdam, Netherlands: City of Canals and Bridges . . 40

Central Europe

Germany: A Country Reunited 42

Berlin, Germany: Once upon a Wall 44

Switzerland: Snow and Chocolates 46

Austria: Land of the Blue Danube 48

Vienna, Austria: City of Music 50

Czech Republic: New Beginnings in a Historic Land 52

Prague, Czech Republic: City of 100 Spires 54

Poland: Country in the Heart of Europe 56

Northern Europe

Reykjavik, Iceland: Bay of Smokes 58

Denmark: A Nation That's Almost an Island 60

Copenhagen, Denmark: City of the Little Mermaid 62

Norway: Land of Fjords and Mountains 64

Sweden: Scandinavia's Largest Country 66

Russia: The Largest Country in the World 68

Eastern and Southern Europe

Budapest, Hungary: Two-in-One City 70

Bucharest, Romania: "Little Paris" 72

Sofia, Bulgaria:
Bulgarian Capital of Today and Yesterday 74

Serbia: A Country of Many Cultures 76

Belgrade, Serbia: White Fortress 78

Ukraine: Borderland Country 80

Greece: Land of Islands 82

Athens, Greece: City of the Acropolis 84

Parthenon: Temple of Athena 86

Italy: A Tourist's Delight 88

Rome, Italy: The Eternal City 90

Vatican City: The Smallest State 92

GLOSSARY 94

INDEX 95

Europe

INTRODUCTION

Where is the Emerald Isle?
How is it possible to travel by train from England to France?
What is the Parthenon? Why was the Berlin Wall built and torn down?

In Volume 6, ***Europe,*** you'll discover answers to these questions and many more. Through pictures, articles, and fun facts, you'll learn about the people, traditions, landscapes, and history that make up many of the countries and cities of Europe.

To help you on your journey, we've provided the following guideposts in *Europe*:

■ **Subject Tabs—**The colored box in the upper corner of each right-hand page will quickly tell you the article subject.

■ **Search Lights—**Try these mini-quizzes before and after you read the article and see how much—*and how quickly*—you can learn. You can even make this a game with a reading partner. (Answers are upside down at the bottom of one of the pages.)

■ **Did You Know?—**Check out these fun facts about the article subject. With these surprising "factoids," you can entertain your friends, impress your teachers, and amaze your parents.

■ **Picture Captions—**Read the captions that go with the photos. They provide useful information about the article subject.

■ **Vocabulary—**New or difficult words are in **bold type**. You'll find them explained in the Glossary at the back of this volume. And there's a complete listing of all Glossary terms in the set in the ***Reference Guide and Index***, Volume 13.

■ **Learn More!—**Follow these pointers to related articles throughout the set.

■ **Maps—**You'll find lots of information in this volume's many maps.

■ The **Country Maps** point out national capitals. **Globes** beside Subject Tabs show where countries are located in the world.

■ The **Continent Maps** have a number key showing the location of all countries.

Cover photos (top): St. Basil's Cathedral, Moscow, Russia, © Charles O'Rear/Corbis; (center): the face of tower clock Big Ben in London, © Corbis; (bottom): Matterhorn near Zermatt, Switzerland, © Blaine Harrington III/Corbis

■ The **Icons** on the maps highlight major geographic features and climate. Here's a key to what the map icons mean:

- Deserts and Other Dry Areas
- Polar Regions and Other Frozen Areas
- Mountains
- Rainforests
- General Forests

■ The **Mini-Atlas**, found in Volume 13, offers detailed maps, useful data tables, and assorted photographs of each continent.

And don't forget: If you're not sure where to start, where you saw something before, or where to go next, the Index at the back of this volume and the ***Reference Guide and Index*** (Volume 13) will point the way.



St. Basil's Cathedral, Moscow, Russia
© Charles O'Rear/Corbis

Have a great trip!

MY FIRST BRITANNICA

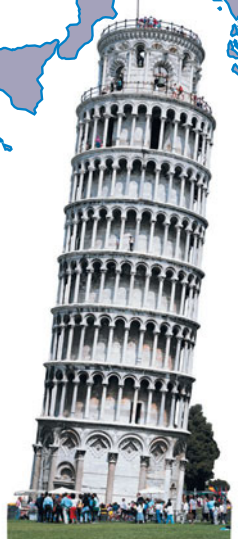
SEARCH LIGHT

Which of these rivers can be found in Europe?
a) Rhône
b) Mississippi
c) Nile

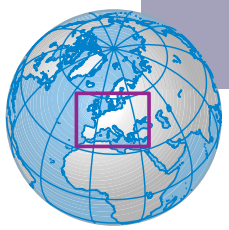


Stonehenge, a mysterious ancient monument in southern England.
© Royalty-Free/Corbis

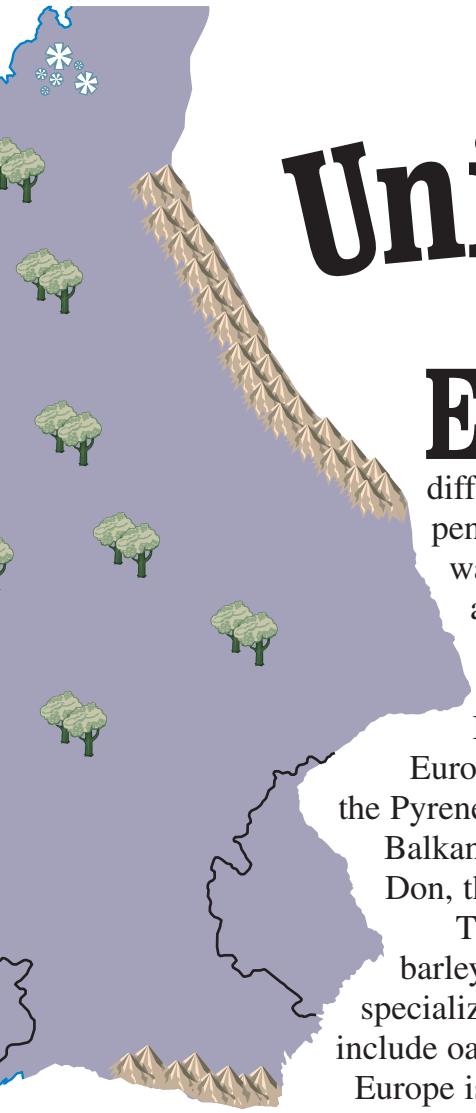
DID YOU KNOW?
The Ural Mountains are considered part of the boundary between Europe and Asia. The mountains run through Russia. That means that part of that country is in Europe and part is in Asia.



Leaning Tower of Pisa, a famous tilting building in Pisa, Italy.
© Royalty-Free/Corbis



Unity in Diversity



Europe is a continent of many countries and many different peoples. Much of it is made up of islands and peninsulas. A peninsula is a piece of land surrounded by water on three sides. Europe's islands include Iceland and the British Isles in the Atlantic Ocean and Corsica, Crete, Malta, and Cyprus in the Mediterranean Sea. Europe's main peninsulas are the Scandinavian, Iberian, Italian, Balkan, and Jutland peninsulas.

Europe also has many mountain ranges. Important ones are the Pyrenees, the Alps, the Apennines, the Carpathians, and the Balkans. Its long rivers include the Volga, the Danube, the Don, the Rhine, the Rhône, and the Oder.

The rivers provide water for Europe's farms. Wheat and barley are two of Europe's major crops. Southern Europe specializes in fruits, vegetables, olives, and wines. Other crops include oats, corn, sugar beets, and potatoes.

Europe is one of the world's major industrial regions. In fact, the **Industrial Revolution** began in Europe. Today the factories of Europe make many different products.

In the first half of the 20th century, Europe was the center of two world wars. After World War II, the countries of Europe became divided into two groups. In general the Western countries had **democratic** governments and economies that were not controlled by the governments. In the Eastern countries the rulers were not chosen in free elections and the economies were based on **communism**. This means that the governments owned all property and controlled the economies. Some of the Western European countries formed the European Union (EU). The EU helps its member countries with issues such as trade and security. At the end of the century most of the Eastern countries gave up communism and also turned to democracy. Many of them soon joined the EU too.

LEARN MORE! READ THESE ARTICLES…
CHARLEMAGNE (VOLUME 4) • CONTINENTS (VOLUME 1)
STONEHENGE (VOLUME 6)

COUNTRIES OF EUROPE

1. Albania
2. Andorra
3. Austria
4. Belarus
5. Belgium
6. Bosnia and Herzegovina
7. Bulgaria
8. Croatia
9. Cyprus
10. Czech Republic
11. Denmark
12. England
13. Estonia
14. Finland
15. France
16. Germany
17. Greece
18. Hungary
19. Iceland
20. Ireland
21. Italy
22. Latvia
23. Liechtenstein
24. Lithuania
25. Luxembourg
26. Macedonia
27. Malta
28. Moldova
29. Monaco
30. Montenegro
31. Netherlands
32. Northern Ireland
33. Norway
34. Poland
35. Portugal
36. Romania
37. Russia (part)
38. San Marino
39. Scotland
40. Serbia
41. Slovakia
42. Slovenia
43. Spain
44. Sweden
45. Switzerland
46. Ukraine
47. Vatican City
48. Wales

Answer: a) Rhône

Life on the Iberian Peninsula

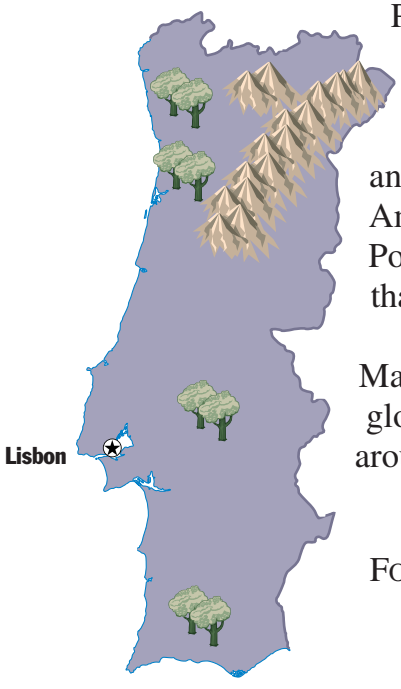


Portugal is a small country in southwestern Europe. Its capital is Lisbon, and its only neighbor is Spain. Together, Spain and Portugal make up the Iberian **Peninsula**.

Northern Portugal is quite hilly, with many oak, beech, chestnut, and pine forests. Southern Portugal has mostly **plateaus** and plains. Brush and grasslands cover the plains of the south. Portuguese farmers grow wheat, corn, potatoes, and grapes. And although olives grow wild in Portugal, many farmers also plant their own olive trees. Portugal's many cork oaks provide much of the world's supply of cork. Portugal is also famous for its many varieties of wine, including port and Madeira.

Summers in Portugal are dry and mild. Many tourists go to Portugal in the summer to see the beautiful museums, castles, and old churches. Or they go to tour historic cities, such as Lisbon, Coimbra, and Porto. And many go to enjoy Portugal's many beaches.

The national sport of Portugal is *futebol* (football, or soccer). Portuguese bullfighting is also very popular. It is different from bullfighting in other countries, however. Portuguese bullfighters do not kill the bull in the ring.



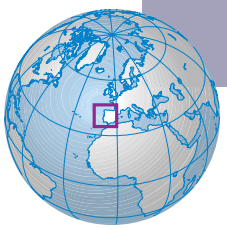
Folk music and folk dancing are popular traditions, and most villages have their own *terreiro*, or dance floor. Among the most popular regional dances is the *fandango*. The Portuguese are especially fond of *fado*, a traditional folk song that reflects a sad mood.

Portugal is also famous for its explorers. Ferdinand Magellan led the first expedition to sail around the globe, and Vasco da Gama opened up a trade route around Africa to Asia.

LEARN MORE! READ THESE ARTICLES…
FOLK MUSIC (VOLUME 3) • FERDINAND MAGELLAN (VOLUME 4)
PENINSULA (VOLUME 1)



Portugal shares much of its culture with the people of Spain. Why do you suppose this is true?



DID YOU KNOW?

The capital of Portugal was once moved to another country on another continent. From 1807 to 1821, Rio de Janeiro in Brazil was Portugal's capital. Brazil was a Portuguese colony at the time.

Many people travel to Portugal to enjoy the country's beautiful sunny beaches.
© Nik Wheeler/Corbis

Answer: The only country to border on Portugal is Spain. So the Portuguese people have had much more contact with the Spanish than with any other people.

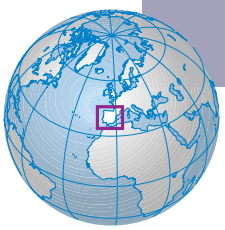


SEARCH LIGHT

Why is the Spanish language spoken in so many countries?

DID YOU KNOW?

With all the rock stars that have come from the United States and England, you might think that the guitar was invented there. The modern electric guitar was invented in the States, but the guitar itself probably originated in Spain in the early 1500s.



A Distinctive European Country



Spain is a country in the southwestern corner of Europe. The capital city is Madrid. Spain borders Portugal and France, but most of the country lies along the Mediterranean Sea and the Atlantic Ocean. The country's beautiful beaches are favorite European holiday spots.

Spain's rich and complex history has differed in many ways from other western European countries. For instance, several Islamic states were formed on its territory, some lasting for centuries. Most other Islamic states lie farther to the east or south, in the Middle East or North Africa. Modern Spain's cultural variety shows in the different languages spoken there, including Catalan, Basque, Gallego, and, of course, Spanish.

In the 1500s and 1600s, Spain was a world power. It had a powerful navy called the Spanish Armada, and it was the first country to **colonize** much of the Americas. That's why so many people in South America, Central America, Mexico, and the United States speak Spanish and are of Hispanic **heritage**.

Spain features seafood in much of its cooking, with dishes such as paella, a fish-and-rice dish. Spanish farmers produce lots of pork, poultry, beef, and lamb. They also grow wheat, barley, corn, sugar beets, beans, and olives. Spain also grows grapes for its large wine industry.

Bullfighting has long been a favorite pastime of Spaniards. And football (soccer) is also very popular. Another activity found in Spain is the music and dancing known as *flamenco*. *Flamenco* came to Spain with the Caló (Gitano) people, more commonly known as Gypsies. It is played on guitar as the dancers click wooden castanets and stamp their feet rhythmically.



LEARN MORE! READ THESE ARTICLES…
FRANCISCO DE GOYA (VOLUME 4)
MADRID, SPAIN (VOLUME 6)
SOUTH AMERICA (VOLUME 9)

This village in Spain overlooks one of the country's many vineyards.
© Patrick Ward/Corbis

Spain conquered many other areas of the world during its Golden Age in the 1500s and 1600s. Those areas eventually adopted many Spanish customs, as well as the language.



DID YOU KNOW?

Madrid is one of the few leading cities in Europe that is not located on a major river. Many such cities use large rivers for transportation. Madrid does, however, have a small river—the Manzanares—running through it.

City of *Tauromaquia*

King Phillip II wanted to establish a capital that wasn't linked with Spain's earlier ruling powers. He chose Madrid. After it became the capital in 1607, Madrid grew into a city of contrasts. Around its old overcrowded center developed palaces, convents, churches, and public buildings.

The Puerta del Sol is Madrid's main plaza, or public **square**. The busiest streets of the city start from the Puerta del Sol. From there you can easily get to such major attractions as the Prado art museum. The Prado has a world-famous collection of paintings, including work by El Greco, Francisco de Goya, Diego Velázquez, and many other artists.

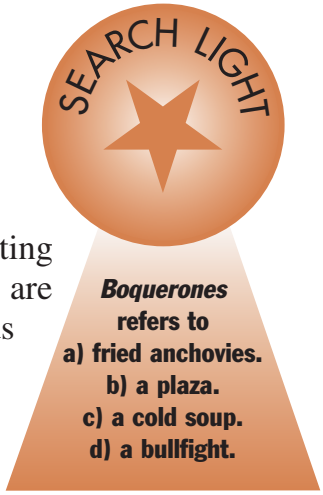


The bullfighter Frascuelo at Las Ventas bullring in Madrid.
© Carlos Alvarez/Getty Images

The **botanical** gardens are close to the Prado. They are said to have nearly 30,000 kinds of plants. Madrid has more than 40 parks and public gardens. Important ones include the Retiro, Campo del Moro, Casa de Campo, and Oeste Park. Also near the Puerta del Sol is the National Palace. It has one of the world's greatest collections of armor and swords. The National Library has many rare books.

Spanish food is popular in many other countries. A meal might include *gazpacho*, a thick chilled soup made with tomatoes and other vegetables, and *boquerones*, freshly fried anchovies. Madrid is famous for its anchovies, a popular food fish. Flan is a favorite dessert, similar to a caramel custard.

Tauromaquia is the Spanish word for bullfighting. Bullfighting is one of Spain's time-honored traditions. In Madrid, bullfights are held in Las Ventas, the 25,000-seat bullfighting ring. Thousands of people go there to cheer their favorite matadors, the main performers in a bullfight.



LEARN MORE! READ THESE ARTICLES…
FRANCISCO DE GOYA (VOLUME 4) • PAINTING (VOLUME 3) • SPAIN (VOLUME 6)

The Plaza Mayor is one of Madrid's most well-known public squares. Today its grand buildings overlook many shops and outdoor cafés.
© Patrick Ward/Corbis

Answer: a) fried anchovies.

DID YOU KNOW?

The English language has changed a lot over the years. The following are two versions of the same sentence from the story *Beowulf*:

Old English:
Wæs se grimma gæst Grendel haten.
Modern English:
Grendel was the name of this grim demon.

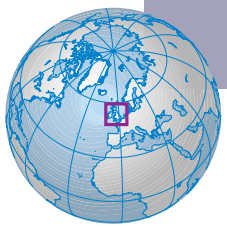


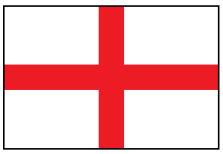
The English countryside contains many small villages such as this one in the south-central Cotswold district.
© Nik Wheeler/Corbis

SEARCH LIGHT

Find and correct the error in the following sentence: William Shakespeare was a famous English novelist.

Heart of a Language and Culture





English is one of the world's most widely spoken languages. This is partly because it was the language of the British Empire. The empire once controlled so much of the world that it was said that the Sun never set on the British Empire.

England, the birthplace of English, takes up most of the island of Great Britain. It is one of the four lands that form the United Kingdom. The English that people speak there today is quite different from the English that was spoken long ago. If you were to read a book by Geoffrey Chaucer, one of the early writers of English, someone would have to explain to you what many words mean.

England has produced many famous writers since Chaucer. They include such poets as John Milton and Percy Bysshe Shelley and such novelists as Jane Austen and Charles Dickens. England is also known for its theater. That art has remained important since the time of playwright William Shakespeare some 400 years ago.

England's Oxford and Cambridge are two of the oldest universities in the world. The country's contributions to classical and folk music, as well as to rock and roll, are also important. It's hard to imagine what rock would be like if there hadn't been English performers such as the Beatles, the Rolling Stones, and David Bowie.

The English also invented two of the world's most popular sports: football (known as "soccer" in the United States) and cricket.



LEARN MORE! READ THESE ARTICLES…
A BRITISH LEGEND: KING ARTHUR'S KNIGHTS OF THE ROUND TABLE (VOLUME 5)
ENGLISH CHANNEL (VOLUME 6) • WILLIAM SHAKESPEARE (VOLUME 4)

Answer: William Shakespeare was a famous English playwright.

City on the Thames

London is the capital of the United Kingdom. It lies in southeastern England, on the banks of the River Thames. Long ago the Romans built a city near the mouth of the river. They called it Londinium. That's how London got its name.



Guards parade in front of Buckingham Palace.
© Graham Tim—Corbis/Sygma

Tourists and Londoners alike use London's public transportation system. The red double-decker buses are recognized worldwide. And the city's underground railway—called the "tube"—has been reliably shuttling passengers throughout London since 1884. The city is full of **monuments**, historic buildings, and other interesting sights. The Tower of London is one of the city's oldest structures. It was built by William the Conqueror as a fortress. It also served as a prison, and its famous prisoners included Sir Walter Raleigh and Elizabeth I before she became queen. The tower is now a museum that contains England's crown jewels.

Other famous buildings include the Houses of **Parliament** (also called Westminster Palace). That building has 1,100 rooms and two miles of **corridors**. It also has a tower clock called Big Ben, whose huge bell weighs more than 13 tons. Nearby is Westminster Abbey, an ancient church where England's kings and queens are crowned. Buckingham Palace is the home of the queen of England.

London's British Museum is the oldest museum in the United Kingdom. It has a vast collection of things from all over the world. It also has one of the world's largest libraries. Another well-known museum is Madame Tussaud's, which has wax statues of famous people.

LEARN MORE! READ THESE ARTICLES…
CHARLES DICKENS (VOLUME 4) • ELIZABETH I (VOLUME 4)
ENGLAND (VOLUME 6)

DID YOU KNOW?

September 2-5, 1666, marks the dates of the worst fire in London's history. The Great Fire of London destroyed a large part of the city, including most of the civic buildings, Old St. Paul's Cathedral, 87 churches, and about 13,000 houses.

© Royalty-Free/Corbis



The tower clock known as Big Ben is a famous sight in London. It stands next to the Houses of Parliament along the River Thames.

SEARCH LIGHT

Find and correct the error in the following sentence: England's kings and queens are crowned in Buckingham Palace.

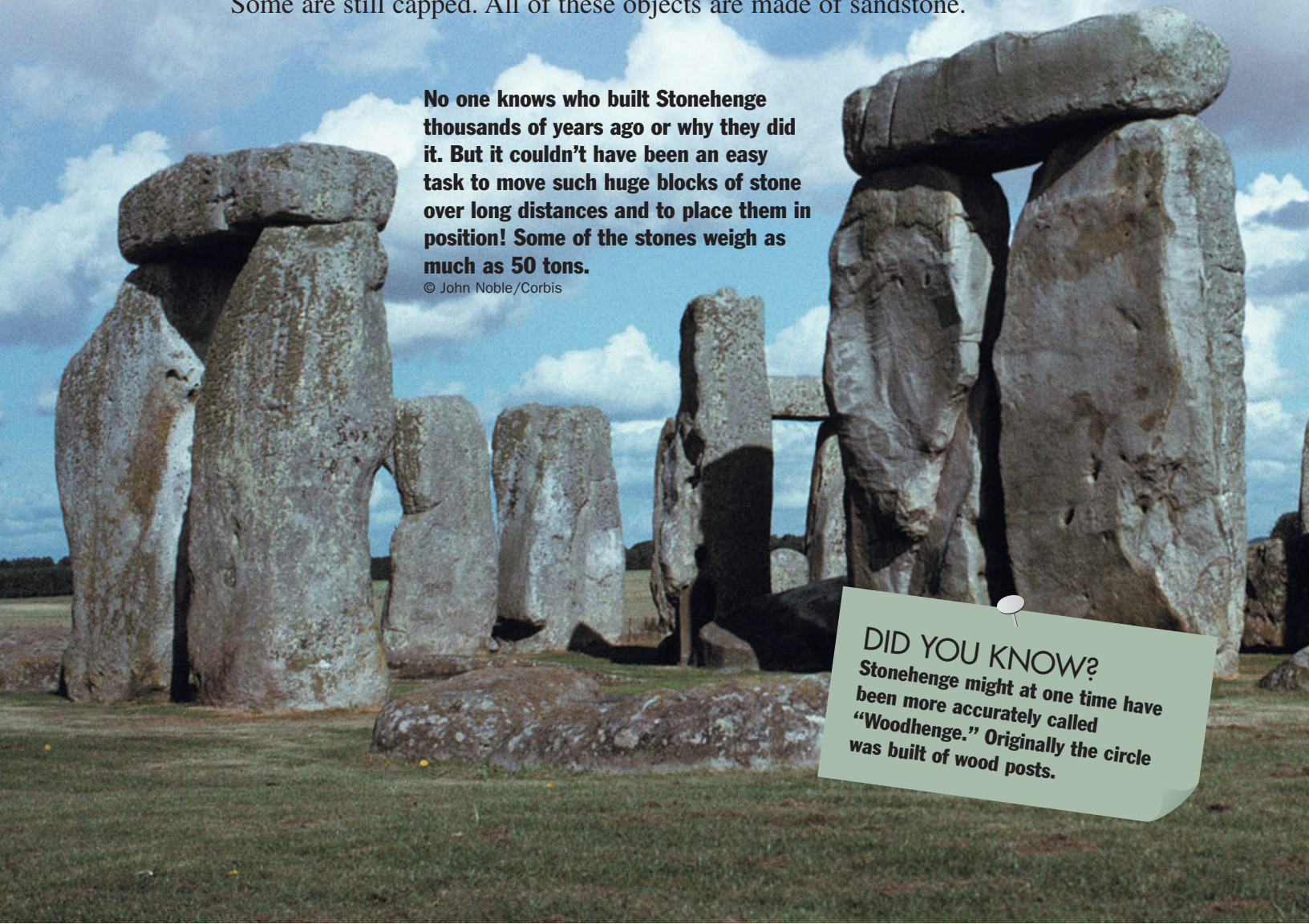
Answer: England's kings and queens are crowned in Westminster Abbey.

Ancient Circle of Stones

Stonehenge is a very special **monument** in England. It's said to be more than 5,000 years old. The "henge" in its name refers to circular structures from ancient times. In this case it refers to the circle of huge stones that stand upright at the center of the monument.

No one knows exactly why Stonehenge was built. Some people believe it might have been used as a device for **predicting** the movement of the Moon. Others think it was a temple for worshiping the sky or the Sun.

Stonehenge includes the largest stone constructions in the British Isles. The monument's biggest stones are arranged in the shape of a horseshoe and are surrounded by another big circle of upright tall stones. Originally all of these surrounding stones had stones on top, covering them like caps. Some are still capped. All of these objects are made of sandstone.

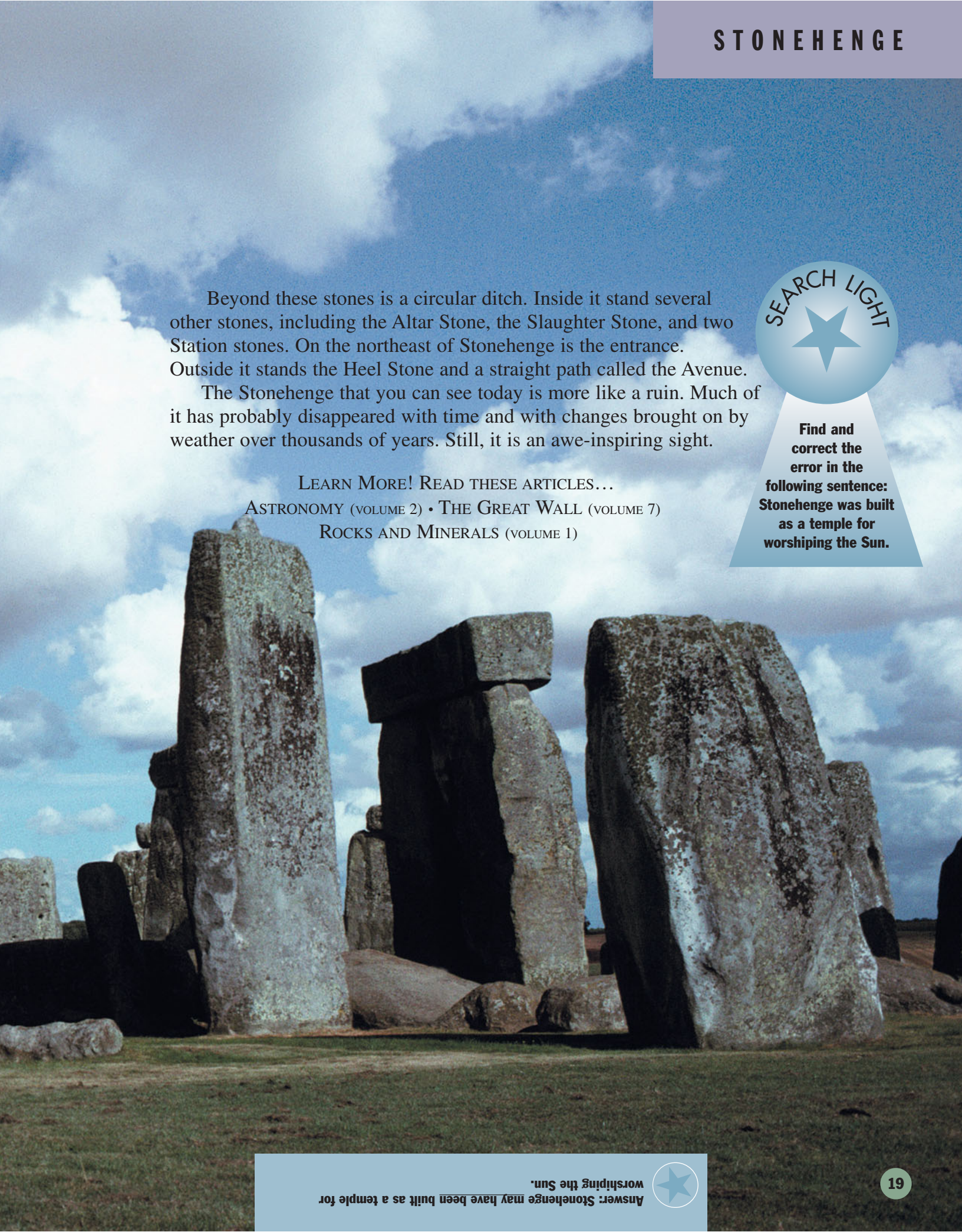


No one knows who built Stonehenge thousands of years ago or why they did it. But it couldn't have been an easy task to move such huge blocks of stone over long distances and to place them in position! Some of the stones weigh as much as 50 tons.

© John Noble/Corbis

DID YOU KNOW?

Stonehenge might at one time have been more accurately called "Woodhenge." Originally the circle was built of wood posts.



Beyond these stones is a circular ditch. Inside it stand several other stones, including the Altar Stone, the Slaughter Stone, and two Station stones. On the northeast of Stonehenge is the entrance. Outside it stands the Heel Stone and a straight path called the Avenue.

The Stonehenge that you can see today is more like a ruin. Much of it has probably disappeared with time and with changes brought on by weather over thousands of years. Still, it is an awe-inspiring sight.

LEARN MORE! READ THESE ARTICLES…
ASTRONOMY (VOLUME 2) • THE GREAT WALL (VOLUME 7)
ROCKS AND MINERALS (VOLUME 1)

SEARCH LIGHT

Find and correct the error in the following sentence: Stonehenge was built as a temple for worshiping the Sun.

Answer: Stonehenge may have been built as a temple for worshiping the Sun.


SEARCH LIGHT
Fill in the blanks: Although many go to Scotland to see its castles and _____, the country is best known for its natural _____.
DID YOU KNOW?
Haggis, a national dish of Scotland, isn't for everyone. It's a large round sausage made of the liver, heart, and lungs of a sheep, all chopped and mixed with fat and oatmeal, and packed into a sheep's stomach and boiled.



Land of Mountains and Heath



Scotland, the northernmost part of the island of Great Britain, is a nation famous for its natural beauty. Pinewood forests dot the Highlands. Dwarf willows grow on the highest slopes of the Grampian Mountains just below the snow-covered peaks. But perhaps the most famous of Scotland's plant life is the heather, a kind of **heath**. The word heath is also used to describe the wild wide-open stretches of rough land of Scotland's countryside.

Scotland has been part of the United Kingdom since the 18th century. Its capital is Edinburgh. Scotland's largest city is Glasgow, an industrial center.

Scotland has made many economic and cultural contributions to the world. Writer Robert Louis Stevenson wrote the well-loved *Treasure Island* as well as the horror story *Dr. Jekyll and Mr. Hyde*. And poet Robert Burns is claimed by Scots as their national poet.

Many visitors to Scotland go there to see its castles and **abbeys**. Tourists to Scotland enjoy the country's wildlife. Deer, foxes, badgers, and wildcats can be seen in the countryside. Golden eagles, peregrine falcons, and kestrels fly overhead. Almost half the world's gray seals breed off the coast in Scottish waters. And sometimes whales can be seen too.

Many tourists also visit the country's largest lake, Loch Ness. Though its famous Loch Ness monster is probably a myth, many sightings of the monster have been reported. And the possibility that it may exist continues to fascinate many people.



LEARN MORE! READ THESE ARTICLES…
DANCE (VOLUME 3) • EDINBURGH, SCOTLAND (VOLUME 6)
MYTHS AND LEGENDS, FOLKTALES AND FABLES (VOLUME 5)

A Scottish farmer stands in a pasture with one of his Highland cattle. His knee-length pleated skirt, called a "kilt," is part of the traditional clothing of men from Scotland.

© Dewitt Jones/Corbis



Answer: Although many go to Scotland to see its castles and abbeys, the country is best known for its natural beauty.



SEARCH LIGHT

Can you guess what Auld means in "Auld Reekie?" (Hint: It sounds the same in English.)

Edinburgh Castle sits high up on Castle Rock, some 250 feet above the rest of Edinburgh. The site may have been used as a fortress as early as the 6th century.
© Larry Lee Photography/Corbis

Fortress on a Hill

Edinburgh is the capital city of Scotland. In the old Scottish Gaelic language, the city's name is Dun Eideann and means "fortress on a hill." People also call Edinburgh "Auld Reekie." "Reek" means "smoke," and Edinburgh got its nickname from the heavy smoke and odors that resulted when the people used a lot of coal.

Edinburgh is built on a chain of low hills separated by valleys. The city is made up of the Old Town and the New Town. The Old Town is part of the original burgh, or village. It stretches from the Castle Rock to the Netherbow Port. On top of the Castle Rock is Edinburgh Castle. The castle used to be the home of Scottish kings. Now it is a museum of old armor and weapons.

The part of the city called New Town was built beginning in the 1700s. There are two main streets in New Town—the Royal Mile and Princes Street. The Royal Mile leads up to the Palace of Holyroodhouse, where you can see the rooms of Mary, Queen of Scots. To the south of the palace is a mass of rock more than five miles around. It's called Arthur's Seat. Princes Street has many hotels, clubs, banks, and shops and is the main street of Edinburgh. The Princes Street Gardens feature the world's first clock made of flowers. Princes Street also has a monument to the famous writer Sir Walter Scott, who was born in Edinburgh.

The annual Edinburgh International Festival attracts hundreds of thousands of arts, theater, and music lovers. It ends with the playing of bagpipes in front of the castle gate.

DID YOU KNOW?

The *Encyclopædia Britannica*, the first English-language encyclopedia, was first published in Edinburgh in 1768.

LEARN MORE! READ THESE ARTICLES…
ARCHITECTURE (VOLUME 3) • SCOTLAND (VOLUME 6) • THEATER (VOLUME 3)

Answer: Auld means "old."

The Emerald Isle



Ireland is a land with no snakes. Legend has it that St. Patrick **banished** them all. But the real reason is that Ireland is an island, and snakes have not lived there at least since the last Ice Age thousands of years ago.

SEARCH LIGHT

How did Ireland get its nickname of the Emerald Isle?

Ireland is close to the larger island of Great Britain, in northwestern Europe. The smaller northern part of the island is called Northern Ireland and is part of the United Kingdom. Northern Ireland's capital is Belfast. The larger part of the island is the Republic of Ireland and is usually simply called Ireland. The capital of this independent country is the city of Dublin.

Because of its location in the Atlantic Ocean, Ireland has a mild **climate** most of the year. It rains quite often, with the hilly parts of the island getting nearly 100 inches of rain each year. The land is covered with grasslands and green mosses. Some people call Ireland the Emerald Isle because it is so beautifully green. The green lowlands and mild climate make Ireland a good place to raise cattle and sheep. Barley, wheat, and potatoes also grow well. In fact, potatoes were once almost the only food people ate. But in the 1840s disease ruined the potato crops, and many people starved or left Ireland for other countries, especially the United States.

Ireland was once a colony of Great Britain. It gained its independence in the 20th century, though Northern Ireland remains part of Britain. Ireland is very popular with tourists, and Irish music and culture are famous throughout the world.



LEARN MORE! READ THESE ARTICLES…
DUBLIN, IRELAND (VOLUME 6) • ENGLAND (VOLUME 6)
ISLANDS (VOLUME 1)

Cattle graze in a field in County Kerry, Ireland.
© Galen Rowell/Corbis

IRELAND

DID YOU KNOW?

The best-known characters in Irish folklore are fairies called "leprechauns." According to legend, they are little old men who live alone and make shoes. They also are supposed to have a hidden pot of gold, which they guard carefully.

Answer: Ireland is such a green and beautiful island that people have for a long time called it the Emerald Isle.

City on the Liffey River

Dublin is the capital of the Republic of Ireland. The city's name means "black pool" in Irish. The River Liffey, which flows through the city, creates dark **bog** waters nearby.

Near the River Liffey is Dublin Castle, which was the headquarters of the English governor when Ireland was a part of the United Kingdom. It is now where Ireland's presidents are sworn into office. In the 19th and early 20th centuries, when Ireland was a colony of Britain, the city was a center of resistance to British rule.

Leinster House is where the **parliament** meets. The twin buildings on either side of Leinster House are the National Library and National Museum of Ireland. Merrion **Square** stands to the east, and Fitzwilliam Square is to the south. They were built more than 200 years ago. The oldest and largest of the city's squares is St. Stephen's Green.

Phoenix Park was once a royal deer park. It lies on the north bank of the Liffey, and it's nearly 30 square miles—making it one of the world's largest city parks. Its zoo is famous for breeding lions.

Theater is an important part of Dublin's history. The famous Abbey Theater is linked with names such as the poet William Butler Yeats and dramatists John Millington Synge and Lady Gregory. It is on Synge Street that the great dramatist George Bernard Shaw lived.

Many who visit Dublin climb the mountains just outside the city. From there they can see the whole city spread out below. Those who look carefully can see all the famous buildings and squares.

DID YOU KNOW?

To impress your friends, try this Gaelic phrase on them: "Go raibh míle maith agat!" It means "May you have a thousand good things."

LEARN MORE! READ THESE ARTICLES…
ENGLAND (VOLUME 6) • IRELAND (VOLUME 6) • THEATER (VOLUME 3)

SEARCH LIGHT

Unscramble these words that have to do with Dublin:
ifLfye
klabc lopo
drllane



Halfpenny Bridge spans the River Liffey. It is one of the many bridges connecting the north and south of Dublin. This bridge got its name from the toll you used to have to pay to get across.

© Macduff Everton/Corbis

Answer: lfLfye = Liffey
klabc lopo = black pool
drllane = Ireland

Land of the Song



Wales is a beautiful land of hills, valleys, and ancient castles. Located on the western edge of the island of Great Britain, it's one of the four countries that today make up the United Kingdom. Wales is called "Cymru" (pronounced "Coomrie") in the Welsh language, and its capital, Cardiff, is called "Caerdydd." Some people still speak Welsh, but Wales's main language is English.

The rough Welsh countryside was created long ago by rivers of ice called "glaciers." Wales's many mountains—including the highest one, Snowdon—were formed mostly from volcanic rock. Along the coast are fabulous cliffs overlooking pebbled and sandy beaches. Seabirds and shorebirds are commonly seen, and bottlenose dolphins live in Cardigan Bay off the west coast.

Coal mining was once the most important part of the Welsh economy. Today, very little coal is still mined in Wales. Many more people now work in manufacturing, especially in the car, chemical, and electronics industries.

Many tourists visit Wales to see its parks and castles and to attend its many music festivals. The largest is the annual Eisteddfod, a celebration of poetry and music that began in 1176. Music is so important in Wales that it is called the "land of the song." Choral (group) singing is especially popular among the Welsh people.

Nearly 2,000 years ago the ancient Romans built a small fort where the Welsh capital, Cardiff, now stands. Hundreds of years later, invaders from England built a castle on that same site. Cardiff eventually grew there and became an important shipping center. Cardiff Castle remains one of the city's most impressive buildings.

LEARN MORE! READ THESE ARTICLES…
ENGLAND (VOLUME 6) • FOLK MUSIC (VOLUME 3)
MOUNTAINS (VOLUME 1)

SEARCH LIGHT

In the Welsh language, the name for the country of Wales is
a) "Eisteddfod."
b) "Caerdydd."
c) "Cymru."





Wales's capital city, Cardiff, had its beginnings in Cardiff Castle. This stone keep, the strongest part of the castle, was built in the 12th century.
© Neil Beer/Corbis

DID YOU KNOW?

Wales's most famous writer was Dylan Thomas, who wrote *A Child's Christmas in Wales*. Roald Dahl, who wrote *Charlie and the Chocolate Factory*, was also born in Wales, as were the actors Richard Burton and Anthony Hopkins.

Answer: c) "Cymru."

"The Sleeve"
Between England and France

The English **Channel** is a narrow arm of the Atlantic Ocean. It separates England from France. The French call it La Manche, which means "the sleeve."

The English Channel is 350 miles long. Its widest point is between Lyme Bay in England and the Gulf of St. Malo in France. The channel has important ports on both sides. These are Plymouth, Southampton, Portsmouth, and Dover in England, and Cherbourg, Le Havre, Dieppe, and Calais in France. Dover is famous for its white cliffs, which are made of chalk.

There are many tourist resorts on the shores of the channel. Visitors go there to enjoy the sandy beaches and bright sunshine when the weather is good. Two famous resorts are Brighton in England and Deauville in France.

SEARCH LIGHT

Fill in the blank: The French call the English Channel "_____," which means "the sleeve."

More than 100 years ago people thought of connecting the two banks of the channel by an underwater tunnel. The idea was discussed and given up several times. France and Great Britain finally signed the Channel Tunnel treaty in 1986. The construction work started the following year.



A hovercraft leaves the harbor at Dover, England, on the English Channel.
Alvey & Towers

Today the Eurotunnel is very important for travel. The Chunnel—its nickname, from "*ch*annel" and "*tunnel*"—is about 31 miles long and is considered a marvel of **engineering**. The two ends of the tunnel are near the narrowest distance across the channel. One end is at Folkestone in England and the other is at Calais in France. Many tourists travel through it just to say they've been under the English Channel.

LEARN MORE! READ THESE ARTICLES…
CHALK (VOLUME 1) • ENGLAND (VOLUME 6) • FRANCE (VOLUME 6)



Swimmers enjoy the water at Lyme Regis, a resort town on the English Channel.

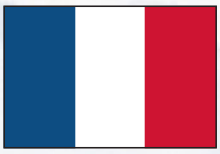
© Nik Wheeler/Corbis

DID YOU KNOW?

In 1875 Captain Matthew Webb swam the channel in 21 3/4 hours—about 1 hour for every mile. He was the first to manage the feat. In 1926 Gertrude Ederle became the first woman to swim the channel.

Answer: The French call the English Channel "La Manche," which means "the sleeve."

Country of Castles, Wine, and History





For hundreds of years France was one of the most prized countries of Western Europe. One reason is that France has wonderful farmland. Many types of crops and plants are grown in France because of the plentiful water from France's rivers. And the French have made good use of their generous harvests—fine French cooking has long been internationally appreciated.

But France may be even better known for its wines. There are miles of lovely green vineyards—areas for growing grapes. The **champagnes** and wines made from these grapes are famous throughout the world.

The French river valleys are full of historic and beautiful old castles, called *chateaux*. These were built of stone, with thick walls that protected the people inside from attacks. At first the *chateaux* were used as forts, but later they were used as homes for the **nobility**. The king and the nobility ruled France until they were overthrown in the French Revolution of 1789. Ten years later the famous leader Napoleon began his rule of France.

Many tourists visit France to see its famous monuments and cathedrals and its beautiful countryside. Some popular spots, such as the palace of Versailles, are located outside the capital city of Paris. Others, such as the Eiffel Tower and the Cathedral of Notre Dame, are inside Paris. Other big French cities include Marseille, Lyon, and Nice.

France is separated from England by a narrow body of water called the English Channel. Today high-speed trains travel between the two countries through the Channel Tunnel, which was built underneath the Channel.

SEARCH LIGHT

Find and correct the error in the following sentence: Today high-speed trains travel through the tunnel underneath the English Channel that connects France with Belgium.

LEARN MORE! READ THESE ARTICLES…
ENGLISH CHANNEL (VOLUME 6) • GRAPES (VOLUME 10)
AUGUSTE RODIN (VOLUME 3)



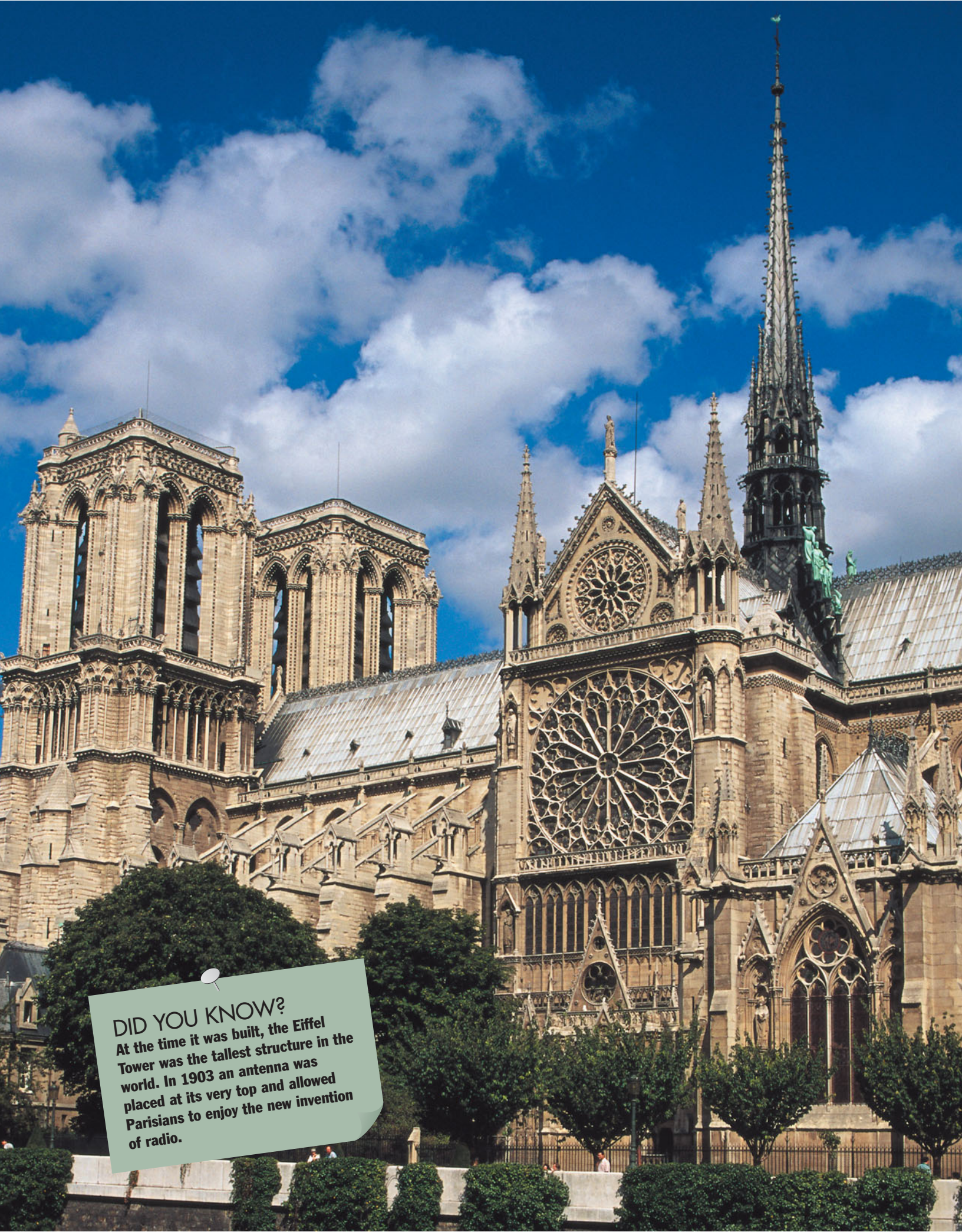
Vineyards, where grapes are grown for wine, surround a village in eastern France. French wine is prized all over the world. This village is part of the region that produces wine called Burgundy.

© Michael Busselle/Corbis

DID YOU KNOW?

French writers have won more Nobel Prizes for Literature than writers from any other country.

Answer: Today high-speed trains travel through the tunnel underneath the English Channel that connects France with England.



DID YOU KNOW?

At the time it was built, the Eiffel Tower was the tallest structure in the world. In 1903 an antenna was placed at its very top and allowed Parisians to enjoy the new invention of radio.

Lovely City of Light

One of the most beautiful cities of Europe is Paris, the capital of France. It has many lovely old buildings, monuments, gardens, plazas, cafés, **boulevards**, and bridges. Because many of these sights are lit at night, Paris is called the "City of Light."

The Seine River flows through the center of Paris. Visitors enjoy touring Paris by riding a boat down the river. One of the most impressive sights on this trip is the Chaillot Palace. It stands on the right bank of the Seine—that is, the right side when you're facing downstream, the direction the water flows. The palace now contains museums and theaters. The Cathedral of Notre Dame, one of the most famous church buildings in the world, can also be seen from the river. And it is awe-inspiring when seen lit up at night.

SEARCH LIGHT

Why is Paris called the "City of Light"?



The Eiffel Tower at twilight.
© Lance Nelson/Corbis

The Louvre Museum is known throughout the world for its fine collection of art. But which is the best-known landmark of Paris? That would be the Eiffel Tower. It was designed by Gustave Eiffel in 1889 for an **international** fair.

At first the people of Paris disliked the tall tower, which was almost 1,000 feet high. They thought it was ugly and ruined the beauty of Paris. But when the tower was finished and the fair was opened, many people saw Eiffel's impressive work and changed their minds. They liked the graceful tower of iron that was strung with lights and stretched into the sky. Today millions of people from all over the world visit the Eiffel Tower each year.

LEARN MORE! READ THESE ARTICLES…
SARAH BERNHARDT (VOLUME 3) • BRUSSELS, BELGIUM (VOLUME 6)
FRANCE (VOLUME 6)

The Cathedral of Notre Dame in Paris is considered an architectural masterpiece. People travel from around the world to see it, along with the city's other marvels.
© Fotografia, Inc./Corbis

Answer: Many of Paris's tourist attractions, such as Notre Dame and the Louvre, are lit up at night. The lighted buildings form a beautiful background for touring the city at night and give the city its nickname.

Belgium's Beautiful Capital



On the banks of Senne River lies Brussels, the capital of Belgium. There is much to see in this historic city known for its lace and chocolate. A more recent feature also sets Belgium apart: together with Strasbourg, France, it's the center of the European **Parliament**.

One of the most beautiful old buildings there is the Town Hall. It has a tower with the statue of St. Michael, the **patron saint** of Brussels. Opposite the Town Hall across the square known as the Grand Place is the King's House. It's now a history museum. On a hill, rising above the modern buildings, is the Church of St. Michael and St. Gudule. It was built more than 500 years ago and has twin towers.

One of the most popular sights in Brussels is a small bronze fountain in the shape of a naked little boy. He is often called the city's "oldest citizen" because he has been around since 1619. Other places to visit include the Royal Palace, the Palace of Justice, and the Opera House. There's also the Palace of the Nation, which is the Belgian parliament house.

An unusual and interesting structure in Brussels is the Atomium. It shows how the atoms of a molecule of iron fit together. It is 326 feet high and is made of shining metal. It was built for the International Exhibition of Brussels, a fair held in 1958.



Chocolate candy is not the only kind of food that comes from Brussels. According to some experts, the vegetable called Brussels sprout was first there 800 years ago.

LEARN MORE! READ THESE ARTICLES…
ATOMS (VOLUME 2) • CABBAGE (VOLUME 10) • PARIS, FRANCE (VOLUME 6)

DID YOU KNOW?

Like many people worldwide, Belgians enjoy fried potatoes (French fries, or chips). But they prefer to eat them with mayonnaise rather than ketchup or some other sauce.

Brussels, BELGIUM



Flowers are sold in Grand Place, a beautiful public square in the city of Brussels. The square began as a marketplace during the Middle Ages.

© Bettmann/Corbis

SEARCH LIGHT

The river that flows past Brussels is called the
a) Seine.
b) Senne.
c) Severn.

Answer: b) Senne.

Country of Windmills and Dikes





The Kingdom of the Netherlands is located in northwestern Europe. Although Amsterdam is the country's capital, the Hague is the home of the government and the courts. Other important cities are Rotterdam and Utrecht. The Netherlands is also known as Holland, and its people are called the Dutch.

Much of the Netherlands is made up of "reclaimed land." This means that lakes, marshes, and low-lying land located at or below **sea level** have been drained and made into usable dry land. Such areas are called "polders." The polders are surrounded by dams called "dikes." Without the dikes, much of the Netherlands would be flooded. People once used windmills to help drain water from flooded lands. Many windmills still dot the landscape. But today electric or **diesel** pumps are used to pump the water out.

Several rivers flow through the central Netherlands. They used to be filled with lobsters and fish, but water pollution has killed many of these animals. Many seabirds and other sea creatures such as **mollusks** can be found in coastal areas.

Throughout history the Netherlands has been known for producing flowers, especially tulips. The butter, cheese, and condensed milk from the country's dairy farms are famous the world over. Hundreds of years ago Dutch seamen were the leading merchants of Europe. Today **commercial** ships keep the harbors and ports of the Netherlands very busy.

Art has a long tradition in the Netherlands. The most famous Dutch painters were Rembrandt and Vincent van Gogh.

LEARN MORE! READ THESE ARTICLES…
AMSTERDAM, NETHERLANDS (VOLUME 6)
VINCENT VAN GOGH (VOLUME 3)
WIND POWER (VOLUME 2)

DID YOU KNOW?

Tulips are grown all over the Netherlands, and the country is famous for them. A few hundred years ago, these flowers were considered so valuable in the Netherlands that a house or a business might be exchanged for a single tulip bulb.

© Larry Lee Photography/Corbis

THE NETHERLANDS



The many windmills in the Netherlands were once used to drain water from the land.

SEARCH LIGHT

A polder is a
a) windmill.
b) land area that was once under water.
c) machine used to pump water out.

Answer: b) land area that was once under water.


SEARCH LIGHT
How was Amsterdam's name originally spelled? Why was it spelled that way?

City of Canals and Bridges

Long, long ago Amsterdam was a small fishing village. It was called Amsteldam then because it was close to a dam built across the Amstel River. Today Amsterdam is a busy and important city. It is the capital of the Netherlands.

Amsterdam is located in a low-lying area on a lake called the IJsselmeer. (IJ is pronounced "eye.") The Amstel River flows through the city toward the waterway known as the IJ, which was once part of an inlet of the North Sea. Parts of Amsterdam lie on land that has been **reclaimed** from marshes, lakes, or the sea. Many **dikes** and **canals** keep the water from rushing back in over the city.

Canals are spread all over the city like a cobweb. They divide the inner city into nearly 90 islands that are connected by about 1,300 bridges. Tourists go to Amsterdam for sightseeing trips along the canals. Many people who live in Amsterdam ride bicycles to and from work.

Amsterdam is full of things to see. In the inner city are the Old Church and the New Church. The Old Church is more than 700 years old. The New Church is only about 500 years old. Next to it is what used to be the city hall and is now the Royal Palace. There are also a South Church and a West Church. The famous painter Rembrandt is buried in the West Church.

Amsterdam is one of the most important places for diamond cutting and polishing. Many of the world's most famous diamonds have passed through Amsterdam.

LEARN MORE! READ THESE ARTICLES…
DIAMONDS (VOLUME 1) • THE NETHERLANDS (VOLUME 6)
WATER POWER (VOLUME 2)

DID YOU KNOW?

Unlike other national capitals, Amsterdam is not where the Netherlands' government is located. The city called The Hague is home to the country's courts and government. This makes it the administrative capital of the Netherlands.

Amsterdam's main canals form a series of rings around the inner city, and smaller canals crisscross them. Using this network, a boat can move easily between parts of the city.
© Patrick Ward/Corbis

Answer: Its name was originally spelled "Amsteldam" because the city stood near a dam across the Amstel River.



SEARCH LIGHT

When did Germany become a unified country? (Hint: there is more than one answer!)

a) 1871
b) 1550
c) 1776
d) 1990

DID YOU KNOW?

For German children, the highlight of the Christmas season is St. Nicholas Day (December 6). The night before, they leave a shoe outside their bedroom door or by the fireplace. St. Nicholas comes during the night to fill the shoes with candy and gifts.

Houses line a river at Schiltach, a village in the Black Forest region of Germany. The region is named for its thick groves of trees.

© Richard Klune/Corbis



A Country Reunited



Although Germany, in the heart of central Europe, has a long history, it is actually a young country. For many years various princes and dukes and bishops ruled small states in the region. It was not until 1871 that these became united as a single nation.

Germany has produced many renowned musicians, writers, artists, scientists, and athletes. Such figures include writer Johann Wolfgang von Goethe and composer Ludwig van Beethoven.

In the early 20th century, Germany became involved in two world wars. The country was on the losing side of World War I and as a result suffered through difficult times. Many of the people were unhappy, and some supported Adolf Hitler, who wanted to make Germany strong again. As the leader of the Nazi party he soon took control of the country. Germany then tried to conquer several neighboring countries. The conflict over these actions developed into World War II.

After Germany was defeated in 1945, the country was divided into East and West Germany. East Germany became a **communist** country. Its rulers controlled both the government and the economy. Berlin, the former capital of Germany, was in East Germany, but it was also divided. In 1961 the East German government built the Berlin Wall to separate the two sides of the city. Many families were split up and could no longer visit each other.



In 1989 the Berlin Wall fell and the communist government of East Germany came to an end. On October 3, 1990, Germany became one country again. Berlin became its new, undivided capital.

LEARN MORE! READ THESE ARTICLES…
LUDWIG VAN BEETHOVEN (VOLUME 3)
BERLIN, GERMANY (VOLUME 6) • ANNE FRANK (VOLUME 4)

Answer: Germany became unified first in 1871 and again in 1990.



In 1989 on the day after East Germany opened its borders with West Germany people climbed the Berlin Wall. It was the first time in over 25 years that people could travel freely between the two parts of Berlin. Here you can see the Brandenburg Gate, an older "dividing line," in the background.

© Anthony Suau–Liaison/Getty Images

Once upon a Wall

Berlin, the capital of Germany, was bombed to mostly **rubble** during World War II. After the war the city was slowly rebuilt, and Germany was split into two separate countries.

The city of Berlin was actually located in East Germany, but half of the city belonged to West Germany. In 1961 the East German government built the Berlin Wall to divide the city's western and eastern sections. The wall was unpopular with many Germans because it separated families and kept them from seeing each other. Nearly 200 people were killed trying to pass from East Berlin into West Berlin.

DID YOU KNOW?

The Berlin Wall was built overnight and surprised the world. It was guarded at all times, and very few people were allowed to cross through it. Of those who tried to sneak through, some were successful, but many were caught and punished and many killed.

In 1989, however, the Berlin Wall was torn down. The next year the two parts of Germany became a single country again. And Berlin was once more its undivided capital.

The rubble caused by bombing during World War II was used to build hills. The highest of these is called Teufelsberg, which means "Devil's Mountain." The 380-foot-high hill is now used for winter sports such as skiing and sledding.

Berlin has many historic buildings that survived the war. Important ones include the Brandenburg Gate, Charlottenburg Castle, and the Kaiser Wilhelm Memorial Church. At the top of the Brandenburg Gate is a stone chariot with four horses. It was shattered during the war but was remade. Like the Berlin Wall, the Brandenburg Gate was an important symbol of the division between East and West Germany. Today it is a symbol of peace and **unity** for the German people.

LEARN MORE! READ THESE ARTICLES…
GERMANY (VOLUME 6) • THE GREAT WALL (VOLUME 7)
PRAGUE, CZECH REPUBLIC (VOLUME 6)

Answer: The Berlin Wall was torn down in 1989, and the two parts of Germany became a single country again.

Snow and Chocolates



Switzerland's great beauty draws visitors from all over the world to its snowcapped mountain ranges, blue lakes, green pastures, and the tall trees covering the mountainsides. Switzerland is a country in central Europe. Bern is its capital city, and its people are the Swiss. Its neighboring countries are Germany, Austria, Liechtenstein, Italy, and France. Because of its close contact with these countries, Switzerland's official languages include German, Italian, and French.

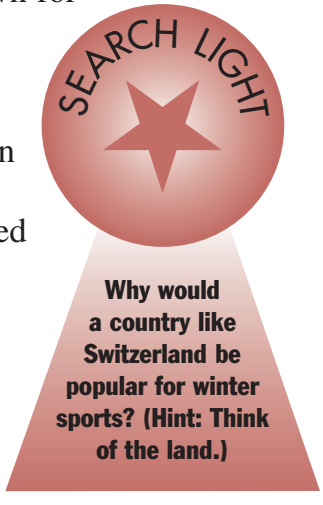
The mountains known as the Alps cover more than half of Switzerland. The Jura Mountains occupy more than another tenth of the country. The Mittelland **plateau** is a flatland that lies between the two mountain ranges.



Because it has so many mountains, Switzerland has bridges and tunnels that help people travel within the country. The tunnels that run through the Alps are among the world's longest.

High up in the Alps you'll find snow and ice all year long. With so much snow, Switzerland has become known for its winter sports. People travel from all over the world to ski, skate, and sled in the **resort** towns of St. Moritz, Gstaad, and Interlaken. The mountain resorts are also popular in summer for activities such as boating, swimming, hiking, and mountain climbing.

The highest grape-growing area of central Europe is located in the Swiss Alps, at an **altitude** of 3,900 feet. Most people know Switzerland better for its watches and cheese, both of which are world famous. And so are the delicious chocolates the Swiss make!



LEARN MORE! READ THESE ARTICLES…
CACAO (VOLUME 10) • ITALY (VOLUME 6) • MOUNTAINS (VOLUME 1)

The Matterhorn, a mountain peak in the Alps, rises above a valley in Switzerland.
© Royalty-Free/Corbis

SWITZERLAND



DID YOU KNOW?

When the new 35-mile-long Gotthard Tunnel opens in 2011, it will be the longest railway tunnel in existence. One of the longest road tunnels also happens to be in Switzerland and is also called Gotthard—the 10-mile-long St. Gotthard Tunnel.

Answer: Some mountains in Switzerland have snow on them year-round, and many lakes freeze. This makes it ideal for sports such as skiing, skating, and sledding.

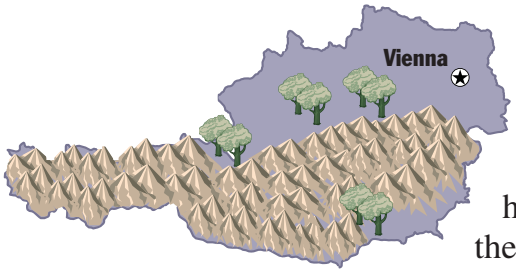
Land of the Blue Danube



Austria is a small beautiful country in central Europe. Most of Austria is covered with woods and meadows, so it looks quite lush and green. The lowland forests are filled with beech, birch, and oak. Fir trees cover most of the foothills, while high up on the mountains grow larch and stone pines.

Roaming in the forests are wild animals such as brown bears, deer, hares, foxes, and badgers. The birds of the meadows and woods include eagles, falcons, owls, and storks. The Danube River drains almost the entire country, and the main lakes are Lake Constance and Neusiedler Lake.

The chain of mountains called the Alps stretches across the country for nearly 340 miles from east to west. The highest peak, called Grossglockner, is 12,457 feet above sea level. Austria has so many mountains that only about half the land is good for farming.



Austria attracts visitors with much more than scenery. Those who enjoy winter sports head for the many ski resorts in the Alps. Fans of theater and music flock to Salzburg every summer for a festival of plays and concerts. Music written by the great Austrian composer Wolfgang Amadeus Mozart is often performed at the Salzburg Festival.

Austria can satisfy not only the eyes and ears but also the appetite. Pastries such as the chocolate Sacher torte are among its most famous products.

LEARN MORE! READ THESE ARTICLES…
MOUNTAINS (VOLUME 1)
WOLFGANG AMADEUS MOZART (VOLUME 4)
VIENNA, AUSTRIA (VOLUME 6)

DID YOU KNOW?

Aside from pastries, you may know the name Vienna from another food. Wieners (also known as frankfurters or hot dogs) were named after Vienna, which is known as Wien in the German language.



SEARCH LIGHT

Fill in the blanks: People who are fond of theater and music travel from all over the world to attend the _____ _____, a famous celebration of Austrian musicians and artists.

The city of Salzburg was the birthplace of the composer Wolfgang Amadeus Mozart. It has been a music center for centuries and now hosts the Salzburg Festival every summer.
© Adam Woolfitt/Corbis

Answer: People who are fond of theater and music travel from all over the world to attend the Salzburg Festival, a famous celebration of Austrian musicians and artists.



DID YOU KNOW?

The Viennese coffeehouse has been a tradition for three centuries. At one time, artists and celebrities gathered at famous literary and theatrical cafés. The word "café," in fact, comes from a Turkish word meaning "coffee."

City of Music

Vienna, the capital of Austria, is famous for its music and its splendid buildings, especially the museums and palaces. What you might find surprising is that Vienna today looks very much like it did hundreds of years ago.

Visitors may take a trip through the city streets in a horse-drawn carriage called a "fiacre." No well-dressed fiacre driver would be seen without a colorful shirt and an old-fashioned black hat, according to custom.



The Vienna State Opera House.
© Royalty-Free/Corbis

One of Vienna's most impressive sights is the spire of St. Stephen's **Cathedral** looming over the city. The cathedral bell weighs 20 tons. The metal to make it was melted down from cannons that were captured from the Turkish army in 1711.

Another important building is the State Opera, where many great composers have heard their works performed. That is where the opera composers Richard Wagner and Giuseppe Verdi conducted and where Gustav Mahler was director. The State Opera opened in 1869 with a performance of Wolfgang Amadeus Mozart's *Don Giovanni*.

Museums have been made from houses of famous **composers** Joseph Haydn, Mozart, Ludwig van Beethoven, Franz Schubert, and Johann Strauss. Before they became famous, Haydn and Schubert were members of the Vienna Boys' Choir. The choir was started in 1498 and still performs in the Hofburg Chapel on Sunday mornings. Now you can see why Vienna is called one of the music capitals of the world.

SEARCH LIGHT

Fill in the blank: Because of the many famous composers who have lived there, Vienna is known as one of the _____ capitals of the world.

LEARN MORE! READ THESE ARTICLES…
LUDWIG VAN BEETHOVEN (VOLUME 3) • BERLIN, GERMANY (VOLUME 6)
PRAGUE, CZECH REPUBLIC (VOLUME 6)

One of the many historic buildings in Vienna is the Schonbrunn Palace. The palace was once the home of many Austrian rulers but is now a museum.
© Adam Woolfitt/Corbis

Answer: Because of the many famous composers who have lived there, Vienna is known as one of the music capitals of the world.

New Beginnings in a Historic Land



On January 1, 1993, the nation of Czechoslovakia did a remarkable thing—the former **communist** country split peacefully into two independent countries. The eastern section became Slovakia. The western provinces, Bohemia and Moravia, became the Czech Republic. The Czech Republic is the larger of the two new countries. Its capital is Prague.

The Czech Republic has many hills and mountains. These include the Sumava, Ore, Sudeten, and Krkonose mountains. The country is noted for its karst region—a limestone area with many sinkholes, caverns, and underground passages and lakes. Many people visit the Czech Republic especially to participate in winter sports. Others go there for fishing and hunting and to enjoy the beauty of the mountains. Among the country's wildlife, the mouflon, an endangered mountain sheep, is reared in game reserves.

Farming is very important in the Czech Republic. The most important crops are sugar beets, wheat, barley, potatoes, and corn. Northern Bohemia is known for a plant called the "hop," used in flavoring beverages. The Czech Republic also has many factories that manufacture iron, steel, aluminum, fertilizers, and cement. Cotton, wool, and **synthetic** fibers are also produced and made into clothing.

The Czechs are known for traditional crafts. They make beautiful glass and **porcelain** objects and are especially known for their fine **crystal.** Some people make pretty lace and others make delightful wood carvings. And among the many Czechs who have contributed to the arts are the novelist Franz Kafka, **composer** Antonin Dvorak, and poster artist Alphonse Mucha. Playwright Vaclav Havel became the first president of the independent Czech Republic.



LEARN MORE! READ THESE ARTICLES…
EUROPE (VOLUME 6)
FOLK ARTS AND CRAFTS (VOLUME 3)
PRAGUE, CZECH REPUBLIC (VOLUME 6)



The town of Telc is in southern Moravia, one of the two provinces that make up the Czech Republic.
© Dave Ball/Corbis

DID YOU KNOW?

The Czech Republic has been greatly affected by acid rain. Because of this pollution, many trees have been cut down. By the end of the 20th century, nearly three-fifths of the republic's forests had been destroyed or seriously damaged.

SEARCH LIGHT

Is the Czech Republic larger or smaller than Czechoslovakia?

Answer: The Czech Republic is smaller than Czechoslovakia.



DID YOU KNOW?

Prague is home to a number of film studios. Czech cinema has been admired worldwide. Director Milos Forman has earned world renown. And Jan Sverak's 1996 film *Kolya* won major awards in Japan, Italy, and the United States.

City of 100 Spires

Prague is nicknamed the "City of 100 Spires" because of its many church steeples. It is the capital of the Czech Republic and is known as Praha to the people who live there.

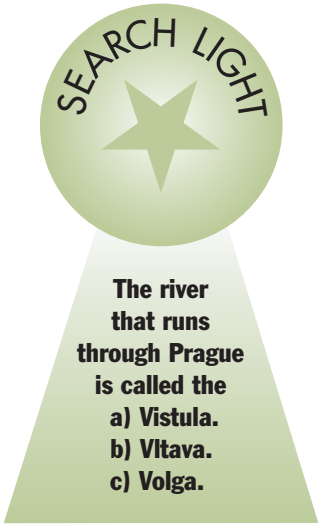
Prague lies on the banks of the Vltava River. The city center has many historic buildings, bridges, and museums. From the beautiful Charles Bridge, you can see the great castle of Hradcany, also called Prague Castle, which was first built in the 9th century. It is now the home of the president of the Czech Republic.

At the center of the Old Town is the Old Town Square, where the 600-year-old Tyn Church is found. The church clock tells the season as well as the time. In the center of the square is a statue of Jan Hus, a religious leader who died in 1415 but is still a hero to the Czech people.

Southeast of the Old Town is a broad street called "On the Moat." It divides the old and the new parts of Prague. It is now the main shopping street. At its northern end stands the old city gate, called Powder Tower.

In the center of Prague is Wenceslas Square. At one end of this broad public square is the National Museum. Long ago Wenceslas Square was the city's horse market. It now has many hotels, stores, and cafés. Charles University (also called the University of Prague) was started in 1348 and is the oldest university in central Europe. Prague also has the oldest Jewish cemetery in Europe.

Unfortunately, much of this beautiful city was damaged during the great flood of 2002.

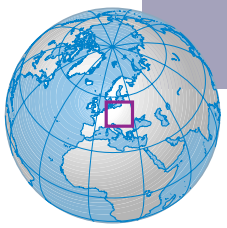


LEARN MORE! READ THESE ARTICLES…
CINEMA (VOLUME 3) • A JEWISH LEGEND: THE GOLEM OF PRAGUE (VOLUME 5)
CZECH REPUBLIC (VOLUME 6)

Charles Bridge spans the Vltava River in Prague. In the distance, the spires of St. Vitus' Cathedral, a richly decorated Gothic church, rise above the skyline. Next to the church is the huge castle of Hradcany (the long white building in the background at right).
© William Boyce/Corbis

Answer: b) Vltava.


SEARCH LIGHT
How could Poland have gone from being Europe's largest state to being no state at all? (Hint: The answer isn't in the article, so you'll have to think it through.)



Country in the Heart of Europe



If someone had asked "Where is Poland?" at different times in the past 1,000 years, they would have been given many different answers.

In the mid-1500s, for example, Poland was the largest country in Europe. But at other times, there was no Polish state at all! In the late 1700s it was no longer a separate country after it was divided by the countries of Russia, Prussia, and Austria. The boundaries of modern Poland were marked out in 1945. Its constitution (laws of government) of 1791 is the oldest in Europe.



About two-thirds of Poland's more than 38 million people live in cities. Warsaw, the capital, is the largest city. Other important cities include Lodz, Gdansk, and Krakow. About 90 percent of Poles are Roman Catholics. They are especially proud because in 1978 Karol Jozef Wojtyla became Pope John Paul II, the first Polish leader of the Roman Catholic church.

Polish ham is one of the country's most famous exports. In addition to raising pigs, people also raise cattle and sheep throughout the country. Nearly half of Poland's land is used for farming.

Poland has had a changeable history, with shifting boundaries, but it's always enjoyed a rich cultural heritage. In literature Polish poet Czeslaw Milosz won the 1980 Nobel Prize for Literature, and poet Wislawa Szymborska won it in 1996. Frédéric Chopin, a famous composer, was from Poland. And one of the most famous scientists in history, Mikolaj Kopernik, was born in Poland. You may know this great astronomer as Nicolaus Copernicus.

DID YOU KNOW?

During World War II the Nazis avoided Rozwadow, Poland, because they believed many people had typhus, a deadly disease. But doctors there had simply injected people with harmless bacteria that looked like typhus in blood tests. This saved many lives.

LEARN MORE! READ THESE ARTICLES…
NICOLAUS COPERNICUS (VOLUME 4) • MARIE CURIE (VOLUME 4) • RUSSIA (VOLUME 6)

The port of Gdansk is one of the largest cities in Poland.
© Bernard and Catherine Desjeux/Corbis

Answer: Poland was divided and ruled by different countries at various times in its history. The two countries that most recently controlled Poland were Russia and Germany.

SEARCH LIGHT

Who were the first people in Iceland?



This power plant produces heat for the city of Reykjavik using steam from hot springs.
© Roger Ressmeyer/Corbis

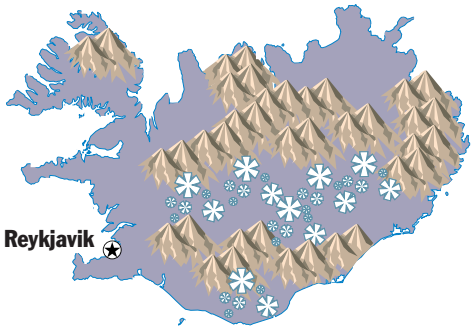


Bay of Smokes



Reykjavik is the capital and largest town of Iceland, a small island country in the North Atlantic Ocean. The word Reykjavik means "bay of smokes." The city's name comes from the steaming hot springs nearby. The town is heated by the hot water carried by pipes from these springs. The water is made hot by the many volcanoes underneath Iceland.

Even though the city is very far north, it has a fairly mild climate. However, winters are long and very dark. Much of Iceland's area outside the city is covered by **glaciers**.



According to legend, a Viking named Ingolfur Arnarson founded the city about 1,200 years ago. For many years Reykjavik remained just a small fishing village. It was occupied and ruled by the Danes, the people of Denmark. Today Reykjavik is a major fishing port. It is also Iceland's main center for business. Not surprising for a fishing city, Reykjavik's chief industries are processing fish and building ships.

Iceland has one of the highest **literacy** rates in the world. Almost all of the people can read. Iceland has a rich literary tradition, and Icelandic **sagas** date from the 13th century. Folklore is also popular, especially stories about trolls.

The city has many museums and art galleries. The country's traditional cuisine includes many seafood dishes and *skyr*, a dessert made with skim milk and served with fresh bilberries.

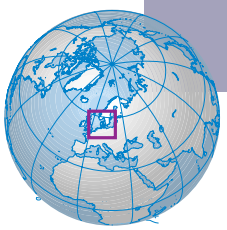
LEARN MORE! READ THESE ARTICLES…
GLACIERS (VOLUME 1) • THERMAL POWER (VOLUME 2)
VIKINGS (VOLUME 4)

DID YOU KNOW?

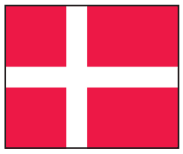
Apparently it's not uncommon for workers in Iceland to hire a medium to help them if something goes wrong during a construction project. A medium is someone who supposedly can talk to supernatural creatures.

Answer: The Vikings were the first people in Iceland.


SEARCH LIGHT
Find and correct the error in the following sentence: The Kingdom of Denmark is a small European city that lies between the North Sea and the Baltic Sea.



A Nation That's Almost an Island



The Kingdom of Denmark is a small European country that lies between the North Sea and the Baltic Sea. With the countries of Norway and Sweden, Denmark makes up the area known as Scandinavia. Denmark is surrounded by water on nearly all sides. Most of the country lies on a long stretch of land called Jutland and two large islands called Fyn and Zealand. It also has about 480 other smaller islands, but only 97 have people living on them. Copenhagen, the capital of Denmark, is on Zealand. People in Denmark are called Danes and speak the Danish language.



Denmark once had many trees, but most were cut down to make room for farming. There still are some spruce and fir **plantations** in Denmark. These are the types of trees often used as Christmas trees. Many of the wild animals—such as elk, brown bear, and wild boar—died when most of the forests were cut down. But roe deer still roam the countryside, and there are more than 300 kinds of birds in Denmark.

The seafaring warriors known as Vikings came from Scandinavia. But Danes have given much to world art and knowledge. Perhaps you've read or heard the stories of Hans Christian Andersen. He wrote about his native Denmark in stories such as "The Little Mermaid" and "The Fir Tree." Karen Blixen gained fame writing under the name Isak Dinesen. And Søren Kierkegaard was an important thinker and writer. Scientist Niels Bohr won the Nobel Prize for Physics for his work on the structure of atoms, the tiny building blocks of all matter.

LEARN MORE! READ THESE ARTICLES…
COPENHAGEN, DENMARK (VOLUME 6)
ISLANDS (VOLUME 1) • VIKINGS (VOLUME 4)

Frame houses face a field on Zealand, the largest of Denmark's islands.
© Paul Almasy/Corbis

DID YOU KNOW?
The Silkeborg Museum has one of the best-preserved human mummies in the world. He's known as Tollund man, and he lived about 2,400 years ago. His body was found in the bogs north of Silkeborg town.

Answer: The Kingdom of Denmark is a small European country that lies between the North Sea and the Baltic Sea.

City of the Little Mermaid

Copenhagen is Denmark's capital and largest city. It is located on two islands: Zealand and Amager. Denmark is an unusual country because it's made up of a peninsula (Jutland) and over 400 islands. What used to be Copenhagen's city center is located on a little island called Slotsholmen (meaning "castle **islet**").

In 1167 Bishop Absalon of Roskilde had a fortress built on Slotsholmen. This was the beginning of the city. The Christiansborg Palace replaced the fortress, and now it houses the Danish **parliament** and the Supreme Court. The Danish royal family today lives in the Amalienborg Palace.

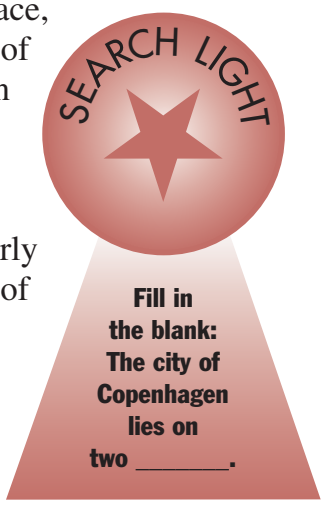


Colorful buildings lining a waterfront in Copenhagen, Denmark.
© Royalty-Free/Corbis

To the west of Slotsholmen is the Town Hall. It has a very interesting feature. Apart from the usual offices, it also has Jens Olsen's **astronomical** clock. This huge clock shows the time in different parts of the world. It also shows the **orbits** of planets and two different calendars.

Nearby is Charlottenborg Palace, the home of the Royal Academy of Fine Arts. The palace was built in the 17th century. Close to it is Tivoli, a world-famous amusement park that opened in 1843.

If you go farther north, you'll see the Citadel, a military **fortress** still used by the Danish army, though it was built nearly 400 years ago. On the harbor outside the fortress is the statue of the Little Mermaid. It is said to be the symbol of the city. The story of the Little Mermaid is a fairy tale written by Hans Christian Andersen, who spent many years of his life in Copenhagen.



LEARN MORE! READ THESE ARTICLES…
ASTRONOMY (VOLUME 2) • DENMARK (VOLUME 6) • PENINSULAS (VOLUME 1)

City natives and visitors alike enjoy the Tivoli Gardens in Copenhagen. Besides its pretty flowers and fountains, Tivoli has restaurants, open-air theaters, and an amusement park with rides and games.
© Steve Raymer/Corbis



DID YOU KNOW?

In World War II when the Germans occupied Copenhagen, the Danish king rode daily through the city on his horse to give his people courage. When asked why the king had no bodyguard, a boy supposedly said, "All of Denmark is his bodyguard."

Answer: The city of Copenhagen lies on two islands.



DID YOU KNOW?

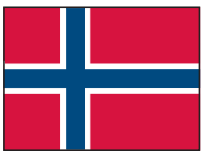
A vast ocean current brings warm water to Norway's coast. This usually keeps the fjords from freezing, even in areas that are north of the Arctic Circle.

SEARCH LIGHT

Fill in the blanks: Two major Norwegian languages are _____ and _____.

Land of Fjords and Mountains





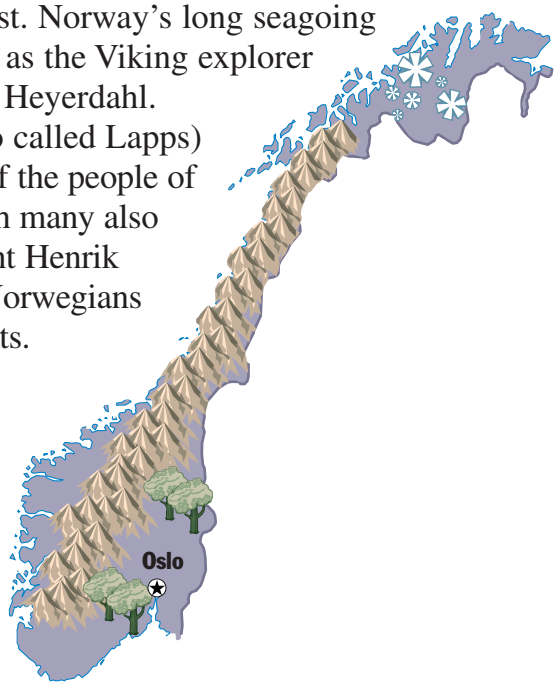
Norway is a country in northern Europe. It lies on the western half of a **peninsula** it shares with Sweden. Together with Denmark, these countries are known as Scandinavia. The many arms of the sea that stretch into Norway are called "fjords." The longest and deepest of these is Sogne Fjord. Almost every part of the country is close to the sea or a fjord.

Norway is also covered with mountains. The two highest peaks are Galdhø Peak and Mount Glitter. Each of them is more than 8,000 feet tall. **Glaciers** can be found in some mountain ranges. The Jostedals Glacier is the largest in Europe.

Norway is a leading producer of **oil**, which comes from the North Sea. Many people work in **forestry**, harvesting trees for **lumber**. Most of Norway's forests have evergreen trees such as pine and spruce. To the south, though, there are ash, birch, and aspen trees. Elk, wild reindeer, lemmings, and wolverines live in the mountains and forests.

Fishing is a major **industry** in coastal areas. Other countries buy fish from Norway, especially frozen cod, canned sardines, and herrings. And whales can be seen, too, off the Norwegian coast. Norway's long seagoing tradition includes many famous explorers, such as the Viking explorer Leif Eriksson and the adventurer-scientist Thor Heyerdahl.

Some of Norway's native Sami people (also called Lapps) still practice traditional reindeer herding. Most of the people of Norway speak either Bokmal or Nynorsk, though many also speak English. Painter Edvard Munch, playwright Henrik Ibsen, and composer Edvard Grieg are famous Norwegians who have made important contributions to the arts.



LEARN MORE! READ THESE ARTICLES…
GLACIERS (VOLUME 1) • SWEDEN (VOLUME 6)
VIKINGS (VOLUME 4)

Many long narrow arms of the sea called "fjords" stretch into the western part of Norway. Here a woman looks down on Geiranger Fjord.
© Bo Zaunders/Corbis

Answer: Two major Norwegian languages are Bokmal and Nynorsk.

Scandinavia's Largest Country



The Kingdom of Sweden in northern Europe is the largest of the Scandinavian countries. **Scandinavia** is the area occupied by Sweden, Norway, and Denmark. Norway and Finland are on Sweden's borders. The rest of the country is bounded by water.

The capital of Sweden is Stockholm, nicknamed the "Venice of the north." Like that Italian city, Stockholm has many waterways and bridges. Sweden has many rivers and lakes. And rivers provide half of the country's electric power. The rivers and lakes also have a large variety of fish.

SEARCH LIGHT

Aside from fish, what do Swedes get from their rivers that helps them in their everyday lives?

Sweden is a cold country. But the temperatures depend on the **elevation** of the land and its nearness to the sea. It's warmer near the sea and colder on the mountains. Evergreen forests of spruce and pine cover more than half of Sweden. In the south there are also deciduous trees (trees that lose their leaves). Because of its rich forests, Sweden is known for its timber, wood **pulp**, paper, and furniture industries.



Within its forests Sweden has many animals and birds. There are hares, weasels, shrews, foxes, ermine, and elk. Snipes, plovers, wagtails, partridges, ptarmigans, grouse, and woodcocks are just some of Sweden's many birds.

The Swedes celebrate many special festivals. On December 13 they celebrate St. Lucia's Day. On that day young girls wear green wreaths with lighted candles on their heads and serve coffee and buns to older family members. Midsummer Eve is celebrated with singing and dancing on about June 24, around the time of the longest day of the year.

LEARN MORE! READ THESE ARTICLES…
DENMARK (VOLUME 6) • PENINSULAS (VOLUME 1)
RABBITS AND HARES (VOLUME 12)



DID YOU KNOW?

Although Sweden can be cold, you still may want to consider moving there when you get a little older. By law all Swedish citizens get at least five weeks of paid vacation a year.



Much of Stockholm, the capital of Sweden, is built on islands. The islands are connected to each other and to city districts on the mainland by old bridges and modern overpasses.

© Macduff Everton/Corbis

Answer: Half of Sweden's electricity comes from its rivers. As the rivers flow through large dams, the water turns motors known as "turbines." The turbines make electricity.



DID YOU KNOW?

It would take all the rivers in the world a year to fill Russia's Lake Baikal just once.

SEARCH LIGHT

Which country is bigger in land area than Russia?
a) United States
b) China
c) Romania



The Largest Country in the World



Russia is the largest country in the world—nearly twice the size of China or the United States. Russia is so large, in fact, that it stretches across two **continents**, Europe and Asia.

Until 1917, Russian **tsars** such as Peter the Great and Catherine the Great had long ruled the country. The communist nation known as the Soviet Union was founded in 1922, and Russia was its largest and most important republic. The Soviet Union dissolved in 1991, however, and Russia became an independent country again.

Most of Russia is covered by large rolling plains. Through the plains flow Russia's rivers, including the Volga, Europe's longest river. "Mother Volga" flows into the Caspian Sea, the world's largest **inland** body of water. Many rivers drain into the Arctic Ocean or into Lake Baikal, the world's deepest lake. More than one-fifth of all the world's fresh water is in Lake Baikal. That's more water than is in all five of the Great Lakes in North America put together.

Roughly 145 million people live in Russia. About three-fourths of them live in cities. Moscow, the capital, is the largest city. It has more than 8 million citizens. St. Petersburg is the second largest city, with more than 4 million people. Both cities have many world-famous museums and buildings.



Russians have contributed greatly to the arts. The works of writers Aleksandr Pushkin, Leo Tolstoy, and Anton Chekhov are still popular today. So is the music of composer Pyotr Ilich Tchaikovsky. And Russia's ballet companies have trained some of the world's most gifted dancers, including Anna Pavlova and Mikhail Baryshnikov.

LEARN MORE! READ THESE ARTICLES…
ASIA (VOLUME 7) • CZECH REPUBLIC (VOLUME 6) • DANCE (VOLUME 3)

St. Basil's Cathedral is a colorful landmark in Moscow, the capital of Russia.
© Jose Fuste Raga/Corbis

Answer: No other country is larger than Russia.

Two-in-One City



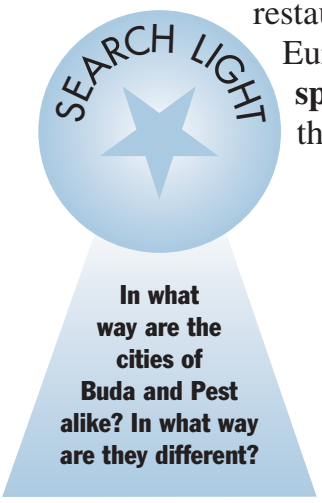


Budapest is the capital of Hungary and is located on the banks of the Danube River. It is made up of two main sections, Buda and Pest, which were once separate cities. These two communities and another, Old Buda, joined to form a single city in 1873. Buda is on the west bank of the Danube, and Pest is on the east bank. A railway tunnel and many bridges connect the two.

Buda sits on several hills and is the older and more beautiful part of the city. At its center is the Varhegy, or Castle Hill. Buda is also the site of the old Citadel, or fortress, and the Royal Palace. Here you'll see the Matthias Church, where many of Hungary's kings were crowned. Janos Hill is the highest of the Buda Hills. You can take a chairlift to the peak for a glorious view of the whole city.

Pest is mostly flat. Although it is now an industrial center with many modern buildings, Pest is the home of the world's second largest **synagogue**, which was built in 1859.

Classical music has a long history in Budapest, and traditional folk music, sometimes played by people known as Roma, can be heard in some restaurants. It might surprise you to know that Budapest is Europe's largest spa city. There are about 120 **thermal springs** in the city, and some of the baths built around them are hundreds of years old.



LEARN MORE! READ THESE ARTICLES…
BUCHAREST, ROMANIA (VOLUME 6) • EUROPE (VOLUME 6)
SOFIA, BULGARIA (VOLUME 6)

Budapest, HUNGARY



The Danube River reflects the streetlights of Budapest at dusk. The city was once nicknamed the "Queen of the Danube."
© Tim Thompson/Corbis

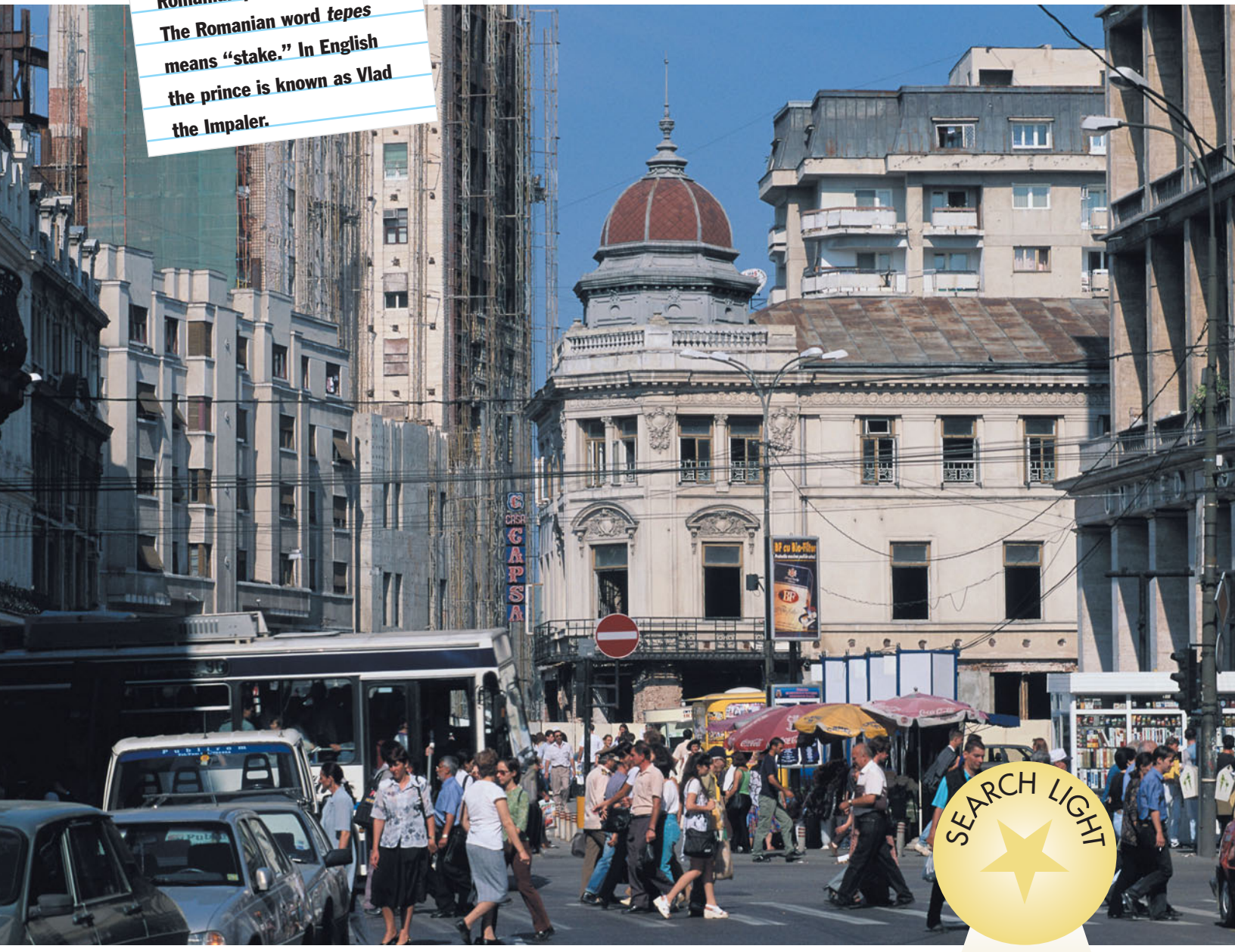
DID YOU KNOW?

The combined city was originally called Pest-Buda. This is because at the time Pest was the larger of the two, with many more people living in it.

Answer: Both cities are on the Danube River, and together they're the capital of Hungary. Buda is older and more hilly. Pest is younger and has more industrial areas.

DID YOU KNOW?

In his novel *Dracula*, Bram Stoker based the character of the famous vampire on a Romanian prince, Vlad Tepes. The Romanian word *tepes* means "stake." In English the prince is known as Vlad the Impaler.



Bucharest is the capital and largest city of Romania. It is the center of business, government, and the arts for the country.
© Sandro Vannini/Corbis

SEARCH LIGHT

Which of these tourist sights cannot be found in Bucharest?
a) Revolution Square
b) Danube River
c) Cretulescu Church
d) Antim Monastery



"Little Paris"

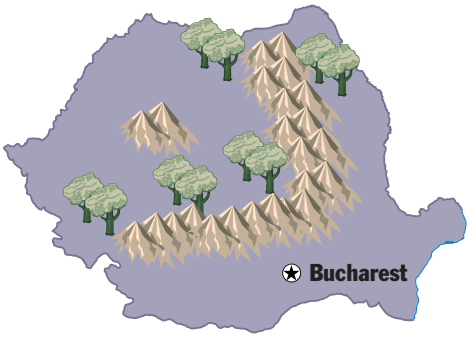


Bucharest, the capital of Romania, has many public squares. A square is an open area that's formed where two or more streets meet. Many of the city's streets and **boulevards** lead into squares. The famous Revolution Square contains the former royal palace and Cretulescu Church, which was built in 1722. It is one of the most beautiful squares in the city. With its tree-lined boulevards and varied **architecture**, Bucharest was once known as "Little Paris."

You can experience some of the city's long history in many of its old buildings. The Antim Monastery and the churches of Stavropoleos and Saint Spiridon are treasured for their age and for their fine architecture. The University of Bucharest was founded in 1864.

Bucharest also has preserved much of its history in its many museums. Two of the most popular are the Museum of the History of the City of Bucharest and the National Art Museum, which is now in the royal palace. Some tourists prefer the Village Museum. It is an open-air building near the Arch of Triumph that displays many kinds of peasant houses.

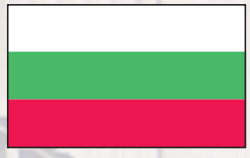
There is much to do in the city, even after the museums close. Bucharest has a national **philharmonic** orchestra, as well as the "I.L. Caragiale," the National Theater, which is named for a famous Romanian playwright. There are also a Theater of Opera and a Ballet of Romania. A typical Romanian meal enjoyed before or after going to the theater might include a kind of bread called *mamaliga* with cheese and sour cream.



LEARN MORE! READ THESE ARTICLES…
ARCHITECTURE (VOLUME 3) • PARIS, FRANCE (VOLUME 6)
YEREVAN, ARMENIA (VOLUME 7)

Answer: Only the Danube River cannot be found in Bucharest.

Bulgarian Capital of Today and Yesterday



Sofia is the capital of the Eastern European country of Bulgaria. It is also the largest city in the country. It lies in a valley in the western part of Bulgaria.

Sofia has had many different names. When the Romans conquered it long, long ago, they called it Serdica. This name came from the Serdi, a tribe of people who had settled there. When it became part of Bulgaria, it was called Sredets. That name means "in the middle," and it refers to the position of the city in the center of the Balkan Peninsula. The Turks conquered Bulgaria in the late 1300s. And about that time the city was given the name Sofia, after its St. Sofia church. In the Greek language, *sofia* means "wisdom."

Like many old cities, Sofia has an old section and a new one. The old section has narrow streets and small houses that are built close to each other. There were once many **mosques** in this part of the city. They were built during the Turkish rule.

The modern part of the city has large apartment buildings and wide avenues. Most people in Sofia live in these buildings. There are similar apartments and broad roads in the suburbs too.

If you like history, you'd like to visit the churches of St. George, Boyana, and St. Sofia. You can also find the Alexander Nevsky Cathedral in Sofia. It was built to honor the Russians who helped Bulgaria to become an independent country in the 1870s.

LEARN MORE! READ THESE ARTICLES…
ATHENS, GREECE (VOLUME 6) • BELGRADE, SERBIA (VOLUME 6)
ISTANBUL, TURKEY (VOLUME 7)



Sofia, BULGARIA



DID YOU KNOW?

In Bulgaria, Christmas is celebrated on two days, December 25 and 26. Under communism, religious holidays weren't allowed. So people invented a supposedly "non-religious" holiday, and they celebrated it the day after Christmas.

Sofia is a busy but beautiful city. Its buildings display a mixture of many different styles of architecture.

© Sandro Vannini/Corbis

SEARCH LIGHT

Choose the answer that puts the city's different names in order from earliest to most recent.

a) Sredets, Sofia, and Serdica
b) Serdica, Sofia, and Sredets
c) Serdica, Sredets, and Sofia

Answer: c) Serdica, Sredets, and Sofia

A Country of Many Cultures





The country of Serbia was part of a bigger country called Yugoslavia until 2003. It lies on the Balkan **Peninsula** in southeastern Europe. The country's capital is Belgrade. Yugoslavia once included several other regions that are now independent countries. These were Montenegro, Croatia, Slovenia, Macedonia, and Bosnia and Herzegovina.

Before the 20th century, Serbia was ruled by many different powers. This made it a country with many **diverse** cultures. The Slavs, the Turks, the Italians, and the Austrians have all influenced the food, folk costumes, and buildings of Serbia. This large mix of people has sometimes caused problems. In the 1990s there was war between the Serbs and several other ethnic groups in the area, including Albanians, Croats, and Bosnians. There were many wars earlier in the 20th century. By the beginning of the 21st century, much of the fighting had ended, and the country was beginning to rebuild itself.

The many mountains of Serbia include the Balkan Mountains and the Dinaric Alps. The country's highest peaks reach more than 6,600 feet. People raise sheep and goats in the mountain pastures. The main flatland area in the country is the Mid-Danube Plain. It's the best and most important place for growing crops. The main crops are maize, sugar beets, and wheat. Fruits and vegetables are also grown.

Many people go to Serbia to see its very old churches and to visit its mineral springs.

DID YOU KNOW?

After the other countries of Yugoslavia became independent in the early 1990s, Montenegro stayed connected to Serbia. Serbia and Montenegro broke apart in 2006, and both became independent countries.

LEARN MORE! READ THESE ARTICLES…
BELGRADE, SERBIA (VOLUME 6)
BUCHAREST, ROMANIA (VOLUME 6)
PENINSULA (VOLUME 1)

The town of Subotica is the market center of a farming region in northern Serbia.
© age fotostock/SuperStock



SEARCH LIGHT

Serbia was part of Yugoslavia for many years. When did it become a separate country?

Answer: 2006



The city of Belgrade grew up around the Kalemegdan fortress. The original fortress was built more than 2,000 years ago. It has been changed many times in the years since then.

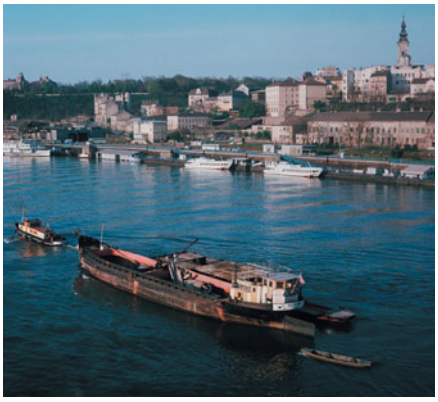
DID YOU KNOW?

The Danube River was traditionally called the Blue Danube because of its beautiful color. There is even a waltz about the river, also called "The Blue Danube," by Johann Strauss the Younger. Sadly, the water is so polluted now that it's more brown than blue.

White Fortress

Belgrade is the capital of Serbia. Serbians call the city Beograd, which means "white fortress." The city lies at the meeting point of two rivers, the Danube and the Sava.

Belgrade is a very old city. It grew up around the Kalemegdan fortress, which was built by an early people called the Celts in the 4th century BC. The fortress was known by the Romans as Singidunum. Its **remains** are a major feature of the present old city, and it is now a history museum. The city was ruled by the Turkish Ottoman Empire for much of the period between the 16th and the 19th century.



The Sava River flowing through Belgrade.
© Paul Almasy/Corbis

Stari Grad, the oldest part of the city, is near the fortress. A few old Turkish houses are still there. Nearby you can see **medieval** gates, churches, tombs, and the old Turkish baths.

The best museums of Belgrade are in the old city. The **Ethnographic** Museum has an excellent collection of Serbian costumes. There are also many displays of art from different parts of the country. In the Gallery of **Frescoes** you can see full-size paintings copied from famous churches in Serbia.

Prince Michael Street is the busiest part of the city. It is full of people, shops, and some of Eastern Europe's best cafés, which offer excellent Turkish coffee. In the cafés you can try *punjena paprika* (stuffed peppers) or *sarma u vinovoj lozi* (stuffed grape leaves). *Baklava* is a popular nut-and-honey dessert.

LEARN MORE! READ THESE ARTICLES…
BUDAPEST, HUNGARY (VOLUME 6) • ISTANBUL, TURKEY (VOLUME 7)
SERBIA (VOLUME 6)

SEARCH LIGHT

Find and correct the error in the following sentence: The people of Serbia call their capital city Beograd, which means "white forest."

Answer: The people of Serbia call their capital city Beograd, which means "white fortress."

© Otto Lang/Corbis

Borderland Country



Ukraine has one of the largest populations of any European country. It is located at the eastern edge of Europe, near Asia (the word Ukraine means "borderland" or "bordering country"). Ukraine's capital is Kiev, an ancient city that was founded more than 1,000 years ago.

Ukraine is a rather flat country, with only a few mountains. Its major mountains are the Carpathians in the west and the Crimean Mountains in the south. It also contains a portion of the Polissya (also known as the Pripet Marshes), the largest swamp in Europe. The **marshes** have a great variety of wildlife, including elk, wolves, lynx, mouflon (wild sheep), and wild boars.



Ukraine has a rich tradition of storytelling and folk music. Ukraine's folk traditions can be seen in the country's many festivals. At the festivals people in brightly colored costumes perform traditional dances and music. The country's written language is similar to Russian and uses the **Cyrillic** alphabet.

The region that is now Ukraine has a long history. Many years ago Kiev was the center of a country called Kievan Rus. In the 1700s Ukraine came under the control of the Russian **tsars**. In the 19th century it was the main site for battles in the Crimean War between Russia and the Ottoman Turks. Ukraine became part of the Soviet Union in the early 20th century. It was known as the country's breadbasket because it produced large amounts of grain (particularly wheat). In 1991, with the fall of the Soviet Union, Ukraine became an independent country.

LEARN MORE! READ THESE ARTICLES…
FOLK MUSIC (VOLUME 3) • RUSSIA (VOLUME 6) • SWAMPS (VOLUME 1)



DID YOU KNOW?

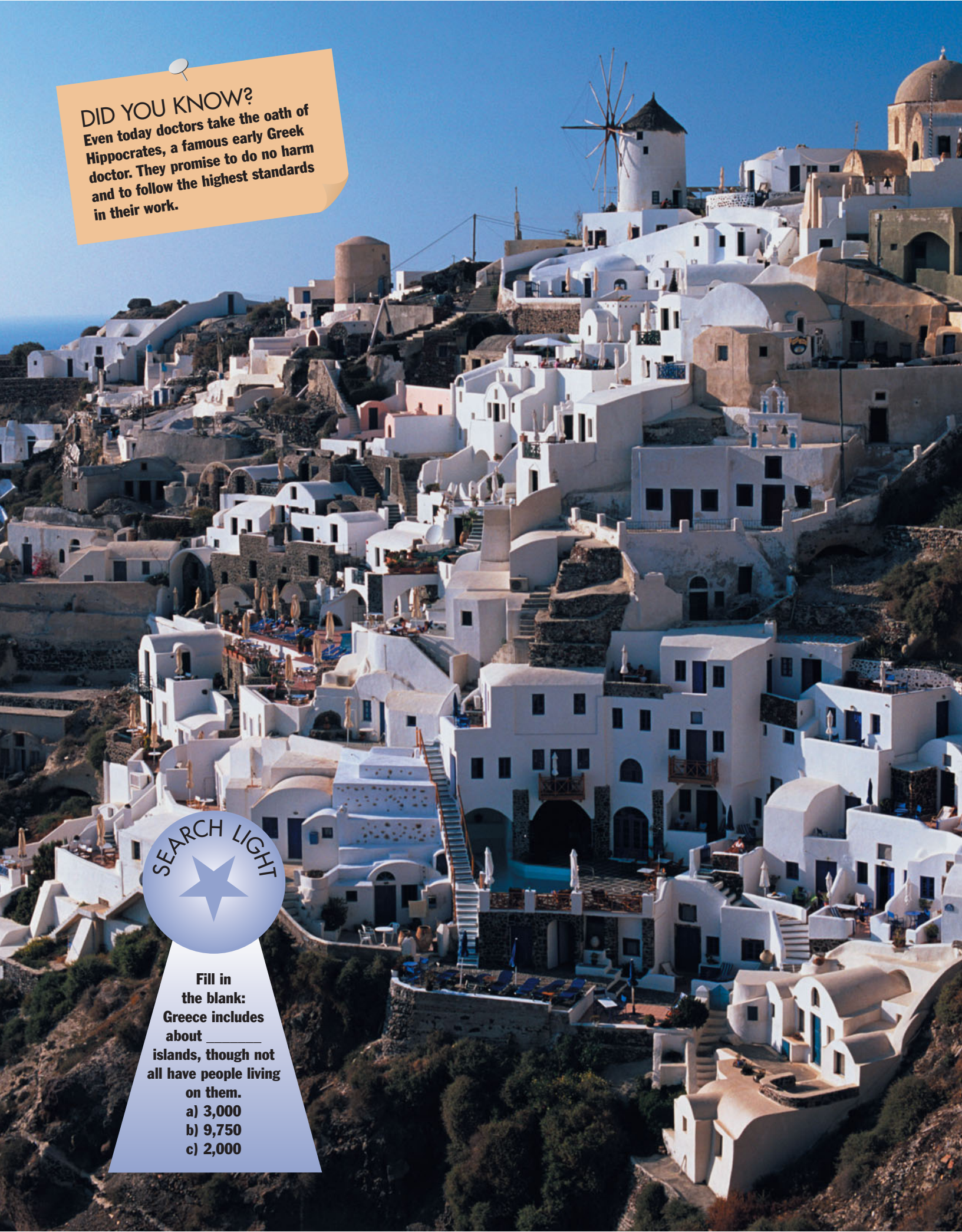
The Ukrainian city of Chernobyl was the site of the world's worst nuclear power station accident. The accident occurred in April 1986.

Ukrainian folk dancers perform in traditional costumes.
© David Cumming; Eye Ubiquitous/Corbis

SEARCH LIGHT

Ukraine was the center of what war in the 19th century between Russia and the Ottoman Empire?

Answer: The Crimean War



DID YOU KNOW?

Even today doctors take the oath of Hippocrates, a famous early Greek doctor. They promise to do no harm and to follow the highest standards in their work.

SEARCH LIGHT

Fill in the blank: Greece includes about _____ islands, though not all have people living on them.

a) 3,000
b) 9,750
c) 2,000



Land of Islands



The country of Greece is surrounded on three sides by seas. To the south is the Mediterranean Sea, to the west is the Ionian Sea, and to the east is the Aegean Sea. More than 2,000 islands in the Ionian and Aegean seas belong to Greece. But people live on only about 170 of them. The islands are divided into two groups—the Ionian Islands and the Aegean Islands—depending on which sea they're in.

Besides its many islands, Greece also has many mountains. The tallest is Mount Olympus. It is 9,570 feet high. Zeus, Ares, Athena, and all the other Greek gods and goddesses were said to live on Mount Olympus.

Greece was the ancient birthplace of Western civilization. The Greeks learned to read and write more than 3,000 years ago. And it was in Greece that the Olympic Games began some 3,500 years ago. The first modern Olympic Games were held in Athens in 1896.

Many great thinkers and philosophers, such as Socrates, Plato, and Aristotle, came from ancient Greece. It also produced such poets and playwrights as Homer and Sophocles, as well as famous historians such as Herodotus and Thucydides. Pythagoras was one of the earliest mathematicians, and Hippocrates is considered the father of modern Western medicine. Greece was also known for its famous speakers, called "orators." One of the most famous was Demosthenes.

Many rare plants grow in Greece, and medicines are made from some of them. But probably the most important plants are the olive trees of Greece. Much of the olive oil that people all over the world buy comes from Greece.



LEARN MORE! READ THESE ARTICLES…
ATHENS, GREECE (VOLUME 6)
ATLAS: BEARER OF THE WORLD (VOLUME 5)
OLIVE (VOLUME 10)

Whitewashed houses line the hillside of the island of Santorini in Greece.
© ML Sinibaldi/Corbis

Answer: c) 2,000



The Theater of Dionysus in Athens is more than 2,300 years old. If you had lived in ancient Athens, you'd probably have gone to see plays in this huge stone theater. The whole community was expected to attend performances there.

© Michael Nicholson/Corbis

DID YOU KNOW?

So many tourists visit the Acropolis every year that buses are no longer allowed to drive to the top. The exhaust from the buses was polluting the buildings and causing them to fall apart.

City of the Acropolis

One of the first things you notice in Athens, the capital of Greece, is a flat-topped mass of rock at the city's center. It's called the Acropolis and is more than 500 feet high. At the top are buildings that were built very long ago. One of them, the famous Parthenon, was built in honor of the goddess Athena. The city was named after her.

SEARCH LIGHT

How did the first public buildings of modern Athens show the Greeks' respect for the past?

Not too far away is the Theater of Dionysus. This was the city's drama center. It had 13,000 seats arranged in 67 rows. Nearby is the Odeum theater, which seated 5,000 people. It is now used for the Athens summer festival of music and drama.

Theater was very important to the ancient Greeks. When these theaters were built thousands of years ago, the actors wore masks when they performed. The types of plays they performed are called classical Greek tragedies and comedies. These are still performed today.

The modern city grew from the small town at the base of the Acropolis. Many newer parts of the city have been built in the last hundred years or so. Some public buildings were made of white marble to match the buildings on the Acropolis. Today Constitution Square is the center of the city. And the Old Royal Palace that stands on one side of it is the home of the Greek **parliament**.

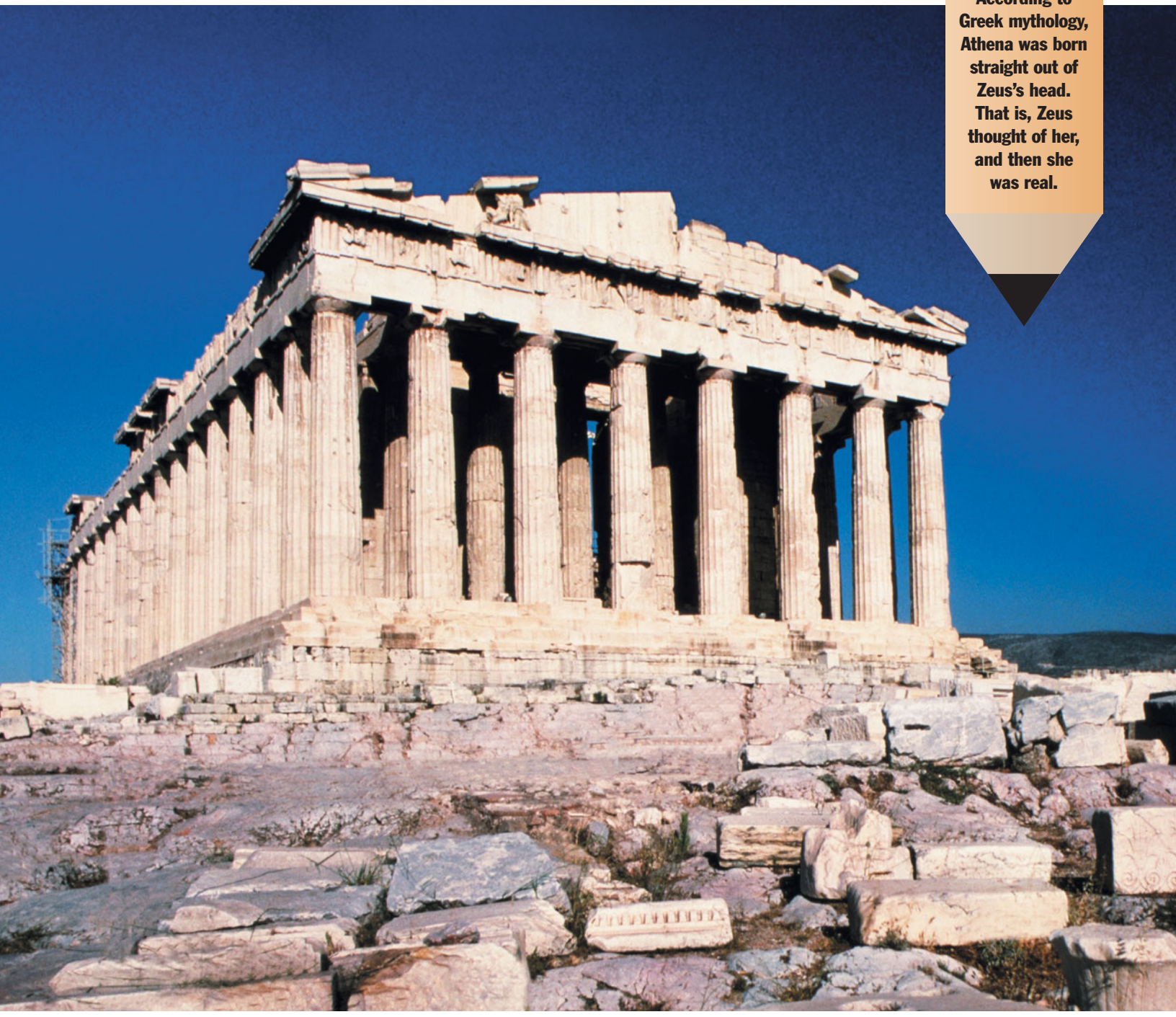
When the Olympic Games were revived in 1896, the first Games were held in Athens in the newly remodeled 70,000-seat Panathenaic Stadium. It was originally built in 329 BC for the Panathenea athletic contests, part of ancient Athens' most important festival.

LEARN MORE! READ THESE ARTICLES…
PARTHENON (VOLUME 6) • SOCRATES (VOLUME 4) • THEATER (VOLUME 3)

Answer: They were made of white marble to match the ancient buildings of the Acropolis.

DID YOU KNOW?

According to Greek mythology, Athena was born straight out of Zeus's head. That is, Zeus thought of her, and then she was real.



The Parthenon has been damaged over the centuries. At one time it was even used to store gunpowder, which exploded by mistake! But its basic structure is still preserved, and art lovers come from all over to see it.

© Charles O'Rear/Corbis

Temple of Athena

According to Greek **mythology**, the king of the Greek gods—Zeus—announced that a new city would be given to the god who offered the most useful gift to the people. Athena, his favorite daughter, was the goddess of war and wisdom. She struck the soil with her spear, and an olive tree sprang up. The people were delighted. Zeus gave the city to Athena and named it Athens in her honor. The olive branch became the symbol of peace, and olives became one of Greece's most important crops.

As the goddess of war, Athena represented the goals of war that include peace, justice, and **unity**. She is usually shown wearing a helmet and carrying a spear and a shield. The owl was her **sacred** animal, so owls came to be associated with wisdom like she was.

The Greek people built Athena a beautiful temple on the Acropolis in Athens. The Acropolis was the **fortified** upper part of the city. It was made of pure white marble and was called the Parthenon. Within the temple stood an ivory and gold statue of the goddess, called the Athena Parthenos.

The rows of pillars on the outside of the temple were carved to represent stories from Greek mythology. On the outer walls, sculptures showed the celebration of the most important festival, Panathenaea. The festival was held on the birthday of Athena.

Today much of this beautiful temple has been destroyed. Many of the sculptures have been moved to the British Museum in London. Other sculptures are in museums in Paris, France, and in Copenhagen, Denmark. However, it is still a beautiful building and remains one of Athens' most popular sights.

LEARN MORE! READ THESE ARTICLES…
ATHENS, GREECE (VOLUME 6)
A GREEK LEGEND: ODYSSEUS AND THE CYCLOPS (VOLUME 5)
TAJ MAHAL (VOLUME 7)

SEARCH LIGHT

Athena was the Greek goddess of
a) war and wisdom.
b) love and money.
c) beauty and talent.

Answer: a) war and wisdom.



The Ponte Vecchio spans the Arno River in the art-filled city of Florence. It connects several historic palaces and contains space for shops.
© William Manning/Corbis

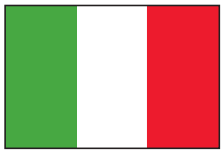
SEARCH LIGHT

Which of the following can all be found in Italy?

a) Milan, Sicily, Rome, and Mount Everest
b) Mount Vesuvius, Paris, and the Statue of Liberty
c) Mount Etna, Pisa, and the Alps



A Tourist's Delight



The country of Italy in south-central Europe has a rich history and many interesting places to visit. Rome, Italy's capital, is one of the world's oldest cities. Other historic Italian cities are Milan, Naples, Florence, and Venice, which has many canals.

DID YOU KNOW?
For many people, it's impossible to imagine a world without Italian food—especially pizza and spaghetti.

In Rome the Colosseum is an **arena** where many years ago thousands of people went to watch **gladiators** fight. Vatican City lies within Rome too. It's the world headquarters of the Roman Catholic church and is where the pope lives. The Sistine **Chapel** in the Vatican is one of the most beautiful buildings in Europe. Its ceiling and walls have famous paintings by the artist Michelangelo.

Pisa in central Italy is best known for its leaning tower. Soon after its construction started, the ground underneath sank. The Leaning Tower of Pisa leans over so much that to climb its stairs you have to lean in the opposite direction. Engineers have stopped it from sinking. They could have straightened out the whole tower, but then it wouldn't be such fun to visit.

On the island of Sicily in southern Italy is Mount Etna, an active volcano. A thin column of smoke always rises from it, and sometimes red-hot lava spills out. Perhaps even more famous are the breathtaking snow-covered Italian Alps in northern Italy. These mountains aren't volcanoes, though. People travel from all over the world to enjoy winter sports in the Alps.



Italy's wine, food, arts, and culture are prized around the world. Famous Italians include artist Leonardo da Vinci, writers Dante and Petrarch, scientist Galileo, and filmmaker Federico Fellini.

LEARN MORE! READ THESE ARTICLES…
MICHELANGELO (VOLUME 3) • VATICAN CITY (VOLUME 6)
VOLCANOES (VOLUME 1)

Answer: c) Mount Etna, Pisa, and the Alps

DID YOU KNOW?

In Rome's Piazza Navona stands a famous structure, the Four Rivers fountain, designed by sculptor Gian Lorenzo Bernini. In medieval times the piazza was flooded to stage naval games.



Parts of several temples and monuments of the ancient Roman Forum (front of picture) still stand in modern Rome. The Forum was the heart of public life in Rome.

© Massimo Mastrorillo/Corbis

The Eternal City

People from all over the world visit Rome, the capital of Italy. **Pilgrims**, **scholars**, art lovers, and tourists all go there to see the "Eternal City" on the banks of the Tiber River. For 3,000 years Rome has been a popular destination for travelers. There is a legend that if you throw a coin into the Trevi Fountain there, you will be sure to return to Rome some day.



The Colosseum in Rome, Italy.
© Dallas and John Heaton/Corbis

Many of the buildings and **monuments** from the city's early days can still be seen. Some of them, such as the Colosseum and the Forum, give us an idea of how the ancient Romans lived and worked. The Colosseum is where **gladiators** fought bloody battles, and the Forum was the site of temples, courts, and public meetings. These buildings were partly destroyed over the years, but Capitoline Hill offers fine views of their **remains**.

Ancient Rome was surrounded by the Aurelian Wall, which was built about AD 270. Much of the wall still survives. The city contains many broad streets and town squares known as **piazzas**, some of which contain beautiful fountains. One of the joys of Rome is a nighttime visit to a lighted piazza. One of the largest monuments in Rome is a white marble building dedicated to King Victor Emmanuel II, who united modern Italy.

On the right bank of the Tiber is the Vatican. This is the headquarters of the Roman Catholic church and the home of the pope. It also houses famous buildings such as St. Peter's **Basilica**, the Sistine Chapel, and the Vatican's many museums and gardens. Though the Vatican grounds are surrounded by the city of Rome, they actually occupy a separate independent state, Vatican City.

SEARCH LIGHT

Fill in the blanks: The _____ and the _____ are remains from ancient Rome.

LEARN MORE! READ THESE ARTICLES…
JULIUS CAESAR (VOLUME 4) • ITALY (VOLUME 6)
VATICAN CITY (VOLUME 6)

Answer: The Colosseum and the Forum are remains from ancient Rome.



Hundreds of people attend a mass outside of St. Peter's Basilica in Vatican City.
© Vittoriano Rastelli/Corbis

DID YOU KNOW?

No one is born a citizen of the Vatican, as people are in other countries. However, all Roman Catholic cardinals are automatically citizens of the Vatican even though most of them live in other countries.

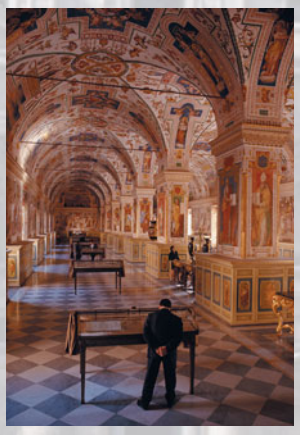
The Smallest State

SEARCH LIGHT

The Vatican is the smallest
a) church in the world.
b) city in the world.
c) country in the world.

Vatican City is the smallest fully independent state in the world. It stands on the banks of the Tiber River in Italy and is surrounded by the city of Rome. Though it occupies a small area, Vatican City does function as a country. It has its own telephone network, post office, bank, power supply, and railway line.

Both the government and the palace structure itself are simply called the Vatican. The Vatican palace is also the official home of the pope, the head of the Roman Catholic church. He leads the more than one billion Catholics throughout the world. Vatican City is also called the Holy See. A see is the area that a Catholic bishop rules over.



A hall in the Vatican Library.
© Ted Spiegel/Corbis

The entrance to the Vatican is St. Peter's Square. At one end of the square is St. Peter's **Basilica**. It is one of the largest churches in the world. Pilgrims—that is, people who travel to holy places—have been visiting it for hundreds of years. Many artists and sculptors helped make St. Peter's Basilica beautiful. Michelangelo helped create the great dome. It is so high that it can be seen throughout Rome. There are many masterpieces inside the basilica. One statue of St. Peter is famous because the kisses of countless pilgrims have worn out one of its feet.

The artwork in the Vatican Museum is known throughout the world. Another famous building in Vatican City is the Sistine Chapel. It is best known for Michelangelo's paintings on its ceiling showing scenes from the Old Testament in the Bible.

LEARN MORE! READ THESE ARTICLES…
CHRISTIANITY (VOLUME 5) • MICHELANGELO (VOLUME 3)
ROME, ITALY (VOLUME 6)

Answer: c) country in the world.

GLOSSARY

abbey place where a community of monks or nuns live and work; also, the church serving that community

altitude the distance of an object above a specific level (such as sea level) on a planet or other heavenly body

architecture the art of designing and building structures, especially buildings that can be lived and worked in

arena enclosed area used for public entertainment

astronomy (adjective: astronomical) the science of the heavenly bodies and of their sizes, motions, and composition

banish to force or drive away

basilica Roman Catholic church that has special ceremonial privileges

bog wet spongy ground

botanical (noun: botany) having to do with plant life

boulevard wide avenue often having grass strips with trees along its center or sides

canal artificial waterway for boats or for draining from or supplying water to land

cathedral large church where a bishop is in charge

champagne a sparkling white wine

channel narrow passageway between two areas of water

chapel smaller, sometimes private place for prayer or special religious services

climate average weather in a particular area

colony (verb: colonize) settlement set up in a distant territory and controlled by a more powerful and expanding nation

commercial having to do with the buying and selling of goods, especially on a large scale and between different places

communism system of government in which all property is owned by the state or community and all citizens are supposed to have a share in the total wealth

composer person who writes music

continent one of the largest of Earth's landmasses

corridor passageway into which compartments or rooms open

crystal clear colorless glass of very good quality

Cyrillic having to do with the alphabet for writing in Russian and other Eastern European languages

democracy (adjective: democratic) government in which the highest power is held by the people and used by them directly or indirectly through representation

diesel type of fuel-fed engine

dike mound of earth built to control water

diverse varied; different

elevation the height of an object above sea level (that is, the surface of the ocean)

engineering design and production of complex objects or structures

ethnography (adjective: ethnographic) the study of human cultures

forestry the science and work of caring for forests

fortify to strengthen with weapons and by military defenses

fortress well-defended place

fresco painting done on freshly spread moist plaster

glacier large riverlike body of ice moving slowly down a slope or spreading over a land surface

gladiator in ancient Rome, a person who fought to the death as part of a public entertainment

heath low evergreen shrub with needlelike leaves and clusters of small flowers

heritage background or descent

Industrial Revolution 18th-century era that began when power-driven machinery became common

industry business and manufacturing

inland part of a country away from the coast

international having to do with two or more countries

islet small island

literacy the ability to read and write

lumber wood used for building or carpentry

marsh area of soft wet land usually overgrown by grasses and sedges

medieval the period in European history from the 5th to about the 14th century AD

mollusk animal of a group that have no backbone and are usually enclosed in a shell (for example, snails, clams, and squids)

monument stone or building set up in memory of a person or event

mosque Muslim place of worship

mythology the stories dealing with the gods and heroes of a particular people or culture

nobility a nation's upper-class social group

oil (or crude oil) liquid taken from the ground and not yet cleaned or separated into such products as gasoline and kerosene; also called petroleum

orbit object's path around another object

parliament the lawmaking division of some governments

patron saint holy person who is chosen to specially protect a group or place

peninsula finger of land with water on three sides

philharmonic large orchestra that plays classical music

piazza open place or area formed at the meeting of two or more streets, especially in an Italian town

pilgrim person who travels to a shrine or holy place to worship

plantation large farming property, usually worked by resident laborers

plateau wide land area with a fairly level surface raised sharply above the land on at least one side

porcelain hard white ceramic ware (earthenware) used especially for making dishes

port protected harbor where ships dock to load or unload goods

predict to foretell an event on the basis of study, experience, or reasoning

pulp mashed-up pasty material

reclaim change to a wanted condition

remains (noun) parts that are left after time passes or some event occurs

resort (noun) fancy vacation spot

rubble confused mass of rough or broken things

sacred holy

saga tale of historic or legendary figures and events of Norway and Iceland

Scandinavia area in northern Europe that includes the countries of Denmark, Norway, and Sweden

scholar person who has done advanced study in a special area

sea level the height of the surface of the sea midway between the average high and low tides

square open place or area formed at the meeting of two or more streets

synagogue Jewish house of worship

synthetic produced artificially

tannery place where animal hides are turned into leather, especially by soaking in a tannin solution

thermal springs a source of hot water coming from underground

tollhouse building or booth where a fee is collected for some permission (such as using a highway)

tsar one of the emperors of Russia until 1917

unity oneness or harmony

I N D E X

Acropolis (ancient citadel in Athens, Greece)
Athens *page* **85**
Parthenon *page* **87**

Alps (mountains in Europe)
Austria *page* **48**
Italy *page* **89**
Switzerland *page* **46,** photograph *page* **47**

Amsterdam (city in the Netherlands) *page* **41**
the Netherlands *page* **38**

Athens (city in Greece) *page* **85**
LEARN MORE *look under* Parthenon

Austria (country) *page* **48**
LEARN MORE *look under* Vienna

Baikal, Lake (lake in Russia)
Russia *page* **69**

Belfast (city in Northern Ireland, U.K.)
Ireland *page* **24**

Belgium (country): *look under* Brussels

Belgrade, *also called* Beograd (city in Serbia and Montenegro) *page* **79**

Berlin (city in Germany) *page* **45**
Germany *page* **43**

Big Ben (clock tower in London, England, U.K.)
London *page* **16,** photograph *page* **17**

Black Forest (region in Germany)
Germany photograph *page* **42**

Brandenburg Gate (gate in Berlin, Germany)
Berlin *page* **45,** photograph *page* **44**

Brussels, *also called* Brussel, *or* Bruxelles (city in Belgium) *page* **36**

Bucharest (city in Romania) *page* **73**

Buckingham Palace (palace in London, England, U.K.)
London photograph *page* **16**

Budapest (city in Hungary) *page* **70**

Bulgaria (country): *look under* Sofia

bullfighting, *also called* tauromaquia
Madrid *page* **13,** photograph *page* **13**
Portugal *page* **8**
Spain *page* **11**

Cardiff, *also called* Caerdydd (city in Wales, U.K.)
Wales *page* **28**

Cardiff Castle (castle in Cardiff, Wales, U.K.)
Wales *page* **28,** photograph *page* **29**

chateaux (French castles)
France *page* **32**

Chunnel: *look under* Eurotunnel

Colosseum (arena in Rome, Italy)
Rome *page* **91,** photograph *page* **91**

Copenhagen (city in Denmark) *page* **62**

Cymru (country in the U.K.): *look under* Wales

Czech Republic (country) *page* **52**
LEARN MORE *look under* Prague

Czechoslovakia (historic nation in Europe)
Czech Republic *page* **52**

Danube, *also called* Blue Danube (river in Europe)
Austria *page* **48**
Budapest *page* **70,** photograph *page* **71**
Did you know? *page* **78**

Denmark (country) *page* **61**
LEARN MORE *look under* Copenhagen

"Dracula" (book by Stoker)
Did you know? *page* **72**

Dublin (city in Ireland) *page* **26**
Ireland *page* **24**

Edinburgh, *also called* Dun Eideann (city in Scotland, U.K.) *page* **23**

Edinburgh Castle (castle in Edinburgh, Scotland, U.K.)
Edinburgh *page* **23,** photograph *page* **22**

Eiffel Tower (tower in Paris, France)
Paris *page* **35,** photograph *page* **35**

Eisteddfod (Welsh festival)
Wales *page* **28**

England (country in the U.K.) *page* **15**
LEARN MORE *look under* English Channel; London; Stonehenge

English Channel, *also called* La Manche (waterway) *page* **30**
France *page* **32**

Etna, Mount (volcano in Italy)
Italy *page* **89**

Europe (continent) **6**

European Union (international organization)
Europe *page* **7**

Eurotunnel, *also called* Chunnel
English Channel *page* **30**

fjords
Norway *page* **65,** photograph *page* **64**

flamenco (music and dance)
Spain *page* **11**

Florence (city in Italy)
Italy photograph *page* **88**

folk dances
Portugal *page* **8**
Ukraine photograph *page* **81**

folk music
Portugal *page* **8**
Ukraine *page* **80**
Wales *page* **28**

folklore
Did you know? *page* **25**

France (country) *page* **32**
LEARN MORE *look under* English Channel; Paris

Gaelic (language)
Did you know? *page* **26**

Gdansk (city in Poland)
Poland photograph *page* **56**

Germany (country) *page* **43**
LEARN MORE *look under* Berlin

Gotthard Tunnel (tunnel in Switzerland)
Did you know? *page* **47**

Great Britain (country): *look under* United Kingdom

Great Fire of London (English history)
Did you know? *page* **16**

Greece (country) *page* **83**

LEARN MORE *look under* Athens; Parthenon

haggis (food)
Did you know? *page* **20**

Hague, the (city in the Netherlands)
Did you know? *page* **41**
Netherlands, the *page* **38**

Holland (country): *look under* Netherlands, the

Hradcany Castle, *also called* Prague Castle (castle in Prague, Czech Republic)
Prague *page* **55,** photograph *page* **54**

Hungary (country): *look under* Budapest

Iceland (country): *look under* Reykjavik

Ireland (country) *page* **24**
LEARN MORE *look under* Dublin

Italy (country) *page* **89**
LEARN MORE *look under* Rome; Vatican City

Kalemegdan, *also called* Singidunum (ancient fortress in Serbia and Montenegro)
Belgrade *page* **79,** photograph *page* **78**

Kiev (city in Ukraine)
Ukraine *page* **80**

kilt (Scottish clothing)
Scotland photograph *page* **20**

Leaning Tower of Pisa (tower in Pisa, Italy)
Europe photograph *page* **6**
Italy *page* **89**

leprechauns (Irish folklore)
Did you know? *page* **25**

Lisbon (city in Portugal)
Portugal *page* **8**

Little Mermaid (statue)
Copenhagen *page* **62**

Loch Ness (lake in Scotland)
Scotland *page* **21**

London (city in England, U.K.) *page* **16**

Madrid (city in Spain) *page* **13**

Manche, La (waterway): *look under* English Channel

Matterhorn (mountain in Europe)
Switzerland photograph *page* **47**

Montenegro (country): *look under* Serbia

Moscow (city in Russia)
Russia *page* **69,** photograph *page* **69**

Netherlands, the, *also called* Holland (country) *page* **38**
LEARN MORE *look under* Amsterdam

Northern Ireland (country)
flag *page* **24**

Norway (country) *page* **65**

Notre-Dame de Paris, Cathedral of (church in Paris, France)
Paris *page* **35,** photograph *page* **34**

Olympic Games
Athens *page* **85**
Greece *page* **83**

Paris (city in France) *page* **35**
France photograph *page* **32**

Parthenon (temple in Greece) *page* **87**

Pest (former town in Hungary): *look under* Budapest

Poland (country) *page* **57**

Portugal (country) *page* **8**

Prague, *also called* Praha (city in the Czech Republic) *page* **55**

Prague Castle (castle in Prague, Czech Republic): *look under* Hradcany Castle

Reykjavik (city in Iceland) *page* **59**

Roman Forum (area in Rome, Italy)
Rome *page* **91,** photograph *page* **90**

Romania (country): *look under* Bucharest

Rome (city in Italy) *page* **91**
Italy *page* **89,** photograph *page* **89**
LEARN MORE *look under* Vatican City

Russia (country) *page* **69**

Saint Basil's Cathedral (church in Russia)
Russia photograph *page* **68**

Saint Peter's Basilica (church in Vatican City)
Vatican City *page* **93,** photograph *page* **92**

Salzburg (city in Austria)
Austria *page* **48,** photograph *page* **49**

Scandinavia (region in Europe): *look under*
places: Denmark; Norway; Sweden

Scotland (country in the U.K.) *page* **21**
LEARN MORE *look under* Edinburgh

Serbia (country) *page* **76**
LEARN MORE *look under* Belgrade

Sistine Chapel (chapel in Vatican City)
Italy *page* **89**
Vatican City *page* **93**

Sofia, *also called* Serdica, *or* Sredets (city in Bulgaria) *page* **74**

Spain (country) *page* **11**
LEARN MORE *look under* Madrid

Stockholm (city in Sweden)
Sweden *page* **66,** photograph *page* **67**

Stonehenge (monument in England, U.K.) *page* **19**
Europe photograph *page* **6**

Sweden (country) *page* **66**

Switzerland (country) *page* **46**

tauromaquia: *look under* bullfighting

Thames, River (river in England)
London *page* **16**

Tivoli Gardens (garden in Copenhagen, Denmark)
Copenhagen *page* **62,** photograph *page* **63**

Tower of London (building in London, England, U.K.)
London *page* **16**

Ukraine (country) *page* **80**

United Kingdom (island country): *look under* England; Scotland; Wales

Vatican City (city and state) *page* **93**
Italy *page* **89**
Rome *page* **91**

Vienna (city in Austria) *page* **51**

Volga River (river in Russia)
Russia *page* **69**

Wales, *also called* Cymru (country in the U.K.) *page* **28**

Warsaw (city in Poland)
Poland *page* **57**

windmills
Kinderdijk windmill photograph *page* **39**
Netherlands, the *page* **38**

Yugoslavia (historic nation)
Serbia *page* **76**

Visit countries, cities, and famous sites in EUROPE


Volume 1: The Earth and Earth Sciences


Volume 2: Physical Sciences and Technology


Volume 3: The Arts


Volume 4: People in History


Volume 5: Folklore and Religions


Volume 6: Europe


Volume 7: Asia, Australia, and New Zealand


Volume 8: Africa


Volume 9: The Americas


Volume 10: Plants


Volume 11: Birds, Insects, Reptiles, and Aquatic Life

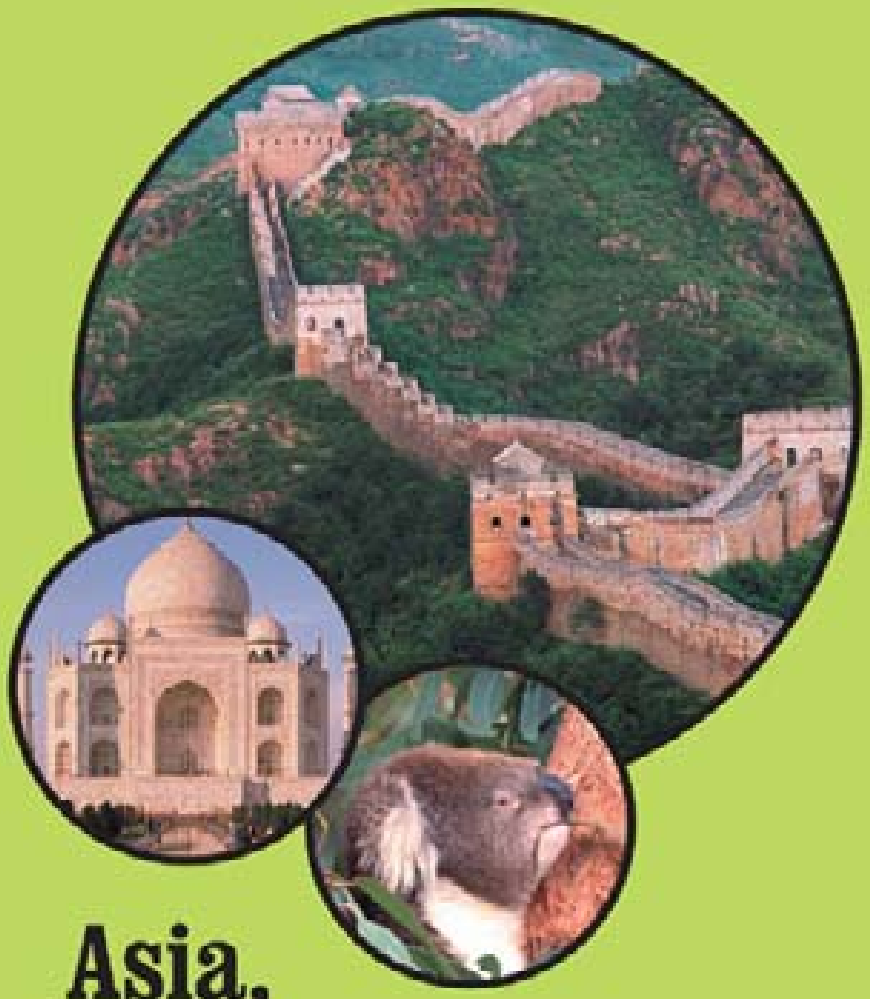

Volume 12: Mammals


Volume 13: Reference Guide and Index

ENCYCLOPÆDIA
Britannica®

xv

My First Britannica



Asia, Australia, and New Zealand

7

My First Britannica

Asia, Australia, and New Zealand

7



Chicago London New Delhi Paris Seoul Sydney Taipei Tokyo

© 2008 by Encyclopædia Britannica, Inc.

International Standard Book Number: 978-1-59339-476-9 (set)

No part of this work may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, recording, or by any information storage and retrieval system, without permission in writing from the publisher.

My First Britannica:
Volume 7: Asia, Australia, and New Zealand 2008

Britannica.com may be accessed on the Internet at http://www.britannica.com.

Encyclopædia Britannica, Britannica, and the Thistle logo are registered trademarks of Encyclopædia Britannica, Inc.

Asia, Australia, and New Zealand

TABLE OF CONTENTS

INTRODUCTION 5

Asia: The Largest Continent 6

East Asia

China: Asia's Largest Country 8
Beijing, China: Home of the Forbidden City 10
The Great Wall: Ancient China's Giant Guardian 12
Japan: Volcanoes, Earthquakes, and Plum Rains 14
Japan: Modern Nation of Ancient Traditions 16
Korean Peninsula: An Asian Land Divided 18
Pyongyang, North Korea: North Korea's Age-Old Capital 20
Seoul, South Korea: A Modern Ancient Capital 22

Southeast Asia

Phnom Penh, Cambodia: The City of Lady Penh 24
Angkor Wat: Cambodia's Treasured Temple 26
Indonesia: Island Nation of Southeast Asia 28
Yangon, Myanmar: City of the Gold Pagoda 30
Philippines: Tropical Island Republic 32
Singapore: The Lion City 34
Thailand: Kingdom of Southeast Asia 36
Bangkok, Thailand: City of Angels 38
Vietnam: North and South 40
Hanoi, Vietnam: Capital of Reunited Vietnam 42

South Asia

Afghanistan: Mountain Country 44
Bangladesh: Land of the Bengals 46
Thimphu, Bhutan: City in the Heart of the Himalayas . . . 48
India: Land of Temples and Shrines 50
Taj Mahal: Wonder of the World 52
Nepal: Country of Mount Everest 54
Kathmandu, Nepal: City of Palaces 56
Pakistan: A Young Country with an Ancient History 58
Pakistan: Land of the Indus Civilization 60
Sri Lanka: Island Nation of Natural Riches 62

The Middle East and Transcaucasia

Fertile Crescent: Cradle of Civilization 64
Yerevan, Armenia: City of Cafés 66
Istanbul, Turkey: City on Two Continents 68
Iran: Modern Persia 70
Baghdad, Iraq: City of Arabian Nights 72
Israel: The Jewish State 74
Jerusalem: Holy City 76
Amman, Jordan: City on Seven Hills 78
Beirut, Lebanon: The City of Wells 80
Oman: Rocky Soils and Oil Riches 82
Mecca, Saudi Arabia: Holiest City of Islam 84
Damascus, Syria: Pearl of the East 86

Australia and New Zealand

AUSTRALIA

Australia: Island Continent 88
Canberra, Australia: Meeting Place on a Hill 90
Great Barrier Reef: Island of Reefs Within Reefs 92
Sydney, Australia: A Magnificent Harbor City 94
Western Australia: Desert State 96

NEW ZEALAND

New Zealand: Land of the Long White Cloud 98
Wellington, New Zealand: A Visit to New Zealand's Capital 100

GLOSSARY 102

INDEX 103

Asia, Australia, and New Zealand

I N T R O D U C T I O N

How did the Forbidden City get its name?
What is the holiest city of Islam? Who built the Taj Mahal?
Where is the largest coral reef in the world?

In Volume 7, ***Asia, Australia, and New Zealand,*** you'll discover answers to these questions and many more. Through pictures, articles, and fun facts, you'll learn about the people, traditions, landscapes, and history that make up many of the countries and cities of Asia, Australia, and New Zealand.

To help you on your journey, we've provided the following guideposts in *Asia, Australia, and New Zealand*:

■ **Subject Tabs—**The colored box in the upper corner of each right-hand page will quickly tell you the article subject.

■ **Search Lights—**Try these mini-quizzes before and after you read the article and see how much—*and how quickly*—you can learn. You can even make this a game with a reading partner. (Answers are upside down at the bottom of one of the pages.)

■ **Did You Know?—**Check out these fun facts about the article subject. With these surprising "factoids," you can entertain your friends, impress your teachers, and amaze your parents.

■ **Picture Captions—**Read the captions that go with the photos. They provide useful information about the article subject.

■ **Vocabulary—**New or difficult words are in **bold type**. You'll find them explained in the Glossary at the back of this volume. And there's a complete listing of all Glossary terms in the set in the ***Reference Guide and Index***, Volume 13.

■ **Learn More!—**Follow these pointers to related articles throughout the set.

■ **Maps—**You'll find lots of information in this volume's many maps.

■ The **Country Maps** point out national capitals. **Globes** beside Subject Tabs show where countries are located in the world.

■ The **Continent Maps** have a number key showing the location of all countries.

Cover photos (top): the Great Wall of China, © Keren Su/Corbis; (center): Taj Mahal, Agra, India, © Galen Rowell/Corbis; (bottom): koala, © Wes Thompson/Corbis

■ The **Icons** on the maps highlight major geographic features and climate. Here's a key to what the map icons mean:

- Deserts and Other Dry Areas
- Polar Regions and Other Frozen Areas
- Mountains
- Rainforests
- General Forests

■ The **Mini-Atlas**, found in Volume 13, offers detailed maps, useful data tables, and assorted photographs of each continent.

And don't forget: If you're not sure where to start, where you saw something before, or where to go next, the Index at the back of this volume and the ***Reference Guide and Index*** (Volume 13) will point the way.



The Great Wall of China
© Keren Su/Corbis

Have a great trip!

MY FIRST BRITANNICA

SEARCH LIGHT

True or false? The highest point on Earth is in Asia.



Statue of Buddha in Si Satchanalai, Thailand.

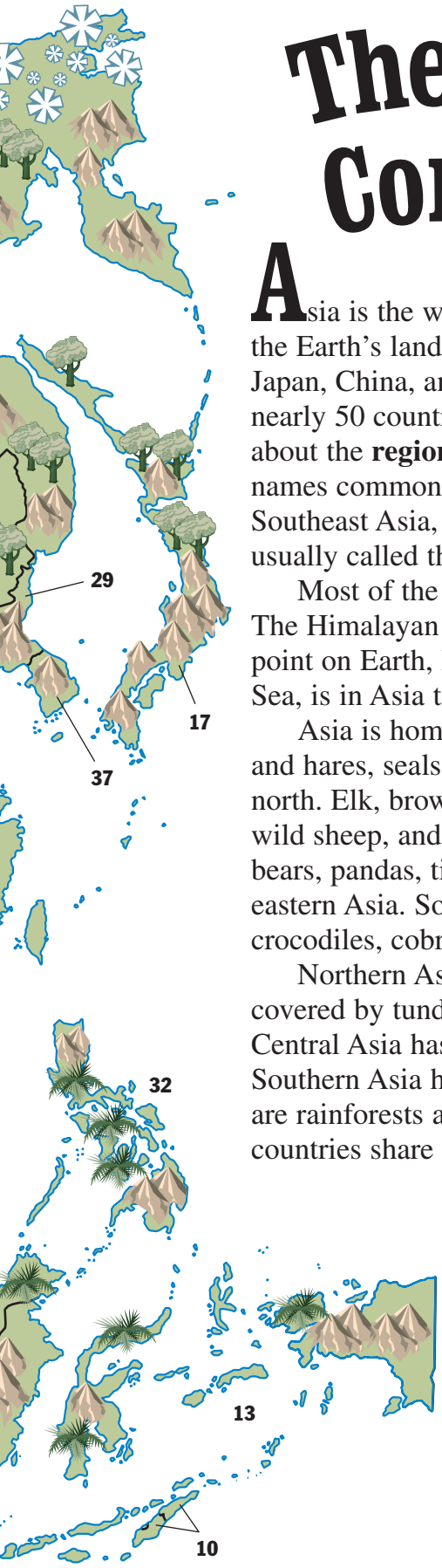
© Royalty-Free/Corbis

DID YOU KNOW?

Asia is the birthplace of all the major religions of the world.

The Largest Continent





Asia is the world's largest continent. It covers about one-third of the Earth's land and has about three-fifths of the world's population. Japan, China, and India are some of the most familiar of Asia's nearly 50 countries. In fact, Asia is so big that it's often easier to talk about the **regions** rather than the countries of Asia. The region names commonly used are North Asia, Central Asia, East Asia, Southeast Asia, South Asia, and Southwest Asia (the last one is usually called the Middle East).

Most of the continent is made up of mountains and **tablelands**. The Himalayan mountain chain in South Asia includes the highest point on Earth, Mount Everest. The Earth's lowest point, the Dead Sea, is in Asia too.

Asia is home to many kinds of animals. Reindeer, Arctic foxes and hares, seals, walruses, and lemmings can be found in the far north. Elk, brown bears, and sables live in the cool forests. Antelope, wild sheep, and goats are found in the **steppes** and deserts. Black bears, pandas, tigers, and monkeys can be found in southern and eastern Asia. Southern Asia is also noted for elephants, leopards, crocodiles, cobras, and peacocks.

Northern Asia has very cold winters and cool summers. It is covered by tundra—vast treeless plains common in cold regions. Central Asia has cold winters and hot summers with little rainfall. Southern Asia has a warm climate all year, with a lot of rain. There are rainforests all across southern Asia. And nearly all Asian countries share one very important food plant: rice.

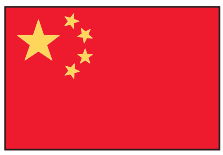
LEARN MORE! READ THESE ARTICLES…
CONTINENTS (VOLUME 1) • EUROPE (VOLUME 6)
MOUNTAINS (VOLUME 1)

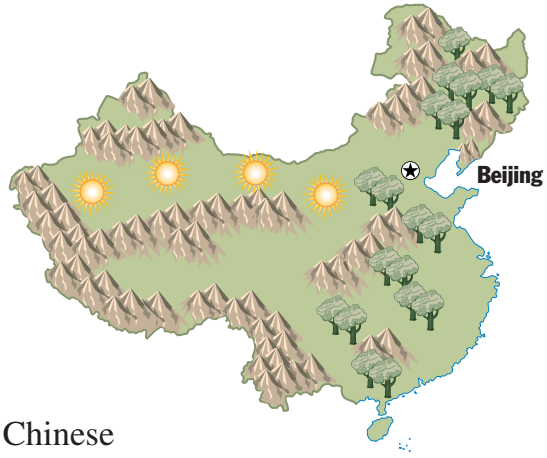
COUNTRIES OF ASIA

1. Afghanistan
2. Armenia
3. Azerbaijan
4. Bahrain
5. Bangladesh
6. Bhutan
7. Brunei
8. Cambodia
9. China
10. East Timor
11. Georgia
12. India
13. Indonesia
14. Iran
15. Iraq
16. Israel
17. Japan
18. Jordan
19. Kazakhstan
20. Kuwait
21. Kyrgyzstan
22. Laos
23. Lebanon
24. Malaysia
25. Maldives
26. Mongolia
27. Myanmar
28. Nepal
29. North Korea
30. Oman
31. Pakistan
32. Philippines
33. Qatar
34. Russia (part)
35. Saudi Arabia
36. Singapore
37. South Korea
38. Sri Lanka
39. Syria
40. Tajikistan
41. Thailand
42. Turkey
43. Turkmenistan
44. United Arab Emirates
45. Uzbekistan
46. Vietnam
47. Yemen

Answer: TRUE. The world's tallest mountain, Mount Everest, is in Asia.

Asia's Largest Country





The People's Republic of China is Asia's largest country and has more people than any other country in the world—more than a billion and a quarter! The capital city is Beijing. Han (or Mandarin) is the most widely spoken language of China's several dozen languages. The Chinese civilization is one of the world's oldest and has produced such famous thinkers as Confucius.

Parts of China are very mountainous, as is the **Plateau** of Tibet in southwest China. One part of the plateau is called "the Roof of the World." China is so big that some parts are scorching hot deserts while it rains almost every day in some southeastern regions. Many boats and ships carry people and goods on China's major rivers—the Huang He, Yangtze, and Xi. China also has many railroads as well as three of the world's longest highways.

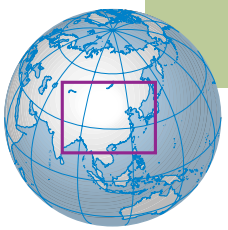
China's enormous and varied land area supports many plants and animals. Some Chinese animals have become **extinct** in the rest of the world, including the giant salamander, the giant panda, and the great paddlefish. Many of China's trees provide useful substances. The tung tree and the camphor tree produce valuable oils. The lacquer (or varnish) tree produces substances used in making wooden objects. And from the star anise tree comes a food flavoring. In addition, Chinese farmers produce more rice than does any other country.

People around the world enjoy eating Chinese food. But China has many more traditional and **regional** dishes than most non-Chinese know about. In addition to rice and noodles, Chinese dishes include delicacies such as steamed chicken feet and hundred-year-old eggs.



Find and correct the error in the following sentence: The People's Republic of China is the largest country in Asia and has the most people: more than a million and a quarter.

LEARN MORE! READ THESE ARTICLES…
CONFUCIUS (VOLUME 5) • MAO ZEDONG (VOLUME 4)
PANDAS (VOLUME 12)



DID YOU KNOW?

You may think of pasta as an Italian dish, but actually it was created in China. So were fireworks, compasses, silk, chopsticks, crossbows, paper, and paper money.



Rice is one of the most important crops grown in China. Farmers use terraced fields such as these to grow rice on hillsides.

© Keren Su/Corbis

Answer: The People's Republic of China is the largest country in Asia and has the most people in the world: more than a billion and a quarter.



Many people in Beijing use bicycles to get from place to place.
© Joseph Sohm—ChromoSohm Inc./Corbis

DID YOU KNOW?

The Forbidden City was well named. The "common people" were never allowed in. Even those who were allowed in, such as the emperor's family, could go into only certain parts of the city.

Home of the Forbidden City

Beijing is the capital of the People's Republic of China. For many years the city was known by English speakers as Peking. China used to be ruled by emperors, and Beijing was the home of those emperors. Their palaces were located in an area that is called the Forbidden City because common people were not allowed inside. The Forbidden City is now a museum.

Next to the Forbidden City is Tiananmen Square. It is one of the largest public squares in the world. Beijing is also famous for its parks. Zhongshan Park is located in the heart of the city. It holds the **Altar** of Earth and Harvests, where the emperor made offerings to the gods of earth and farming. Beihai Park has a big lake and several artificial hills and islands. Atop one of the hills stands the beautiful White **Pagoda**. In summer the lake is full of rowboats. In winter it freezes, and people use it as a skating rink.



The Forbidden City, in Beijing, China.
© Keren Su/Corbis

The Beijing Zoo was once called the Garden of Ten Thousand Animals. It doesn't really have that many animals, but it does have lots of interesting ones, including some famous giant pandas. Of course, there are places to visit outside the parks. Some people like to tour the neighborhoods of the city. The city has many narrow alleys, or *hutongs*. Old houses with enclosed courtyards and tiny gardens of potted plants open off the alleys.

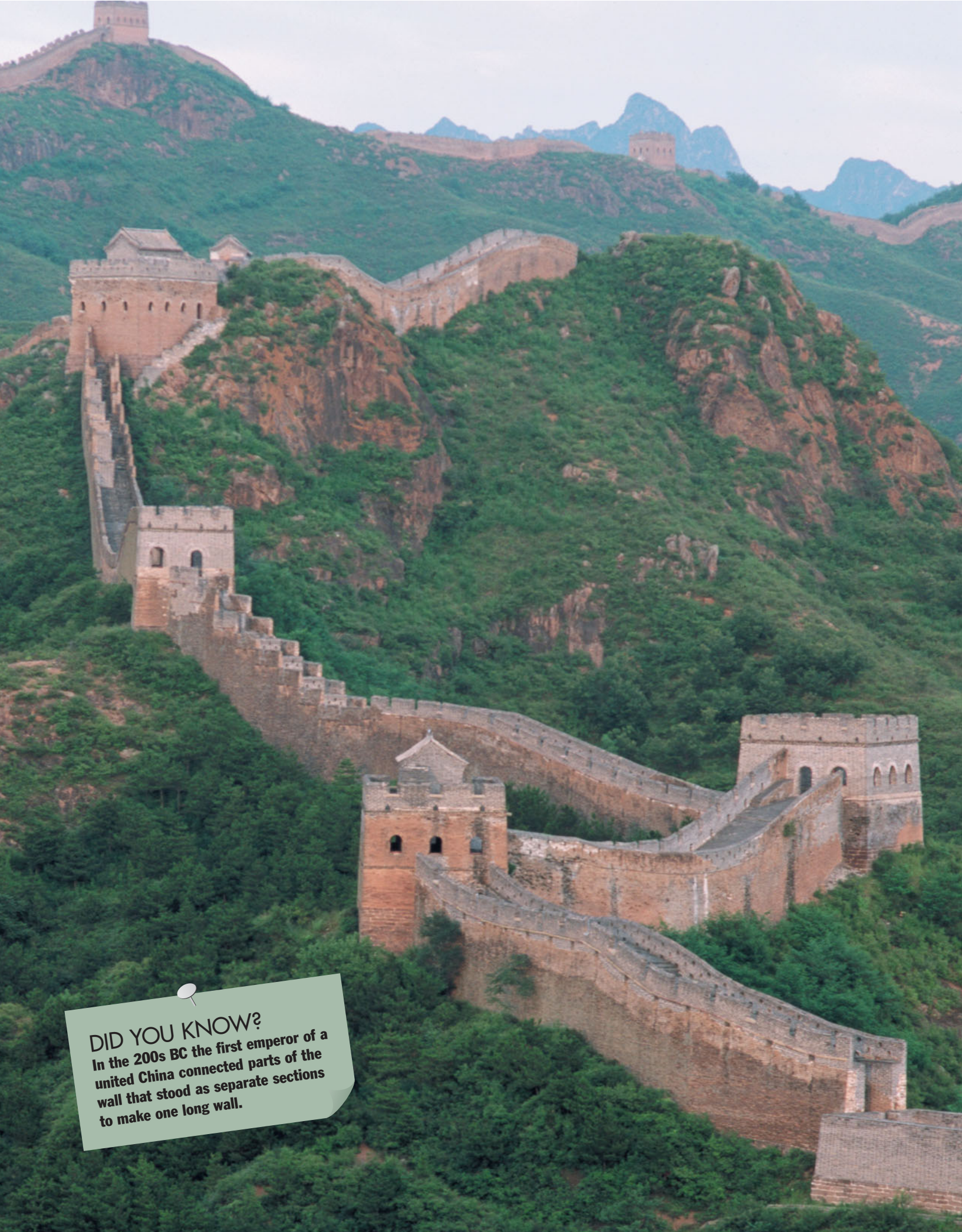
There's much to see in Beijing. And, especially exciting, the Olympics will be held there in 2008.

LEARN MORE! READ THESE ARTICLES…
CHINA (VOLUME 7)
A CHINESE CINDERELLA STORY: YEH-SHEN (VOLUME 5)
EMPRESS OF CHINA (VOLUME 4)

SEARCH LIGHT

Find and correct the error in the following sentence: The city of Beijing has many lovely parks, or *hutongs*.

Answer: The city of Beijing has many narrow alleys, or *hutongs*.



DID YOU KNOW?

In the 200s BC the first emperor of a united China connected parts of the wall that stood as separate sections to make one long wall.

Ancient China's Giant Guardian

The Great Wall of China is the largest structure humans have ever built. Chinese **emperors** had the wall built to guard the country from raids or invasions. It runs from east to west for more than 4,000 miles as it stretches across the mountains and valleys of northern China. It is about 20 feet thick at its base and as tall as a house. The entire wall is made of earth and stones. The wall also had watchtowers placed along its length.

SEARCH LIGHT

Why did the Chinese emperors have the Great Wall built?



Tourists visiting the Great Wall of China.
© Dean Conger/Corbis

Different parts of the wall were built at different times, but all of it was finished long before there were machines to help with the building. Thousands of men worked to build the wall. Many of them died while working on it.

After the Great Wall was built, the people of China felt safer. If an enemy approached the wall, smoke signals would be passed from watchtower to watchtower. A signal fire would be lighted if an attack came at night. An alarm would be sounded, and the emperor's army would rush to defend the wall.

But the Great Wall didn't always provide protection. Because the wall was so long, some parts of it were guarded better than others. Sometimes enemies broke through. Finally, the Chinese stopped depending on their wall.

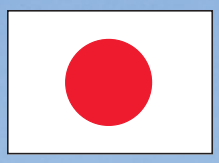
Today the Great Wall is a great attraction for visitors to China. In 1987, UNESCO (the United Nations Educational, Scientific, and Cultural Organization) named the Great Wall a World Heritage site.

LEARN MORE! READ THESE ARTICLES…
ANGKOR WAT (VOLUME 7) • CHINA (VOLUME 7) • EGYPT (VOLUME 8)

The Great Wall of China is one of the most remarkable structures on Earth. It is more than 4,000 miles long and is one of the largest construction projects ever carried out. Work on parts of the wall began more than 2,500 years ago.
© Keren Su/Corbis

Answer: The emperors had the wall built to keep out the people who were raiding northern China.

Volcanoes, Earthquakes, and Plum Rains



Japan is made up of a string of islands that stretches for nearly 1,500 miles along the coast of northeastern Asia in the Pacific Ocean. The four main islands are Honshu, Hokkaido, Kyushu, and Shikoku. The largest of them is Honshu.



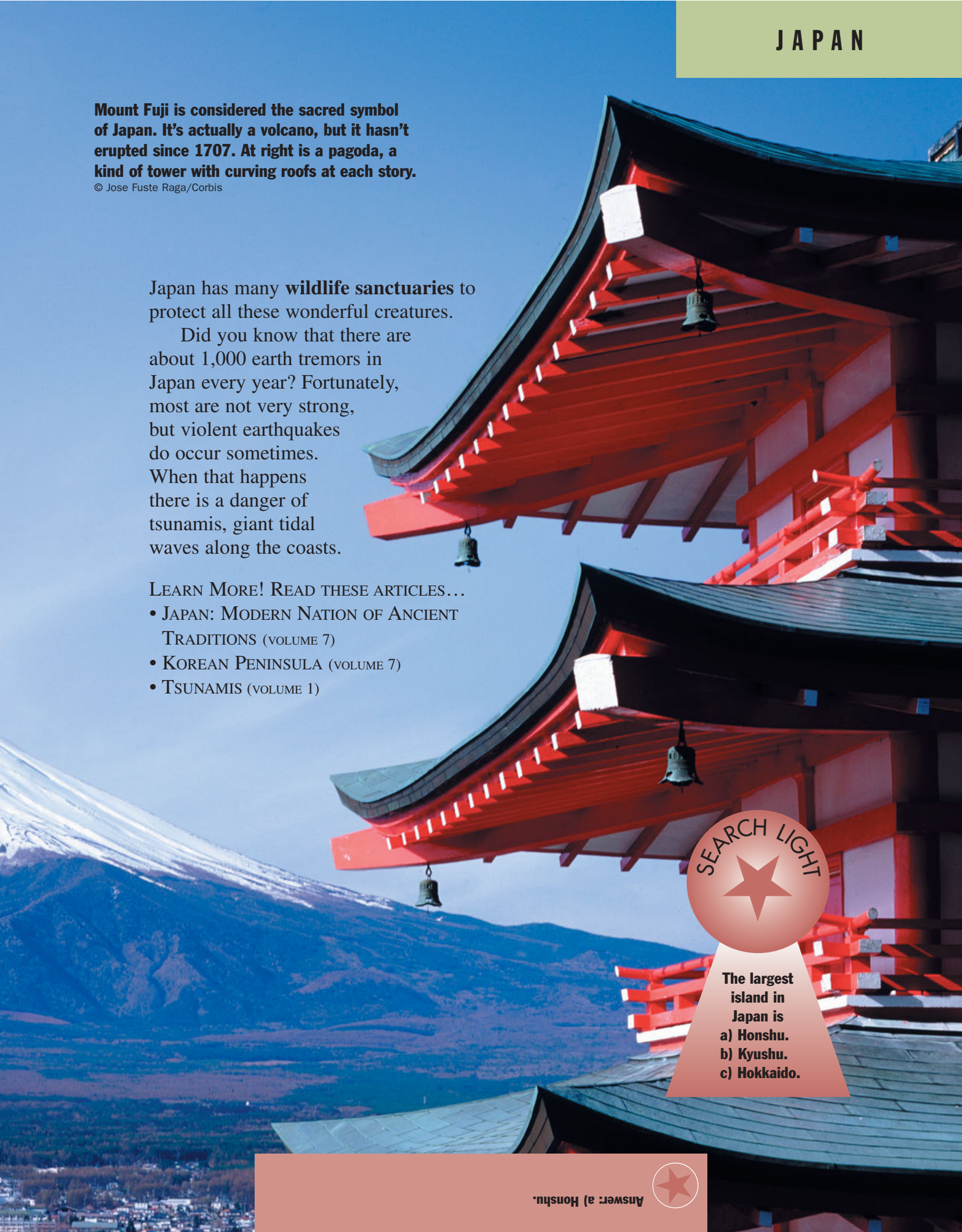
Most of the islands are covered with hills and mountains. Many of the mountains are volcanoes. Some of them are active, and some are "asleep." Mount Fuji is an active volcano though it hasn't erupted since 1707. It is Japan's highest mountain, reaching a height of 12,388 feet. Rivers flowing past the volcanoes get so much **acid** in them that they can't be used to water crops.

There are many lush forests in Japan. Japanese cherry trees, famous for their spring blossoms, are planted throughout the country. The forests stay beautifully green because it rains and snows so much in Japan. Most parts of the country get more than 40 inches of rain each year. The summer rains are called *baiu,* which means "plum rain." They are called that because they begin at the time when the plums ripen. Some parts of Japan get many feet of snow each winter.

Many kinds of wild animals can be found in Japan's forests. They include bears, badgers, otters, mink, deer, and foxes.

DID YOU KNOW?

Mount Fuji may not seem so high compared with some of the world's other mountains. But it's high enough that during the summer the temperature at the top is 40° F cooler than it is at the bottom.



Mount Fuji is considered the sacred symbol of Japan. It's actually a volcano, but it hasn't erupted since 1707. At right is a pagoda, a kind of tower with curving roofs at each story.
© Jose Fuste Raga/Corbis

Japan has many **wildlife sanctuaries** to protect all these wonderful creatures.

Did you know that there are about 1,000 earth tremors in Japan every year? Fortunately, most are not very strong, but violent earthquakes do occur sometimes. When that happens there is a danger of tsunamis, giant tidal waves along the coasts.

LEARN MORE! READ THESE ARTICLES…
- JAPAN: MODERN NATION OF ANCIENT TRADITIONS (VOLUME 7)
- KOREAN PENINSULA (VOLUME 7)
- TSUNAMIS (VOLUME 1)

SEARCH LIGHT

The largest island in Japan is
a) Honshu.
b) Kyushu.
c) Hokkaido.

Answer: a) Honshu.

Modern Nation of Ancient Traditions

When you're in Japan, you'll notice something that is really striking: the mixture of old things and new. On the one hand, you'll see beautiful old **pagodas** and **shrines**. On the other hand, you'll find skyscrapers, overpasses, and subways.

Some people in Japan continue to fish for a living, just as their ancestors had for thousands of years. Salmon, sardines, tuna, squid, mackerel, cod, and mullet are the important fish they catch. The Japanese people catch more than 5 million tons of fish each year. This makes Japan one of the world's leading fishing nations.



Skyscrapers in Shinjuku, a main shopping district in Tokyo.
© Jose Fuste Raga/Corbis

But Japan is also one of the most developed countries in the world. It is one of the world's biggest producers of automobiles, computers, cameras, radio and television sets, watches, microwave ovens, and many more electronic items.

Tokyo, Japan's capital, is one of the world's largest cities. It has many skyscrapers and grand shopping plazas that may remind you of New York City. The Ginza shopping area is often referred to as Tokyo's Fifth Avenue. But you will also find many Buddhist temples and shrines scattered throughout the city, and they are quiet and peaceful.

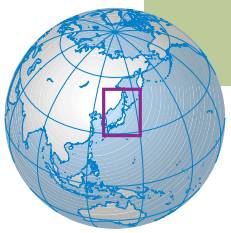
The traditional court music of Japan is called *gagaku* and can be heard in Tokyo. But so can a lot of Western music, such as jazz, rock, and blues. And all the latest pop songs that you would hear in English-speaking countries can be heard in Tokyo too.

This mix of ancient and modern culture makes Japan an exciting place to live or visit.

LEARN MORE! READ THESE ARTICLES…
BASHO (VOLUME 3) • HIROHITO (VOLUME 4)
JAPAN: VOLCANOES, EARTHQUAKES, AND PLUM RAINS (VOLUME 7)

SEARCH LIGHT

Are each of the following things part of old Japan or new Japan?
- **shrines**
- **skyscrapers**
- **subways**
- ***gagaku***
- **rock and jazz**
- **fishing**



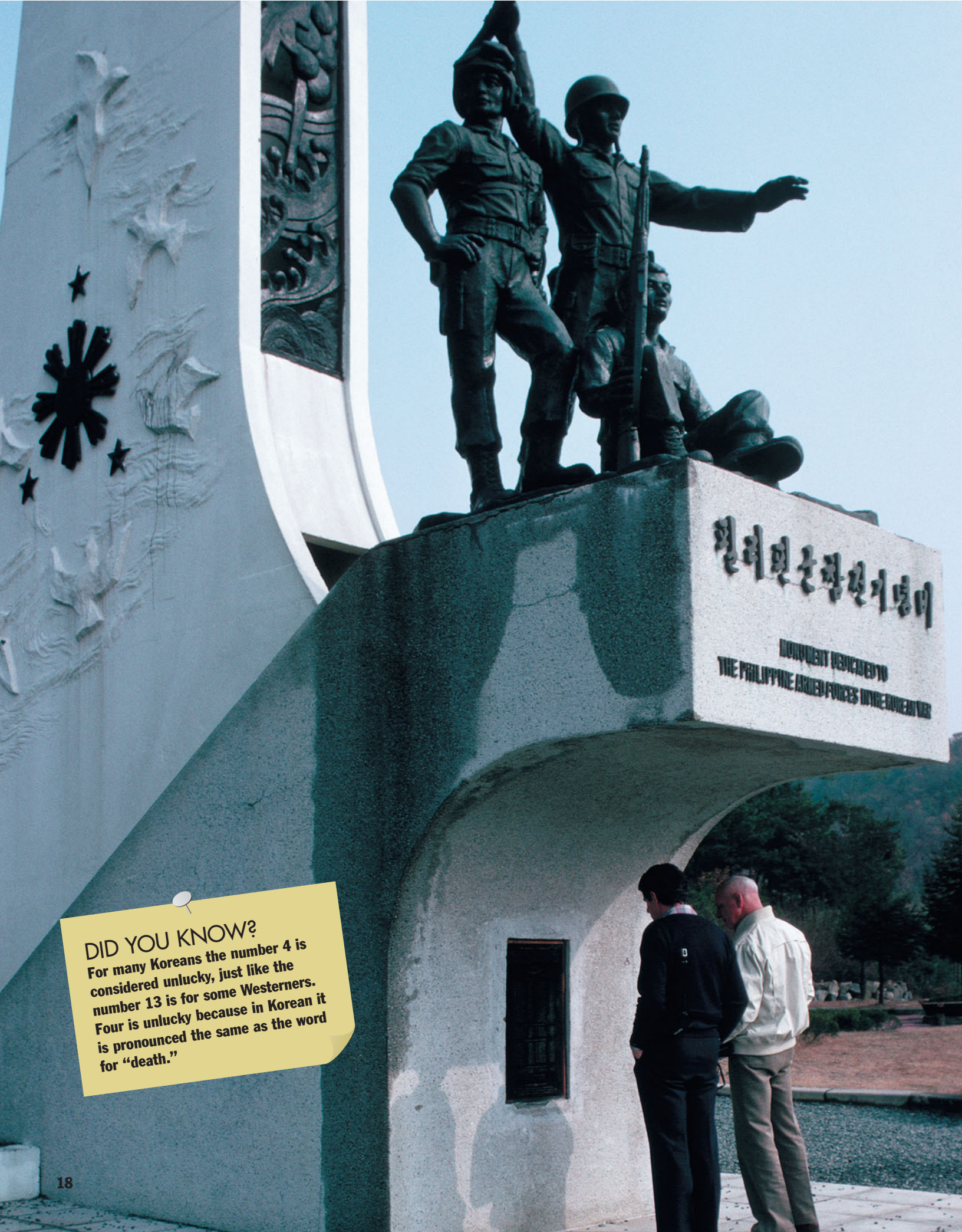
DID YOU KNOW?

Shinjuku train station in Tokyo is perhaps the busiest train station in the world. About 2 million people pass through it every day.



Built in the 7th century, Senso Temple is the oldest of Tokyo's many Buddhist temples.
© Richard T. Nowitz/Corbis

Answer: Shrines, *gagaku* (court music), and fishing have all been part of Japan for many hundreds of years. Skyscrapers, subways, and rock and jazz music are all fairly new to Japan.



DID YOU KNOW?

For many Koreans the number 4 is considered unlucky, just like the number 13 is for some Westerners. Four is unlucky because in Korean it is pronounced the same as the word for "death."



An Asian Land Divided



North Korea



South Korea

The Korean **peninsula** is a land of beautiful mountains. For a long time it was a single country. Today it is divided into two countries—North Korea and South Korea. But though they are separate, they share a border and a common history that stretches back thousands of years.

Korea has a rich culture that was influenced by China, especially in early times. The Buddhist and Confucian religions came to Korea from China. Over the years, however, Korea developed a culture that is very much its own. For example, even though it once used the Chinese system of writing, the Korean language isn't closely related to any other language. And Korean music sounds quite different from other East Asian music. In the folk music called *p'ansori*, a singer-storyteller performs with a drummer. In dance and other music, the *kayagum*, a stringed instrument, is an original Korean favorite. Many people around the world love to eat Korean food—especially tasty barbecued meat and a spicy cabbage dish called *kimchee*.



In 1948, after World War II, the Korean peninsula was officially divided into North Korea and South Korea. North Korea became a **communist** country, but South Korea did not. In 1950 a war broke out between the two. This was the Korean War, which ended in 1953 with the two Koreas remaining separate.

Both North and South Korea have been rebuilt since the war. In 2000 the two countries held talks about joining together again. People were finally allowed to cross between them and meet family members they had not seen since the war, almost 50 years before.

SEARCH LIGHT

True or false? The Korean peninsula became a communist country in 1948.

LEARN MORE! READ THESE ARTICLES…
PENINSULA (VOLUME 1) • PYONGYANG, NORTH KOREA (VOLUME 7)
SEOUL, SOUTH KOREA (VOLUME 7)

This monument honors soldiers who fought in the Korean War. The memorial stands near the village of Panmunjom. It lies within a neutral zone established between North and South Korea after the war.

© Robert Holmes/Corbis

Answer: FALSE. The Korean peninsula was divided into two countries in 1948. North Korea became communist, but South Korea did not.

North Korea's Age-Old Capital

SEARCH LIGHT

Why have parts of Pyongyang been rebuilt a number of times?

Pyongyang is the capital and largest city of the East Asian country of North Korea. It lies along the Taedong River, close to the Yellow Sea. The name Pyongyang means "flat land" or "cozy place" in Korean.

People have lived where Pyongyang now stands for many thousands of years. According to legend, the modern city was started in 1122 BC. Since then it has faced a number of invasions and wars. Armies from China and Japan captured Pyongyang at different times, and much of the city was destroyed in a war between those two countries in the 1890s. The Japanese ruled Pyongyang from 1910 to 1945. In 1948, when Korea was divided into two nations, Pyongyang became the capital of communist North Korea. The city was heavily damaged once again during the Korean War of 1950 to 1953.



Children giving a concert at the Children's Palace in Pyongyang.
© Jeremy Horner/Corbis

A bronze statue of a winged horse towers over Pyongyang. It is meant to remind people of the way the city grew after the end of the Korean War. Other large monuments built in recent years include the wide Arch of Triumph and the Tower of the Juche Idea. (*Juche* means "self-reliance"—that is, depending on yourself rather than on other people.)

Pyongyang has a university, a medical school, and a school for training Communist Party leaders. There are also a large theater, a large assembly hall, and a large stadium. In addition, North Korea's main museums and libraries are located in the city.

LEARN MORE! READ THESE ARTICLES…
BERLIN, GERMANY (VOLUME 6) • KOREAN PENINSULA (VOLUME 7)
SEOUL, SOUTH KOREA (VOLUME 7)



DID YOU KNOW?

Wrestling is very popular in North Korea. The largest crowd to watch a live wrestling match was in Pyongyang in 1995, when 190,000 people gathered there to watch The International Sports and Culture Festival for Peace.

The Tower of the Juche Idea rises above the city center of Pyongyang. The monument celebrates *juche* ("self-reliance"), a quality favored by Kim Il-Sung, the first ruler of North Korea.

© Jeremy Horner/Corbis

Answer: Several wars have been fought in Korea over the centuries, and the city has been partially destroyed during the many battles.



DID YOU KNOW?

The name Seoul comes from the Korean word *sorabol*, which means "capital."

A Modern Ancient Capital

SEARCH LIGHT

Why is Seoul sometimes called an "endless construction project"?

Seoul, the capital of South Korea, has been attacked and destroyed many times in the past. As a result, it reflects the struggles of Korea in important ways.

In the 16th century Japanese invaders partially destroyed the city. Between 1910 and 1945 Seoul came under Japan's control, and Japan made the city its **colonial** capital. The city was devastated during the Korean War, from 1950 to 1953. Since the 1950s the city has been rebuilt once again. It is sometimes described as an "endless construction project."



Statues of men in traditional Korean clothing, at the National Folk Museum of South Korea, in Seoul.
© Royalty-Free/Corbis

There is much Chinese influence in Seoul, especially in its design. A long defensive wall with gates, in Chinese style, was built around the city near the end of the 14th century. Parts of the wall and the gates can still be seen.

Today Seoul is a modern city with ancient accents. It has freeways, plazas, and high-rise buildings alongside centuries-old **pagodas**. In downtown Seoul there are striking palaces and other structures from the city's royal past. Several of these, such as Toksu and Changgyong palaces, are open to the public as museums.

Any tour of Seoul should include a view from Seoul Tower in Namsan Park near the city center. From the tower you can see many historic and modern sights. These include Kyongbok Palace, one of the royal palaces of the Choson **dynasty**, and Olympic Park, site of the 1988 Summer Olympic Games.

LEARN MORE! READ THESE ARTICLES…
JAPAN: MODERN NATION OF ANCIENT TRADITIONS (VOLUME 7)
A KOREAN FOLKTALE: THE TIGER IN THE TRAP (VOLUME 5)
PYONGYANG, NORTH KOREA (VOLUME 7)

Seoul is home to historic palaces as well as modern high-rise buildings. Changgyong Palace can be seen here in front of the skyline of downtown Seoul.
© Jose Fuste Raga/Corbis

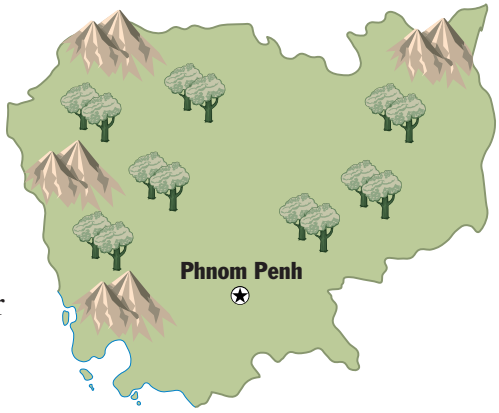
Answer: Seoul has been destroyed and rebuilt several times.

The City of Lady Penh



Phnom Penh is the capital of the Kingdom of Cambodia in Southeast Asia. It is located at the meeting point of three rivers: the Basak, the Sab, and the Mekong.

Phnom Penh is more than 500 years old. According to legend, a woman named Lady Penh was walking on a hill and found a bronze statue of the Buddha, the founder of the Buddhist religion. There she started the town of Phnom Penh, whose name means "Penh Hill." Her ashes, it is said, were kept in a **pagoda** at the top of the hill.



Phnom Penh was built around the Preah Morokot pagoda. Its floor is paved with tiles of solid silver. The pagoda is built like a tower, with several stories. At the edge of every story, the roof curves upward. It and other stately buildings are near the Royal Palace, where the king and his family live.

There are many museums in Phnom Penh. The National Museum has a fine collection of art by the Khmer people, who make up more than 85 percent of the population of Cambodia. The Tuol Sleng Museum is devoted to the memory of the many Cambodians who were killed in the 1970s by Cambodia's communist government. This was a terrible time in the history of the city and country.

The Royal Ballet of Phnom Penh is known the world over. Its ballets deal with ancient Buddhist and Hindu legends. There was a time when the dancers performed only for the Cambodian royal family. Now everyone can enjoy them.

SEARCH LIGHT

What kind of government does Cambodia have? (Hint: Think of the country's full name.)

LEARN MORE! READ THESE ARTICLES…

ANGKOR WAT (VOLUME 7)

A CAMBODIAN MYTH: MONI MEKHALA AND REAM EYSO (VOLUME 5)

THAILAND (VOLUME 7)



DID YOU KNOW?

In the 1970s Phnom Penh nearly became a ghost town when Cambodia's rulers forced almost everyone out of the city to work in farm fields.



The Royal Palace in Phnom Penh is home to Cambodia's king and his family.
© Nevada Wier/Corbis

Answer: Cambodia is a kingdom, so it's supposedly ruled by a king or a queen. However, in modern times most monarchs have government officials and lawmakers to help run the country.

Cambodia's Treasured Temple

Angkor Wat is a **temple** in the Southeast Asian country of Cambodia. The word *angkor* means "capital," and *wat* means "**monastery**." Angkor Wat is more than 800 years old. It is the world's largest religious structure.

The Khmer people are native to Cambodia, and the city of Angkor was once the capital of the Khmer Empire. King Suryavarman II built Angkor Wat. He dedicated the temple to the three Hindu gods Brahma, Vishnu, and Shiva. It was not just a temple but also the government center of Suryavarman II's empire.

The temple walls are covered with sculptures of Hindu gods. They also show scenes from ancient Khmer history. In addition, there are hundreds of carved statues of *apsara*s, or "heavenly dancers." They are seen wearing beautiful costumes, jewelry, and crowns.

About 20 years after the complex was built, a foreign army attacked the Khmers and **looted** the city. King Jayavarman VII, who was ruling the Khmer, felt that the gods had failed him. He became a Buddhist and built a new capital nearby called Angkor Thom. Angkor Wat then became a Buddhist **shrine**. Many of the statues and carvings were replaced by Buddhist art.

SEARCH LIGHT

Fill in the blanks: Angkor Wat is more than _____ years old and is the world's _____ religious structure.

After many years, however, the forest grew and covered Angkor Wat. Most people forgot all about it. A French explorer named Henri Mouhot rediscovered the city while traveling on the Mekong River in 1858. In 1992 UNESCO (the United Nations Educational, Scientific and Cultural Organization) named the entire Angkor area a World Heritage site. Today Angkor Wat is one of the main attractions for visitors to Cambodia.

LEARN MORE! READ THESE ARTICLES…
BUDDHISM (VOLUME 5) • HINDUISM (VOLUME 5)
PHNOM PENH (VOLUME 7)

Tree roots growing on the Ta Prohm temple, part of the temple center at Angkor, Cambodia.
© Royalty-Free/Corbis



DID YOU KNOW?

When UNESCO named Angkor Wat a World Heritage site, it meant that the place has major importance for the entire world. Being a World Heritage site makes it easier for countries to cooperate to protect a cultural or natural treasure.

Answer: Angkor Wat is more than 800 years old and is the world's largest religious structure.

DID YOU KNOW?

Indonesia has more than 200 active volcanoes. Among them is the famous Krakatoa. When it erupted more than a hundred years ago the explosions were heard thousands of miles away.



Indonesians use a process called batik to dye fabrics. The results can be quite colorful.

© Wolfgang Kaehler/Corbis

SEARCH LIGHT

Fill in the blank: Indonesia is a country made up of about 13,670 _____.

Island Nation of Southeast Asia





The Republic of Indonesia consists of a group of islands lying between the Indian and Pacific oceans. Its capital is Jakarta on the island of Java.

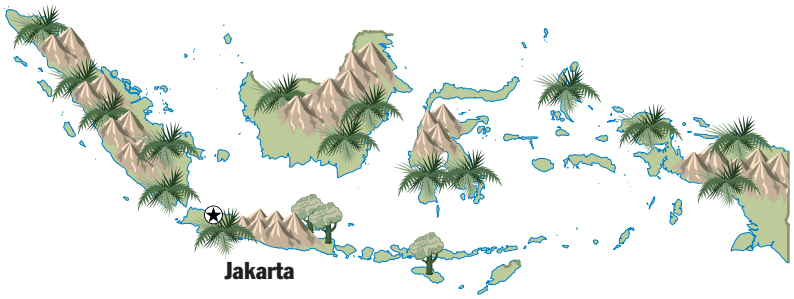
Indonesia is made up of about 13,670 islands, though some are shared with other countries. The largest island is New Guinea, which Indonesia shares with Papua New Guinea. Parts of Borneo, the second largest island in the group, belong to Malaysia and Brunei. Sumatra, Java, and Celebes are the other major islands of Indonesia. Most of Indonesia's people live on these five islands.

Most of the islands are mountainous. Only about one-tenth of the land is used for growing crops, but many of the people make their living from farming. Rice is the main crop grown there. Other crops include coffee, tea, tobacco, and spices. There are also many palm and rubber trees in Indonesia. The country produces many things made of palm oil and is a major supplier of natural rubber.

The **climate** in Indonesia is hot and **humid.** Rain falls heavily throughout the year. Because of that, much of Indonesia is covered with rainforests. Mangrove tree swamps are common along the coasts.

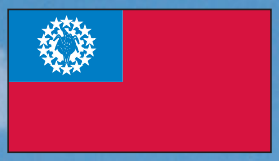
Indonesia is known for more than its **natural resources**, though. The people of Indonesia practice special decorative arts throughout the islands. Perhaps the most popular art with tourists is batik, a special way of dyeing fabric. Indonesians are also known for their traditional dance and puppet performances. Puppetry is one of the favorite arts of the islanders themselves.

LEARN MORE! READ THESE ARTICLES…
FOLK ARTS AND CRAFTS (VOLUME 3) • DANCE (VOLUME 3)
VOLCANOES (VOLUME 1)



Answer: Indonesia is a country made up of about 13,670 islands.

City of the Gold Pagoda



Yangon is the largest city in Myanmar and the country's business center. It is located near the Yangon River. In the past the city was known as Rangoon and the country was called Burma.

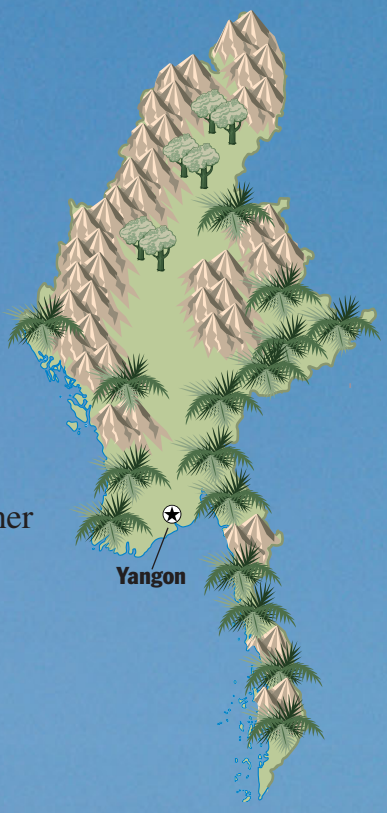
At one time Yangon and the rest of Myanmar were controlled by Great Britain. The center of the city, known as the Cantonment, was planned by the British. It is laid out in a system of blocks. Each block is divided by streets running north to south and east to west. As Yangon's population increased, new settlements were built around the Cantonment.

If you visit Yangon, you'll find many interesting places to see. The most famous building is the Shwe Dagon **Pagoda**. It is a great Buddhist temple on a hill. The pagoda is a solid brick structure that is covered with gold. It has been a place of **pilgrimage** for many centuries. Yangon also has many other important **shrines**, including the World Peace Pagoda.

DID YOU KNOW?

The city's name in the English language was changed from Rangoon to Yangon in 1989. Yangon is closer to the way that the name is said in Burmese, the most widely spoken language in Myanmar.





Many people travel to Yangon to visit the Buddhist temple known as the Shwe Dagon Pagoda.
© Christophe Loviny/Corbis

Most of the buildings in the city center are made of bricks. Some of these old brick buildings are from the British **colonial** days. The Office of Ministers is one of them. Other British buildings built around the same time include the Law Courts, Yangon General Hospital, and the **customhouse**. In other parts of the city you'll see many traditional wooden houses.

To the north of the city center is Royal Lake. The lake is surrounded by a wooded park. Nearby are the city's zoo and botanical gardens.

LEARN MORE! READ THESE ARTICLES…
BANGKOK, THAILAND (VOLUME 7)
BUDDHISM (VOLUME 5) • U THANT (VOLUME 4)

SEARCH LIGHT

Yangon shares its name with what geographic feature?

Answer: Yangon is also the name of the river that passes near the city.



SEARCH LIGHT

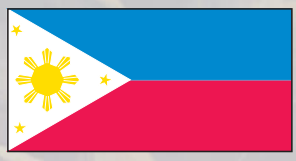
Find and correct the error in the following sentence: The Philippines is a large group of islands in the Indian Ocean.

DID YOU KNOW?

The most famous Filipino athlete of all time is Rafael ("Paeng") Nepomuceno. He is a professional bowler who is in the International Bowling Hall of Fame in St. Louis, Missouri, in the United States.



Tropical Island Republic



The Republic of the Philippines is made up of about 7,100 islands in the Pacific Ocean along the southeastern coast of Asia. The two main islands are Luzon, in the north, and Mindanao, in the south. Manila, the capital and most important port, is on Luzon. Most of the larger islands have mountains and dormant, or "sleeping," volcanoes.

Being an island country and in the tropics, the Philippines has a climate that's warm and **humid**, with a lot of rain. The eastern islands are sometimes soaked by **typhoons**. These strong storms are called "hurricanes" in other parts of the world.

Watered by all that rain are nearly 10,000 kinds of flowering plants and ferns. There are 800 kinds of orchids in the Philippines. Some are very rare. Important trees of the Philippine forests include pine and lauan, which is better known as Philippine mahogany. The country's animals include monkeys, water buffalo, and more than 50 kinds of bats. The monkey-eating eagle is one of the rarer birds.

Farming is an important business in the Philippines. The people grow mostly rice and corn, though they also grow sugarcane, bananas, and pineapples. The Philippines also produces many coconuts. Most of the farming is done on the central plain of Luzon.

The Philippine people are known as Filipinos. They speak many languages. The official languages are Pilipino and English. The English language came to the Philippines when the country was led by the United States after the Spanish-American War of 1898.



LEARN MORE! READ THESE ARTICLES…
BATS (VOLUME 12) • INDONESIA (VOLUME 7)
VOLCANOES (VOLUME 1)

A woman sells colorful flowers at a market in Manila, the capital of the Philippines.
© David Samuel Robbins/Corbis

Answer: The Philippines is a large group of islands in the Pacific Ocean.

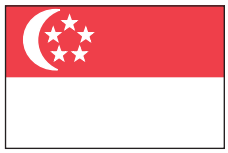


SEARCH LIGHT

Singapore has four official languages—Malay, Mandarin Chinese, Tamil (an Indian language), and English. Most countries have one or two. Why do you think Singapore has so many?



The Lion City



The Republic of Singapore is a small island nation in Southeast Asia. Singapore is also the name of the country's main island and of its capital city. Legend says that a prince named the island Singapura, meaning "lion city," because he thought he saw a lion there.

Singapore Island and about 60 little nearby islands make up the country. All these islands lie off the southern tip of the Malay **Peninsula**. Singapore Island is shaped like a diamond. It is linked to the country of Malaysia on the Malay Peninsula by a road and railway that cross the water of the Johor **Strait**.



As of 1995, almost 3 million people lived in this small island nation. That makes Singapore one of the most crowded countries in the world. But Singapore is also one of the most well-to-do Asian nations because it has been a busy world shipping port for a long time. People have moved there from all parts of Asia, giving Singapore a rich and varied cultural **heritage**. Most people speak the Malay language, but Mandarin Chinese, Tamil (an Indian language), and English are also official languages.

Singapore's weather is hot and very rainy—a typical **monsoon** climate. The lowlands often flood when it rains hard, but the rainy weather is good for plants. While only a few of Singapore's native plants remain, patches of original rainforests still survive. There are some original **mangrove** forests on the main island's northwestern side. And people often call Singapore city the "Garden City" because of its many parks, gardens, and tree-lined streets.

DID YOU KNOW?

If you want to give a gift to someone from Singapore, you shouldn't give a clock or a handkerchief. These objects are linked with death or funerals. Umbrellas are not good gifts either—they are associated with accidents.

LEARN MORE! READ THESE ARTICLES…
INDONESIA (VOLUME 7) • ISLANDS (VOLUME 1)
RAINFORESTS (VOLUME 1)

Singapore is sometimes known as the "Lion City." Its symbol is a merlion, a creature that is half lion and half fish.
© Earl & Nazima Kowall/Corbis

Answer: Singapore's four official languages reflect the fact that people from many different cultures have moved there. Also, being a busy and successful world port means that people from all over the world live, work, and pass through Singapore.



DID YOU KNOW?

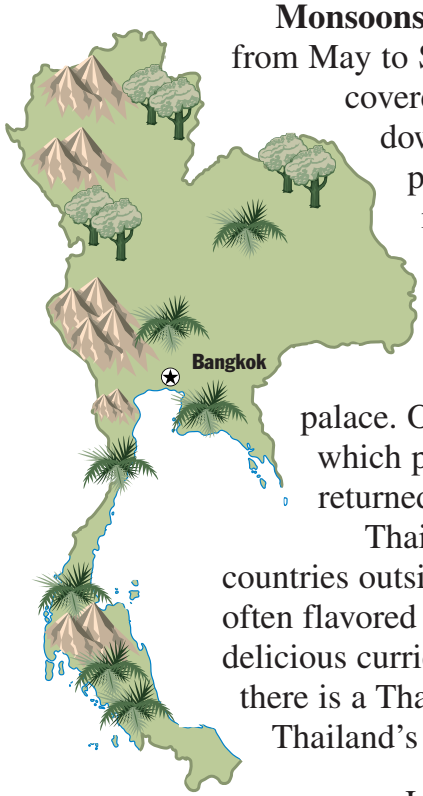
Long ago, the kings of Thailand gave white elephants to people who upset them. No one could refuse such a rare gift, but owners often went bankrupt because caring for the elephants was very expensive. Today the phrase "white elephant" is used to describe a gift that nobody wants.



Kingdom of Southeast Asia



The people of the Kingdom of Thailand often describe their land as looking like an elephant's head. The trunk is the south. The ear is the northeast. The top of the head is the mountainous north. The mouth is the **delta** and harbor of the Chao Phraya River, where you will also find Bangkok, the country's capital and chief port. The plains of the river's **basin** make up the elephant's eyes.



Monsoons shape the weather in most of Thailand, bringing lots of rain from May to September. The heavy rain was good for the forests that once covered half of the country. But many of the forests have been cut down by loggers since 1970. Forestland has also been cleared to provide land for farming, especially for growing rice, the main food crop. The remaining forests in Thailand contain teak, bamboo, palms, and rattan. All of these are used to make things to sell.

The royal palace plays an important part in preserving traditional Thai culture. Many ceremonies are held at the palace. One of these is the yearly *kathina* ("cloth") ceremony, in which people present gifts to Buddhist **monks** who have just returned from a period of **seclusion**.

Thai cooking has become very popular in many countries outside Thailand. Seafood, meats, and vegetables are often flavored with coconut milk and peanuts in spicy and delicious curries, or stews, and served over rice or noodles. If there is a Thai restaurant in your area, you can enjoy a sample of Thailand's famous **cuisine**.

LEARN MORE! READ THESE ARTICLES…
ELEPHANTS (VOLUME 12) • MONASTICISM (VOLUME 5)
VIETNAM (VOLUME 7)

Here, Buddhist monks in Thailand take part in a special ceremony. Buddhism, the national religion, plays an important role in Thai culture.
© Jeremy Horner/Corbis



Look at the map of Thailand. Do you think it looks like an elephant? Can you make out the head, ear, and trunk?

Answer: There's no one answer. Compare your answer with your friends' answers.



DID YOU KNOW?

The full official Thai name for Bangkok has more than 160 letters. According to some sources, it is the longest name of any place in the world.

City of Angels

Bangkok is the capital of Thailand and the country's largest and most important port. The Thai people call the city Krung Thep, which means "city of angels." Bangkok spreads across both sides of the Chao Phraya River. From the river a network of **canals** spreads through the city.



Goods sold from small boats in a floating market in Bangkok.
© Louis K. Meisel Gallery/Corbis

The Grand Palace, where the kings of Thailand once lived, stands on the river's east bank. The palace is surrounded by walls. Also within these walls is Wat Phra Kaeo, a temple full of Thai art treasures. It holds the Emerald Buddha, the holiest statue of the Buddha in all of Thailand.

There are many other Buddhist temples, or *wat*s, along the banks of the Chao Phraya River. A *wat* usually has living quarters for monks, **shrines** for **meditation**, towers, and a meeting place. Some of the *wat*s are decorated with beautiful carvings. The Temple of Dawn, or Wat Arun, is one of these.

Wat Pho is the oldest and largest *wat* in Bangkok. It has the largest reclining Buddha and the largest collection of Buddha images in Thailand. People call Wat Pho the first university in Thailand. An early king had **texts** carved in stone and set around the temple so that people could read and learn from them.

In Bangkok's famous floating markets, merchants sell fruits, vegetables, flowers, and other items from boats in the canals. Shoppers step from boat to boat as they look at all the things to buy.

LEARN MORE! READ THESE ARTICLES…
BUDDHISM (VOLUME 5) • SCULPTURE (VOLUME 3)
THAILAND (VOLUME 7)



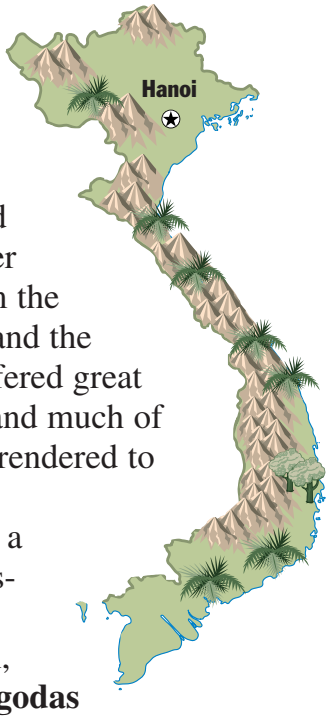
These Buddhist monks walk on the grounds of one of Bangkok's famous temples, the Wat Phra Kaeo. Inside the temple is a sacred image called the Emerald Buddha. Buddhism is the city's main religion.
© Paul Almasy/Corbis

Answer: b) "city of angels."

North and South



The Socialist Republic of Vietnam is located in Southeast Asia, near China, Laos, and Cambodia. It is made up of what for many years were two countries: North Vietnam (the Democratic Republic of Vietnam) and South Vietnam (the Republic of Vietnam). After a long war, the two countries were reunited in 1976. The capital of Vietnam is Hanoi.



Most people know of Vietnam because of its wars. The one that led to the reunification of North and South Vietnam began in the 1950s. The **communists** who ruled North Vietnam wanted to bring the two countries together under their leadership. South Vietnam, with support from the United States, tried to stop them. During the late 1960s and the early 1970s, both the Vietnamese and the Americans suffered great losses. Many people were killed, and Vietnamese cities and much of the countryside were badly damaged. South Vietnam surrendered to North Vietnam in 1975.

In spite of the troubles Vietnam has faced, it still has a number of interesting places to visit. Hanoi has centuries-old temples as well as modern art and history museums. Bustling Ho Chi Minh City (formerly Saigon, capital of South Vietnam) has Buddhist **pagodas** and a **cathedral** among its attractions.

Most of Vietnam's people are farmers. Much of the farmland is used for growing rice. There are also farms that grow coffee, tea, rubber, sugarcane, soybeans, and coconuts. The people often eat meals of rice with fish.

SEARCH LIGHT

Fill in the blanks: Present-day Vietnam is the result of joining _____ and _____ Vietnam in the 1970s.

LEARN MORE! READ THESE ARTICLES…
BUDDHISM (VOLUME 5) • HANOI, VIETNAM (VOLUME 7)
RICE (VOLUME 10)

© Steve Raymer/Corbis



DID YOU KNOW?

French is one of the languages spoken in Vietnam, and French cooking is part of Vietnam's cuisine. Sound odd? France once ruled the country as a colony, until the Vietnamese gained their independence in the 1950s.

Farmers work in a rice paddy in central Vietnam.

Answer: Present-day Vietnam is the result of joining North and South Vietnam in the 1970s.

Capital of Reunited Vietnam

Hanoi has been the capital of Vietnam since 1976. It is located on the western bank of the Red River. *Ha* means "river" and *noi* means "within." Hanoi has been called by many other names in the past. First it was Dong Kinh, then Tonquin, Tonkin, and finally Hanoi.

From the 1880s to the 1940s, Hanoi was the center of French-controlled Southeast Asia. Then Hanoi became the capital of North Vietnam when it went to war with South Vietnam. The North defeated the South in 1975. The two parts of the country became one again, and Hanoi became the capital.

SEARCH LIGHT

If Pho Hang Bun means "street of noodles" and Pho Hang Bac means "street of jewelry" what do you think Pho Hang means?

The streets in Hanoi are named for the things that used to be sold there long ago. Pho Hang Bun was where noodles were sold. Pho Hang Ma was the place for paper products. And Pho Hang Bac was the road for buying jewelry. Some streets have **shrines** dedicated to the gods of these trades.

During the Vietnam War many of Hanoi's monuments and palaces were destroyed. One that survived was Lake Hoan Kiem. It was once part of the Red River and was called Luc Thuy, or "Green Water," because of its color. Two interesting historical places are the Co Loa **citadel** and the Temple of Literature. The citadel is what remains of an ancient capital. The thousand-year-old temple is a shrine dedicated to Confucius, the great Chinese thinker. The Temple of the Trung Sisters is an interesting place to visit too. It honors two women who led a rebellion against the Chinese Han dynasty in the 1st century AD.

DID YOU KNOW?

Dong Kinh, the original name of Hanoi, became Tonquin only because Europeans had trouble pronouncing the name.

LEARN MORE! READ THESE ARTICLES…
CONFUCIUS (VOLUME 5)
PHNOM PENH, CAMBODIA (VOLUME 7) • VIETNAM (VOLUME 7)



In this picture you can see many sides of Hanoi. Women sell produce from nearby farms, modern motorcycles and cars share space with bicycles, and in the background is a French-built opera house from colonial times.
© Steve Raymer/Corbis

Answer: If you guessed that Pho Hang means "street of," then you're right. It can also mean "district."



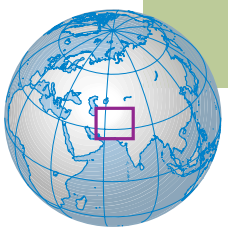
SEARCH LIGHT

Unscramble these words connected with Afghanistan:

- blaKu
- niHud shuK
- tinamouns

DID YOU KNOW?

Conflict is not new to Afghanistan. During the 1800s, Russia and England supported different tribal groups in Afghanistan. This led to many battles and wars in the region. The Europeans called this contest the "Great Game."



Mountain Country

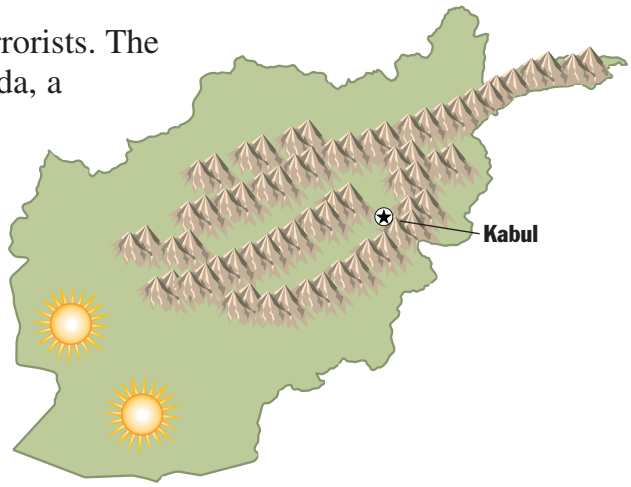


Afghanistan is a dry country in southern Central Asia. Kabul is Afghanistan's capital city. Mountains cover a large part of the country. The Pamir Mountains rise in the northeast, and the giant Hindu Kush range spreads across the country from northeast to southwest. Many of Afghanistan's rivers get their water from the melting snow and **glaciers** in the mountains. The Kabul River provides water for the fertile valleys and **basins** around the cities of Kabul and Jalalabad.

Not much of Afghanistan's land can be used for farming, though. It's either too rocky or too dry. Only farmers who live in the river valleys where water is available are able to grow crops. They mostly grow wheat, corn, grapes, and rice. Instead of farming, many people raise herds of sheep, goats, cattle, or camels.

For centuries Afghanistan was ruled by a king. It suffered a long civil war in the 1980s when the Soviet Union supported Afghanistan's **communist** government. In the 1990s a Muslim group overthrew the government and then fought among themselves. Finally one group, called the Taliban, took control. They made many strict laws and took away a lot of the Afghan people's rights. Many people around the world were upset by this.

In 2001 the United States was attacked by terrorists. The U.S. government blamed the terrorism on al-Qaeda, a Muslim group supported by the Taliban. A few weeks later the United States, Britain, and other allies attacked Afghanistan and forced the Taliban from power. The new government restored many of the rights of the Afghan people that the Taliban had taken away.



LEARN MORE! READ THESE ARTICLES…
ISLAM (VOLUME 5) • MOUNTAINS (VOLUME 1)
PAKISTAN (VOLUME 7)

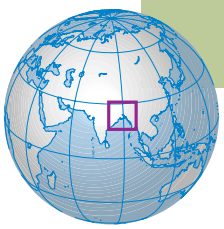
Complex designs cover a wall of a mosque in the city of Mazar-e Sharif, Afghanistan. Many Muslims believe that inside the mosque is the tomb of Ali, the son-in-law of Muhammad, the founder of the Islamic religion.

© Charles & Josette Lenars/Corbis

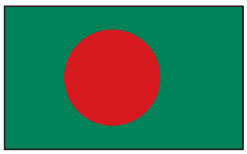
Answer: - blaKu = Kabul
- niHud shuK = Hindu Kush
- tinamouns = mountains



This young woman is picking tea leaves in a field in Bangladesh. Tea is one of the country's major crops.
© Roger Wood/Corbis



Land of the Bengals



Bangladesh is a small, densely populated country in South Asia. It's also a young country, born only in 1971. Before that it was called East Pakistan. But the area it lies in is traditionally known as Bengal.

East Pakistan was part of the country of Pakistan. The people of East Pakistan wanted their freedom, and they won it after fighting a war with the help of the neighboring country of India. Today Bangladesh shares a language (Bengali) and culture with the Indian state of West Bengal. Most of the people are of the Islamic faith, though a number are Hindu.

Bangladesh is generally hot and **humid**. Two major rivers—the Ganges (Ganga) and the Brahmaputra—come together there as the Padma River. Summer brings heavy rains. Every two or three years the Brahmaputra River floods the countryside, killing many people and damaging crops and houses.

Bangladesh's capital, Dhaka, is divided into Old and New Dhaka. In Old Dhaka you can see many styles of buildings, most notably Mughal (Islamic) monuments, gardens, and mosques. In the maze of crowded narrow lanes, bazaars sell everything from bracelets to silk to books.



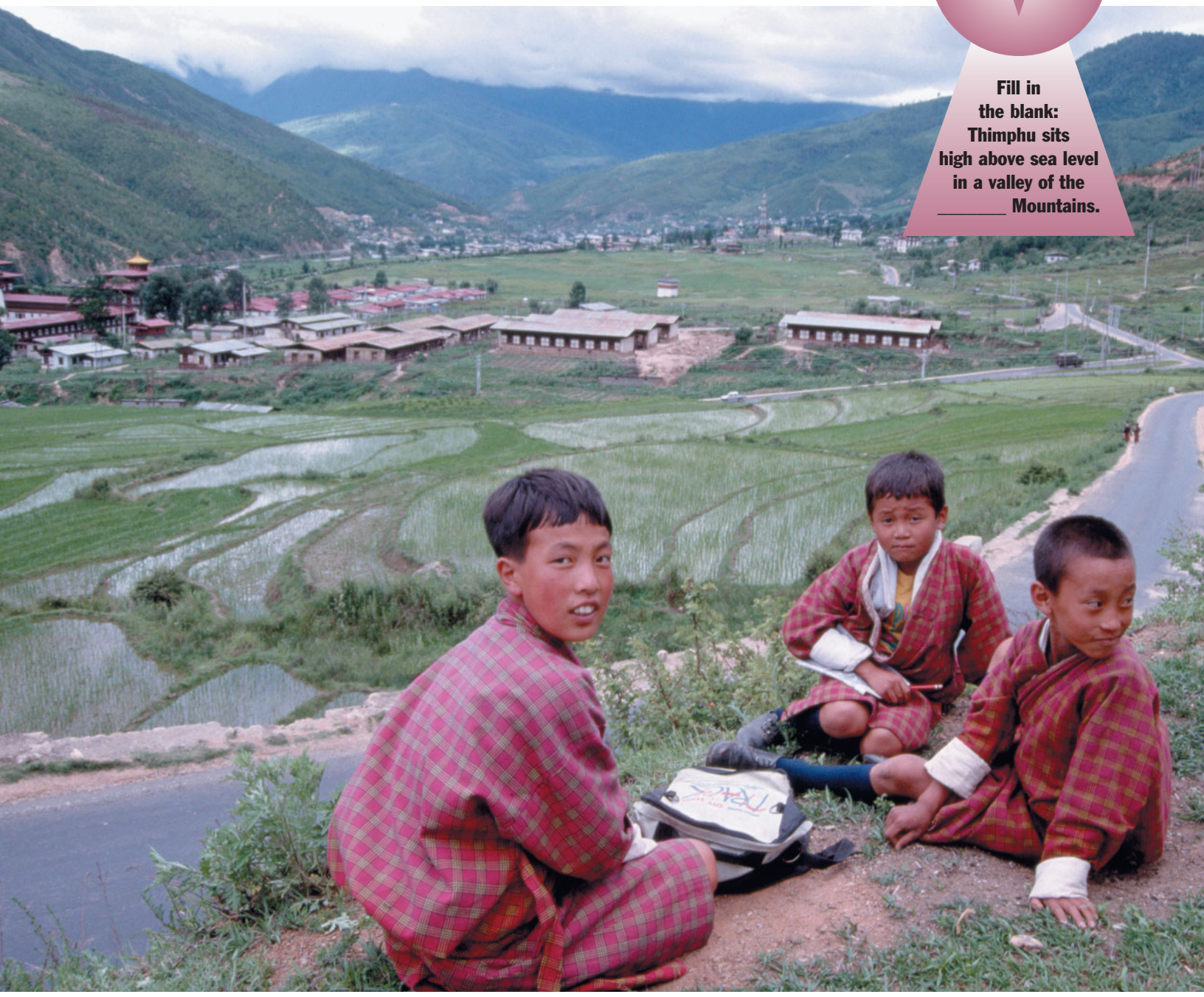
In the **fertile** central region of Bangladesh, many crops are grown. These include rice and jute, a fiber often used to make sacks and mats. Jute is sold to other countries. Parts of Bangladesh are covered with forests—bamboo trees in the east and mangrove swamps along the coast. Elephants, bears, deer, and monkeys live in the forests and grasslands. But the country's best-known animal is the Bengal tiger—larger than all the big cats except the Siberian tiger.



People are trying to save the Bengal tiger by saving its habitat. Why would that help? (Hint: What does the forest do for the tiger?)

LEARN MORE! READ THESE ARTICLES…
BAMBOO (VOLUME 10) • PAKISTAN (VOLUME 7)
TIGERS (VOLUME 12)

Answer: Without forests in which to hide and hunt for food, tigers would die. So by saving the place where the Bengal tiger lives and gets its prey, we have a better chance of saving the animal as well.



Schoolchildren sit on a hill above Thimphu. Before the 1960s the city had no formal schools except ones that taught religion. But since then great progress has been made in non-religious education.
© Karan Kapoor/Corbis

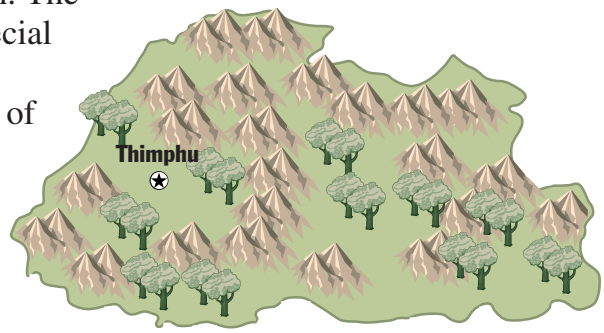


City in the Heart of the Himalayas



Thimphu is the capital of Bhutan, a small country in South Asia. It is a small city located in a valley in the heart of the Himalaya Mountains.

The people of Thimphu are not allowed to build houses in just any way they choose. There are strict rules for how all buildings must look. Buildings must be a certain height, and they have to follow the traditional building style of Bhutan. The similar-looking buildings give Thimphu a special look.



The Tashi Chho *dzong* is a good example of the Bhutanese style of building. Styled like a fortress, the *dzong* was originally a **monastery**. It's been remodeled and now also houses the offices of the royal government.

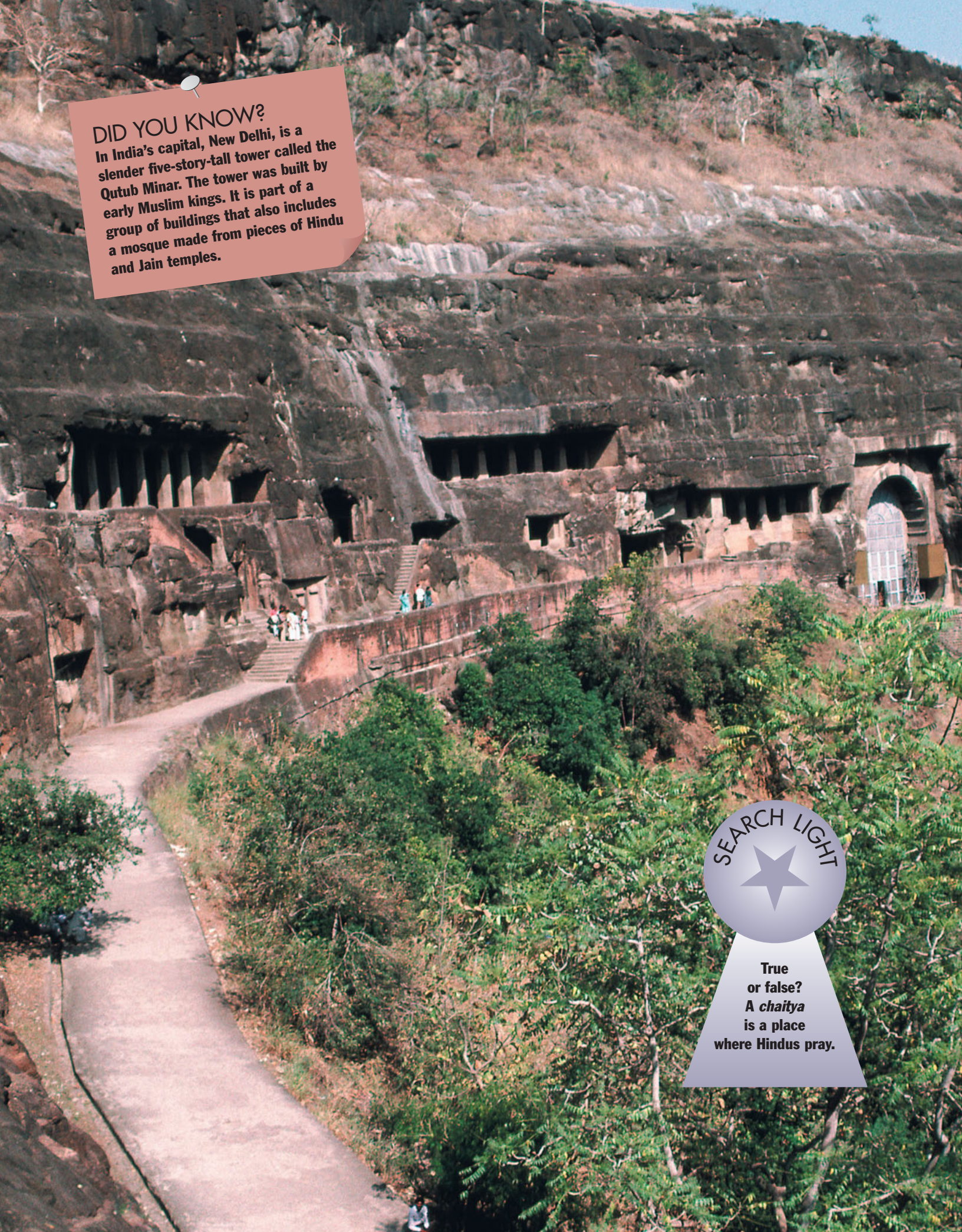
Farming is very important to the people of Thimphu. All **fertile** soil is used for growing crops—even the land around the royal palace. The main crops are rice, corn, and wheat.

Tourists usually like to visit the vegetable market in Thimphu. At one end of the market, you'll find people selling **handicrafts** and other locally made items. These include Buddhist prayer wheels and flags, baskets, handwoven and hand-knitted clothes, and many different kinds of hats. Another interesting place is the memorial *chorten*, or small **shrine**, at the temple called Changangkha Lhakhang. And you should make time to go up the hill known as Sangay Gang. From there you'll get a spectacular view of Thimphu.

DID YOU KNOW?
The government of Bhutan limits the number of tourists who can enter the country. One result is that Thimphu is a quiet city with little of the crowding common in other capitals.

LEARN MORE! READ THESE ARTICLES…
KATHMANDU, NEPAL (VOLUME 7)
MONASTICISM (VOLUME 5)
MOUNTAINS (VOLUME 1)

Answer: Thimphu sits high above sea level in a valley of the Himalaya Mountains.



DID YOU KNOW?

In India's capital, New Delhi, is a slender five-story-tall tower called the Qutub Minar. The tower was built by early Muslim kings. It is part of a group of buildings that also includes a mosque made from pieces of Hindu and Jain temples.

SEARCH LIGHT

True or false? A *chaitya* is a place where Hindus pray.



Land of Temples and Shrines



India is a country of more than a billion people. The people speak dozens of languages, including Hindi, Bengali, Telugu, and Tamil. Many also speak English. The country is the birthplace of two major religions: Hinduism and Buddhism. Both were founded in ancient times, but many people in India still practice them, especially Hinduism. Other religions in India include Islam, Christianity, and Sikhism. The country's capital is New Delhi.

People from all over the world travel to India to see its many beautiful and historic buildings. Long ago, for instance, Buddhists built dome-shaped **shrines** called *stupa*s. These were built in places where the founder of the religion, the Buddha, lived, visited, or preached. Some of the most famous *stupa*s are at Sanchi and Sarnath. A *chaitya* is a Buddhist temple, or place where people pray together. There are some beautiful *chaitya*s among a group of caves carved out of cliffs at Ajanta. The Ajanta caves are also known for their paintings. Though the paintings are about 2,000 years old, they still look bright and beautiful.

India also has several Hindu rock temples. The Kailash Temple at Ellora is carved out of solid rock. So are the sculptured temples of Khajuraho. The stone *ratha*s, or shrines, in Mahabalipuram are also remarkable.

Many tourists like to see India's grand **mausoleums**, where important people are buried. The Taj Mahal, one of the most beautiful sites in the world, is the mausoleum complex Emperor Shah Jahan built for his queen in the 1600s.



LEARN MORE! READ THESE ARTICLES…
BUDDHISM (VOLUME 5)
HINDUISM (VOLUME 5)
TAJ MAHAL (VOLUME 7)

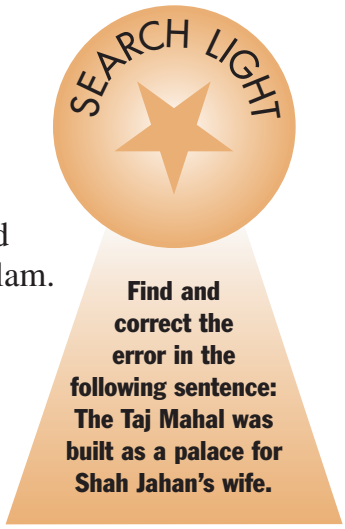
The Buddhist religion began in India many years ago. These caves in western India were used as temples and monasteries by early followers of the religion. The walls of the caves are covered with religious paintings.

© David Gurr—Eye Ubiquitous/Corbis

Answer: FALSE. A *chaitya* is a place where Buddhists pray.

Wonder of the World

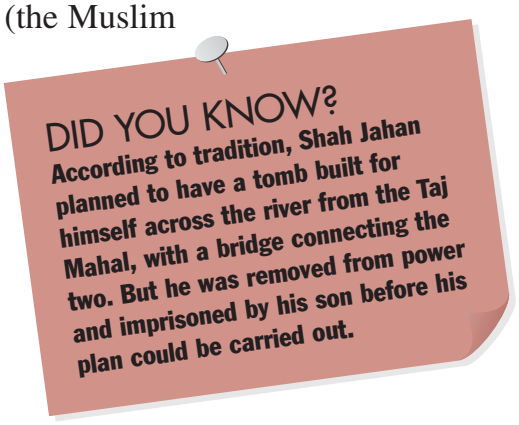
Several hundred years ago most of India was conquered and ruled by the Mughals, who followed the religion of Islam. When the emperor Jahangir ruled over northern India, his son, Prince Khurram, married Arjumand Banu Baygam. Prince Khurram called his wife Mumtaz Mahal, meaning "chosen one of the palace." The two were almost always together, and together they had 14 children.



Prince Khurram became emperor in 1628 and was called Emperor Shah Jahan. But three years later Mumtaz Mahal died while having a baby. Shah Jahan was heartbroken. He decided to build the most beautiful monument to his wife. He had the best **architects** design it in a perfect blend of Indian, Persian, and Islamic styles. Beginning in about 1632, over 20,000 workers labored for 22 years to create what was to become one of the wonders of the world.

The great monument was called the Taj Mahal (a form of Mumtaz Mahal's name). It was built in the city of Agra, India, the capital of Shah Jahan's empire. Its several buildings sit in a large garden on the south bank of the Yamuna River. From the garden's south gateway you can see the front of the white marble **mausoleum**. It contains the tombs of Mumtaz Mahal and Shah Jahan. The mausoleum stands on a high marble platform surrounded by four minarets, or towers. Many of its walls and pillars shimmer with **inlaid** gemstones, including lapis lazuli, jade, crystal, turquoise, and amethyst. And verses from the Koran (the Muslim holy book) appear on many parts of the Taj.

Many visitors still come to the Taj Mahal. To help protect and care for it for many years to come, the Taj was made a World Heritage site in 1983.



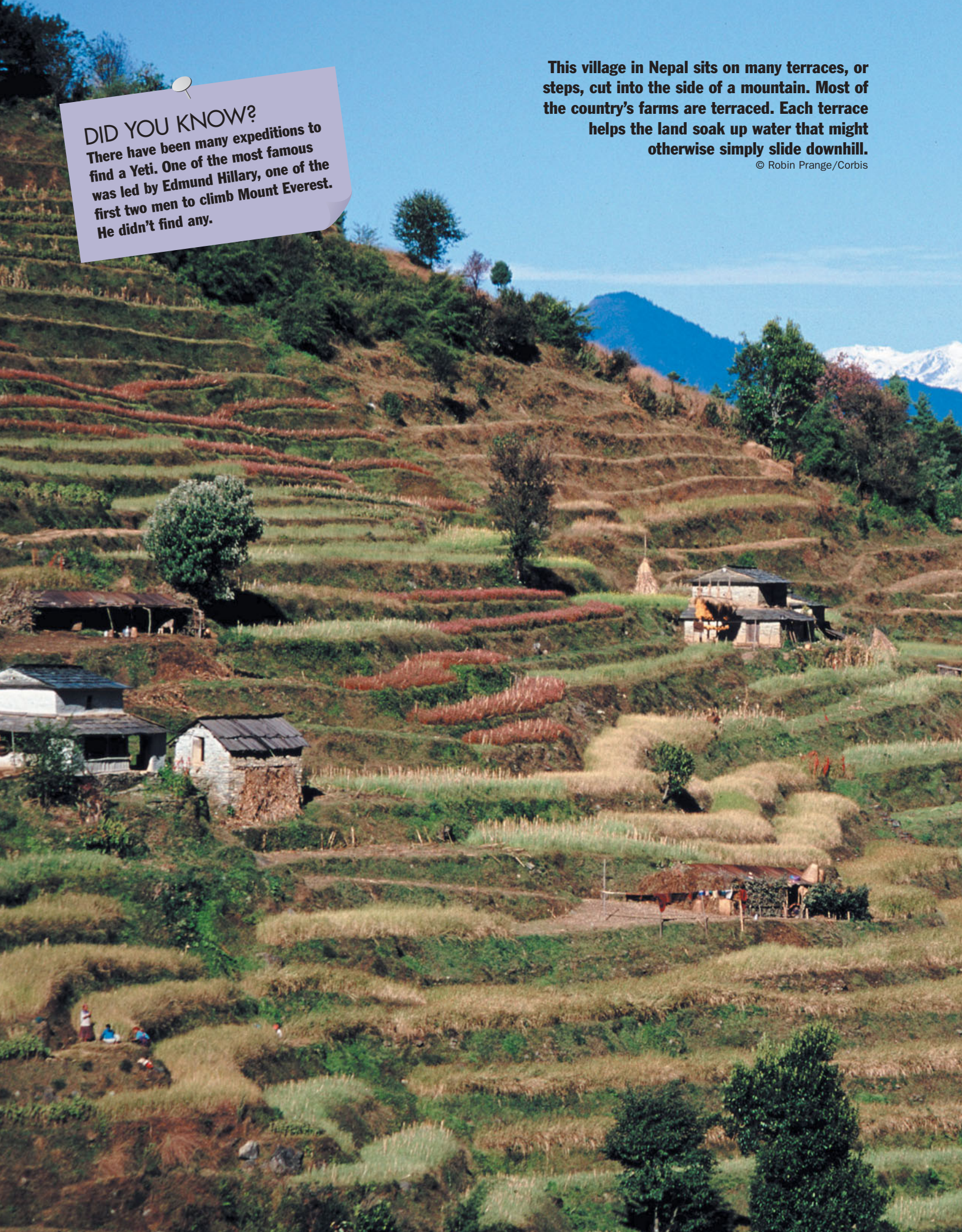
LEARN MORE! READ THESE ARTICLES…
ARCHITECTURE (VOLUME 3) • INDIA (VOLUME 7)
KORAN (VOLUME 5)



Visitors flock to see the breathtaking Taj Mahal in Agra, India. Many people in the city claim to be descendants of the 20,000 workers who built the structure.
© Vince Streano/Corbis



Answer: The Taj Mahal was built as a tomb for Shah Jahan's wife.



DID YOU KNOW?

There have been many expeditions to find a Yeti. One of the most famous was led by Edmund Hillary, one of the first two men to climb Mount Everest. He didn't find any.

This village in Nepal sits on many terraces, or steps, cut into the side of a mountain. Most of the country's farms are terraced. Each terrace helps the land soak up water that might otherwise simply slide downhill.

© Robin Prange/Corbis

Country of Mount Everest





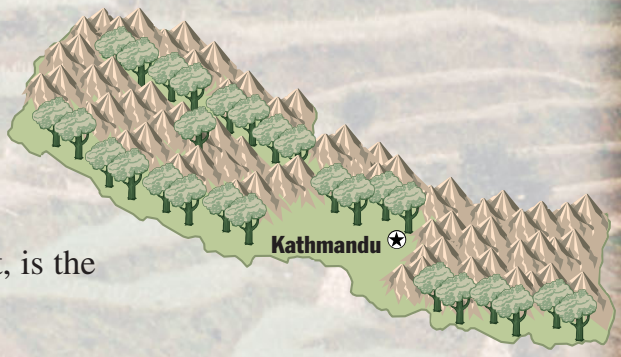
Nepal is a mountainous country between India and the Tibet **Autonomous** Region of China. Its capital is Kathmandu. Mount Everest, the world's tallest mountain, stands on the border between China and Nepal. The people of Nepal call it Sagarmatha. Everest and many other of the world's highest peaks belong to the mountain range called the Himalayas.

Rain falls in Nepal between June and September, which is good for farming. Among the crops grown are rice, sugarcane, and wheat. Most of the fields are in steps, or terraces. Farmers also raise sheep, cattle, and the longhaired oxen known as yaks.

Nepal has many forests in the valleys and lower mountains. The country's wild animals include sheep, goats, and deer. The snow leopard and the great Indian rhinoceros are also present but are seldom seen.

The Himalayas are famous for the Yeti, or **Abominable** Snowman. Some people point to strange footprints in the snow and say that only a monstrous Yeti could have made them. But most scientists say that the footprints are actually made by bears and that the Yeti is only a legend.

Even if you don't see the Abominable Snowman, there are still many interesting sights in Nepal. Lumbini is said to have been the birthplace of the Buddha, a religious leader whose followers are called Buddhists. The valley of Kathmandu also has nearly 2,500 ancient temples and other places of worship. Followers of Hinduism, the ancient religion of India, think that the temple of Lord Pashupatinath, a guardian spirit, is the holiest place in Nepal.



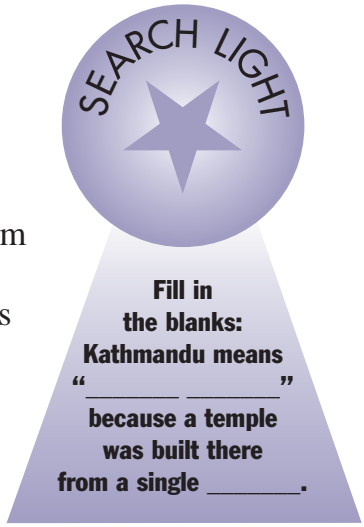
SEARCH LIGHT

Does the Yeti exist?

LEARN MORE! READ THESE ARTICLES…
BUDDHA (VOLUME 5) • HINDUISM (VOLUME 5)
KATHMANDU, NEPAL (VOLUME 7)

Answer: There has been no proof that the Yeti exists—no photos, films, or living examples. On the other hand, most animals that are "discovered" by scientists are known for a long time by the local people. Some local people claim to have seen a Yeti.

City of Palaces



Kathmandu is the capital city of the mountainous South Asian country of Nepal. Kathmandu means "wooden temple." The city got its present name more than 400 years ago, when a temple was built there from the wood of a single tree. The temple still stands in Kathmandu's central square. It is one of many temples in the city built by followers of the Buddhist and Hindu religions.

Even older than the temple is the palace of the Malla family. The palace was built by a *raja*. *Raja* is a title given to many princes and rulers in South Asia. The main gate of the palace is guarded by a figure of the monkey god Hanuman. The palace has a small adjoining square where there are many **pagoda**-style temples.

Many other palaces stand just outside Kathmandu. The grandest among these is the Singha Palace. It used to be the residence of the prime ministers of Nepal. The palace is now the government **secretariat**.

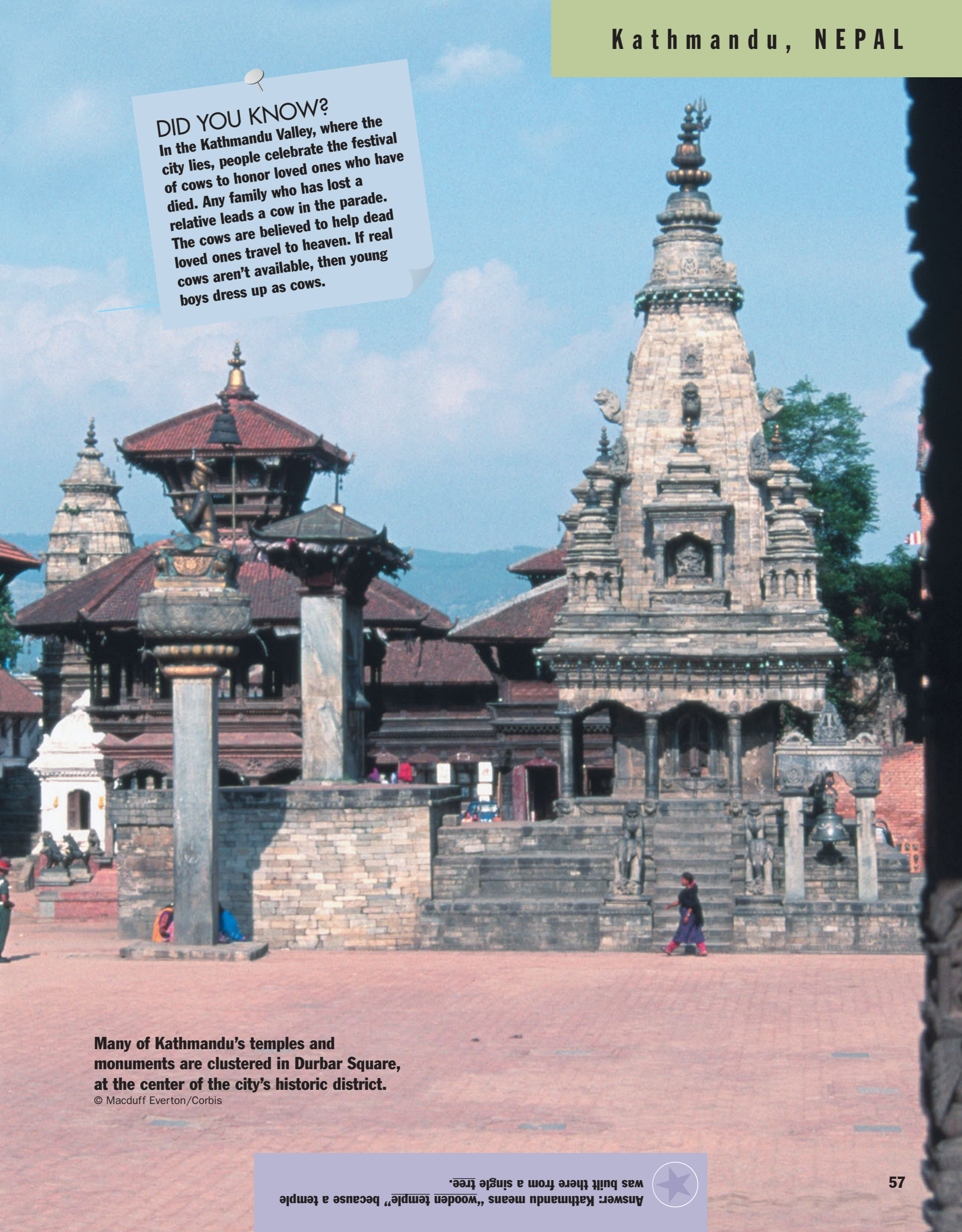
The city also has a large parade ground. In the center of the ground is a stone platform surrounding a tree. This place was used long ago for making important announcements to the army.

It is interesting to visit Kathmandu during festival time. And there are many festivals. In spring there is the Machendra Jatra, when the image of the god Machendra is carried in a long **procession** through the streets. In late summer is the Gai Jatra, a festival of cows. As part of the autumn festival called Indra Jatra, a young girl is dressed up as the goddess Devi and carried through the city.

LEARN MORE! READ THESE ARTICLES…
BUDDHISM (VOLUME 5) • HINDUISM (VOLUME 5) • NEPAL (VOLUME 7)

DID YOU KNOW?

In the Kathmandu Valley, where the city lies, people celebrate the festival of cows to honor loved ones who have died. Any family who has lost a relative leads a cow in the parade. The cows are believed to help dead loved ones travel to heaven. If real cows aren't available, then young boys dress up as cows.

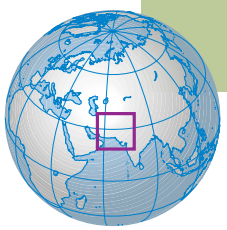


Many of Kathmandu's temples and monuments are clustered in Durbar Square, at the center of the city's historic district.
© Macduff Everton/Corbis

Answer: Kathmandu means "wooden temple" because a temple was built there from a single tree.



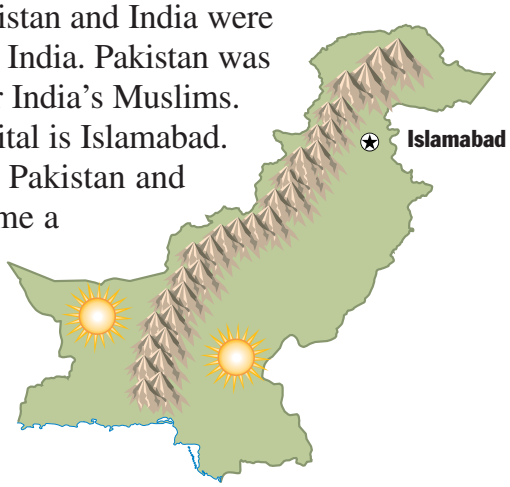
A group sets up camp in the Karakoram Range in Pakistan.
© Galen Rowell/Corbis



A Young Country with an Ancient History



Pakistan is a country in South Asia. Its neighbor to the east is India. For many years Pakistan and India were a single country known as British India. Pakistan was created to provide a homeland for India's Muslims. It became an independent country in 1947. Its capital is Islamabad.



Pakistan was established in two sections, East Pakistan and West Pakistan. Later, in 1971, East Pakistan became a separate country called Bangladesh.

Although Pakistan is a young country, it has a rich history. It was the site of the ancient Indus civilization. This was one of the largest of the early city-based civilizations. Pakistan is also home to many historic **mosques**, tombs, and **shrines**. Some of these are hundreds of years old.

Pakistan is a rugged place. In the north are the mountains of the Karakoram Range and the Himalayas. Some of the world's tallest mountains are part of these ranges. Huge **glaciers** and roaring rivers cross this landscape. Other parts of the country are very dry. Pakistan's natural plant life is mainly grass and bushes. But on the slopes of the Himalayas, oak, cherry, cedar, and pine trees grow. Brown bears, black Himalayan bears, leopards, and wild sheep are found in the northern mountains. The rare snow leopard is found there too.

Most of Pakistan's people speak Urdu. But Punjabi, Sindhi, Pashto, and Balochi are also spoken. Many people can also speak English.

Many Pakistanis are farmers. They grow rice and cotton. Some people make a living from logging and fishing. Others make beautiful carpets and do fine **embroidery**.

LEARN MORE! READ THESE ARTICLES…
BANGLADESH (VOLUME 7)
MOHAMMED ALI JINNAH (VOLUME 4)
PAKISTAN: LAND OF THE INDUS CIVILIZATION (VOLUME 7)

DID YOU KNOW?

The official emblem, or symbol, of Pakistan features the crescent-and-star symbol of the national religion, Islam. The emblem also displays what were originally Pakistan's four main crops: cotton, tea, wheat, and jute.

Answer: TRUE.

Land of the Indus Civilization

There are some great mysteries in history. One of the greatest concerns the ancient Indus civilization. Nearly 4,000 years ago the Indus people and their civilization disappeared. Why did this happen? If there's an answer to be found, it lies in what is now the country of Pakistan.



Ancient stone tablets containing an early form of writing.
© Charles & Josette Lenars/Corbis

For thousands of years no trace remained of the Indus civilization. Then, beginning in 1921, its remains were discovered by **archaeologists.** Buried near the Indus River in Sindh, now in Pakistan, were bricks, seals (imprinting stamps), water **ducts**, and fossils. They told an interesting story.

The remains showed that the Indus people had lived in two large cities and more than 100 towns and villages. The two cities were Mohenjo-daro and Harappa. Both had a huge fortress on a raised mound and houses laid out below.

The Indus people were farmers. They grew wheat, peas, sesame, and cotton. They kept different kinds of cattle and fowl. They may have also kept pigs, camels, and elephants. And they traded. They bought precious metals such as gold, silver, and copper from southern India or perhaps Afghanistan. And they had their own form of writing, with 250 to 500 symbols or letters.

How did the civilization come to an end? Mohenjo-daro was destroyed by outside invaders. But most of the towns were close to the Indus River and were often flooded. It is possible that the region suffered many natural disasters. It also may be that no single thing caused the civilization to decline. No one knows for sure.

LEARN MORE! READ THESE ARTICLES…
FERTILE CRESCENT (VOLUME 7) • FOSSILS (VOLUME 1)
PAKISTAN: A YOUNG COUNTRY WITH AN ANCIENT HISTORY (VOLUME 7)

DID YOU KNOW?

Although such major cities of the Indus civilization as Mohenjo-daro existed many thousands of years ago, they had very good drainage and sanitation systems. Many houses had their own bathrooms.



Thousands of years ago the Indus River civilization developed in what is now Pakistan. Remains of the civilization's largest city, Mohenjo-daro, can be seen here.
© Paul Almasy/Corbis

SEARCH LIGHT

The people of the Indus Valley civilization disappeared
a) 4,000 years ago.
b) 40,000 years ago.
c) 400 years ago.
d) yesterday.

Answer: a) 4,000 years ago.

Island Nation of Natural Riches





The cloth of your shirt or the lead in your pencil may be from Sri Lanka! Tea is another famous **export** of this island nation.

Sri Lanka lies just south of India in the Indian Ocean. For hundreds of years it was called Ceylon. In 1972 its name was changed to Sri Lanka. Colombo is Sri Lanka's capital, but the country's **legislature** and law courts are based in the city of Sri Jayewardenepura Kotte.

Most Sri Lankans are farmers. Because the country has a tropical **climate**, with high **humidity** and plenty of rainfall, it is easy to grow rice, tea, sugarcane, rubber trees, and coconut palms. Sri Lankans mine precious gems such as sapphires and rubies. They also produce graphite, the material used to make pencil leads and other products.

Sri Lanka was ruled by different countries for hundreds of years. The Portuguese were the first Europeans to conquer the island, arriving in 1505. Then the Dutch gained control by promising to help drive the Portuguese away. Finally, in 1802 the British took over the island. They ruled for almost 150 years. Each of these countries wanted to **colonize** the island so they could make money trading its natural goods.

Despite long years of foreign rule, the Sri Lankan people have preserved their traditional sculpture, painting, and **architecture**. The ancient religions of Buddhism and Hinduism have strongly influenced the arts in Sri Lanka. The country's many Buddhist and Hindu temples, with their dramatic ceremonies, are a focus of the island's cultural life.

LEARN MORE! READ THESE ARTICLES…
BUDDHISM (VOLUME 5)
HINDUISM (VOLUME 5) • INDIA (VOLUME 7)

SEARCH LIGHT

Which of these products does Sri Lanka sell to other countries?
a) tea, tobacco, and coconuts
b) tea, coconuts, and gold
c) tea, rubber, and gems



People in Sri Lanka practice a traditional form of fishing using stilts.
© Torleif Svensson/Corbis

DID YOU KNOW?

Some people in Sri Lanka believe it's bad luck to have a chameleon cross your path.

Answer: c) tea, rubber, and gems



Scientists uncovered these ruins (seen from an airplane) of the ancient city of Hazor, in what is now northern Israel. Located on an important trade route through the Fertile Crescent, the city blossomed during biblical times.

© Richard T. Nowitz/Corbis

Cradle of Civilization

The Fertile Crescent is an area in the Middle East. It is called that for two reasons. First, the land was fertile—that is, rich and productive—for growing crops and could feed many people. Many of the earliest civilizations started here. And, second, the area formed the shape of a crescent, which is what the Moon looks like when most of it is in shadow.

The Fertile Crescent is located between the Arabian Desert and the mountains of Armenia. The Tigris and Euphrates rivers are major waterways within the Fertile Crescent. Some people also include the Nile River valley of Egypt as part of the region. The other modern countries that lie in the area of the Fertile Crescent include Jordan, Syria, Lebanon, Israel, Iraq, and part of Turkey.



Ancient sculpture from the Fertile Crescent showing merchants carrying goods on horseback.
© Archivo Iconografico, S.A./Corbis

This area was particularly good for farming long ago, especially in the Nile valley. That is why it is called "fertile." It is still a farming area today. Just like in days long ago, people today use man-made methods of watering for crops to grow. This is called "irrigation." In fact, it would be impossible to grow anything without irrigation in some places there.

For many years historians believed that the earliest civilization started in the Fertile Crescent. Much later, when scientists discovered new methods for finding out how old a place or a thing was, they proved the historians right. Scientists now believe that the early villages and the things found in the Fertile Crescent belong to a time many, many thousands of years ago.

LEARN MORE! READ THESE ARTICLES…
DAMASCUS, SYRIA (VOLUME 7)
ISRAEL (VOLUME 7)
NILE RIVER: EGYPT'S GIFT (VOLUME 8)

Answer: The Fertile Crescent was given its name for two reasons. First, it is crescent-shaped, like a New Moon. Second, it is an area that was very good for growing crops.



Yerevan is an attractive city in a fine natural setting framed by "dead" volcanoes, including the snow-capped peaks of Mount Ararat. Many of the city's buildings were made using local stone of various colors, especially pink.
© Dean Conger/Corbis

SEARCH LIGHT

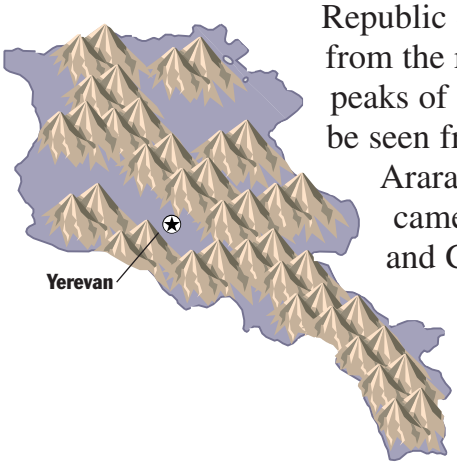
Find and correct the error in the following sentence: Yerevan is famous for being one of the world's largest cities.



City of Cafés



Yerevan is one of the world's oldest cities. A fortress was built there in 783 BC. Yerevan is the capital of Armenia, a country at the northwestern edge of Asia. The Hrazdan River divides the city. In early times the city became an important stop for traders. In modern times dams have been built on the river to supply electric power for the city's many **industries**.



Republic Square lies at the center of the city. Yerevan spreads out from the riverbank to the slopes of the surrounding hills. The peaks of Mount Aragats, Mount Azhdaak, and Mount Ararat can be seen from the city. All three are "dead" volcanoes. Mount Ararat is traditionally considered the place where Noah's ark came to a rest at the end of the flood described in the Jewish and Christian Bible. Most of the houses in the city are pink because they are made with pink "tuff" stones from the volcanoes.

Yerevan's many museums include the National Art Gallery and the Children's Art Gallery. There is also a painters' **bazaar** during weekends where paintings are sold at reasonable prices. The Matenadaran archives houses books that were written long ago. It has a wonderful collection of old illustrated **manuscripts**. The Erebuni Museum contains many historical objects, including coins and ancient tools.

One of the most unforgettable things about Yerevan is its many cafés. In summer there are so many sidewalk cafés that it's often hard to tell where one ends and the next one begins!

DID YOU KNOW?
Many Armenians hold Mount Ararat sacred. They believe their ancestors were the first people to appear in the world—and therefore on the mountain—after the great flood described in the Bible.

LEARN MORE! READ THESE ARTICLES…
BIBLE (VOLUME 5) • ISTANBUL, TURKEY (VOLUME 7)
VOLCANOES (VOLUME 1)

Answer: Yerevan is famous for being one of the world's oldest cities.



SEARCH LIGHT

Istanbul was formerly known as
a) Constantinople and Ottoman.
b) Byzantium and Constantinople.
c) Bosporus and Byzantium.

City on Two Continents

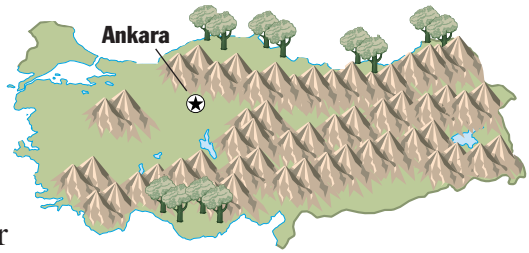




Istanbul is the only city in the world that sits on two continents. It is divided by the Bosporus Strait—a narrow stretch of water that separates Europe from Asia. So part of Istanbul lies in Asia and part in Europe. The city has been a gateway between Asia and Europe for centuries. Today it is the largest city in Turkey and its most important port.

DID YOU KNOW?
Two bridges spanning the Bosporus Strait connect Istanbul's European and Asian sides. So you can actually walk from one continent to another!

Istanbul has a long history. In the 7th century BC the Greeks built a **colony** on the site and called it Byzantium. For more than 1,000 years, beginning in the 4th century AD, the city was the capital of the Byzantine Empire. It became known as Constantinople during this period. In 1453 the Turks of the Ottoman Empire conquered Constantinople and made it their capital. After the fall of the Ottoman Empire, Turkey became a **republic** in 1923. The capital was then moved to Ankara. Istanbul took its current name in 1930.



Fires, earthquakes, and invasions have greatly damaged Istanbul over the years, but the old part of the city still has many historic sights. One of these is Topkapi Palace, where the Ottoman **sultans** lived. Another landmark is the Hagia Sophia, which was built as a church almost 1,500 years ago. It later became a **mosque** and is now a museum.

Of the many mosques built by the Ottomans, the Blue Mosque is the most famous. Another interesting place to visit is the Grand **Bazaar.** It has shops selling gold, carpets, **ceramics**, copper, brass, and hundreds of other items.

LEARN MORE! READ THESE ARTICLES…
ASIA (VOLUME 7) • EUROPE (VOLUME 6)
MEDITERRANEAN SEA (VOLUME 1)

The Hagia Sophia, in the background, and the Blue Mosque are two of the best-known sights in Istanbul.
© Danny Lehman/Corbis

Answer: b) Byzantium and Constantinople.



SEARCH LIGHT

Find and correct the error in the following sentence: Iran was once the center of the mighty Ottoman Empire.



Modern Persia



The country of Iran, in southwestern Asia, was the center of a mighty empire in ancient times. Today it is a strict Islamic **republic**, meaning that its laws are based on the religion of Islam. Many people in the countries around Iran also follow Islam. However, most Iranians follow Shi'ah Islam, a form that is less common elsewhere. The country's capital is the ancient city of Tehran.



The people of the region always called the land Iran, but outsiders gave it the name Persia. The name came from the province of Pars, or Persis, where some of the early kings of the region had their capital. In about 550 BC one of those kings, Cyrus the Great, expanded his kingdom and created the Persian Empire. The empire lasted for more than 200 years until the Macedonian empire-builder Alexander the Great defeated the last Persian ruler. After that the region changed hands many times.

All the different groups that ruled Iran through the centuries contributed to its rich culture. One of Iran's best-known poets was Omar Khayyam. He wrote beautiful poems that are still read today. Iran is also famous for its miniature paintings, silver work, and Persian rugs. Iran continues to produce these traditional crafts, but it has worked to develop modern **industries** as well.

Iran relies on selling its oil and natural gas for much of its income. The country also produces chemicals from those two substances. Iran borders the Persian Gulf and the Caspian Sea, and fisheries there provide jobs for some Iranians.

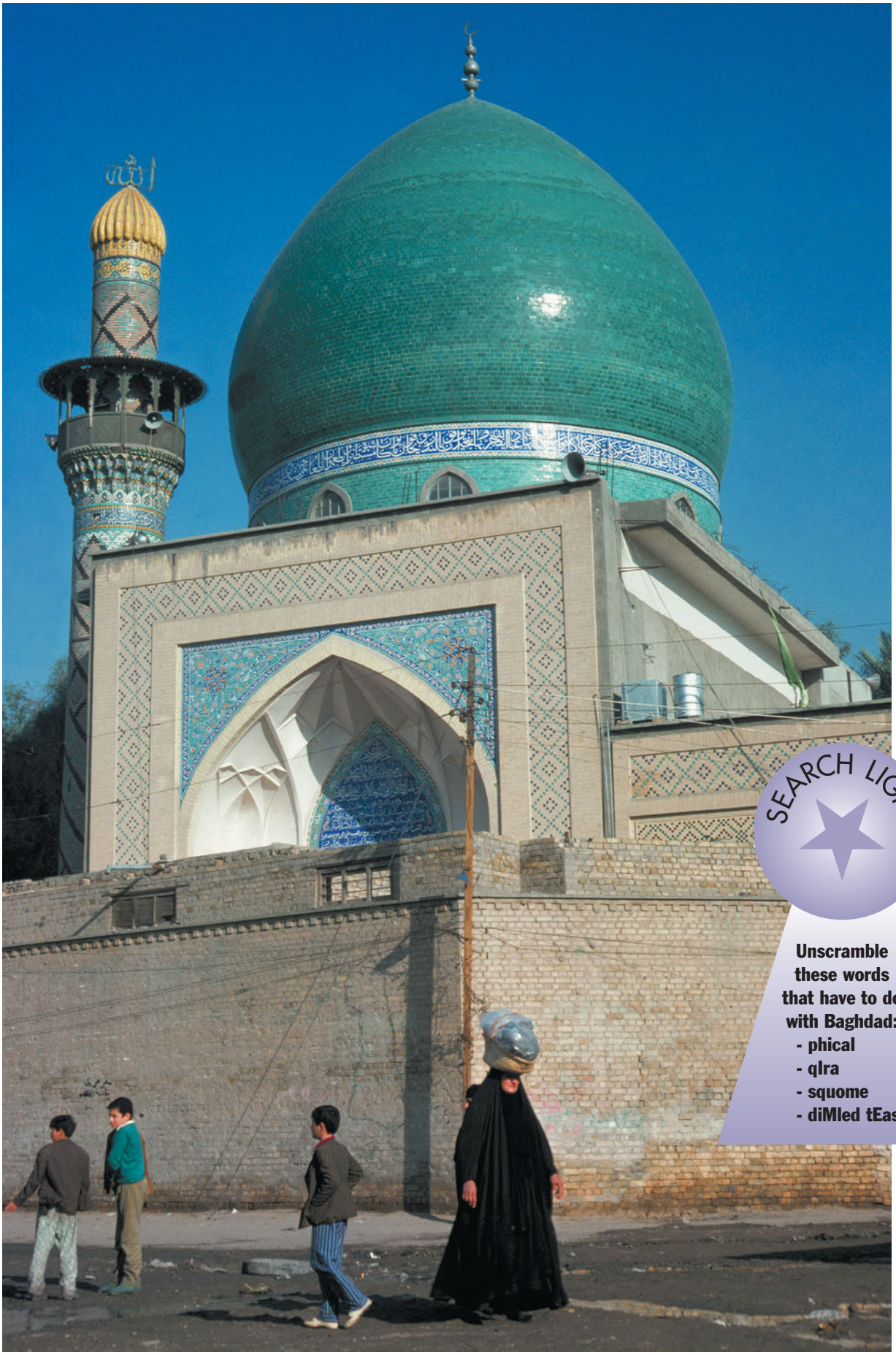
LEARN MORE! READ THESE ARTICLES…
DAMASCUS, SYRIA (VOLUME 7)
FROM THE *KALILAH WA DIMNAH*: THE POOR MAN AND THE FLASK OF OIL (VOLUME 5) • ISLAM (VOLUME 5)

DID YOU KNOW?

The religion of Zoroastrianism was founded in Iran by a man named Zoroaster, or Zarathushtra, more than 2,500 years ago.

Shop windows in Tehran, Iran, display jewelry and other goods.
© Shepard Sherbell/Corbis

Answer: Iran was once the center of the mighty Persian Empire.



SEARCH LIGHT

Unscramble these words that have to do with Baghdad:

- **phical**
- **qlra**
- **squome**
- **diMled tEas**

City of Arabian Nights





Have you heard the stories of *The Arabian Nights*? Did you know that most of the stories are set in Baghdad? Baghdad is the capital of Iraq. It lies on the banks of the Tigris River.

People have lived in the area where Baghdad now stands for about 4,000 years. The city itself, however, did not develop until many years later. About 1,200 years ago a Muslim caliph (leader) named al-Mansur chose a village called Baghdad for his capital. The new city was built within rounded walls. At the center stood the caliph's palace and a grand **mosque**. People called Baghdad the City of Peace or the Round City. During the reign of a later caliph named Harun al-Rashid, Baghdad was said to be the richest and most beautiful city in the world. The stories in *The Arabian Nights* tell about the glory of Baghdad during this period.

Today Baghdad is one of the largest cities in the Middle East. It is also a center of the art and culture of the religion of Islam. It has many mosques, museums, and libraries. People go to the Awqaf Library to study Arabic history and literature. The Iraqi National Museum has a famous collection of items from the country's early history.

Despite its many advantages, Baghdad has faced many problems in recent times. After Iraq invaded Kuwait in 1990, the United States and other countries bombed Baghdad and other parts of Iraq. Parts of the city were destroyed. Baghdad was damaged again in 2003, during another war with the United States. Once again the people of Baghdad had to work to rebuild their city.

LEARN MORE! READ THESE ARTICLES…
FERTILE CRESCENT (VOLUME 7)
ISLAM (VOLUME 5)
MYTHS AND LEGENDS, FOLKTALES AND FABLES (VOLUME 5)

DID YOU KNOW?
The caliphs of Baghdad in the 800s and 900s AD were great supporters of the game of chess. The city was home to some of the world's best players.

Most of the people of Baghdad follow the religion of Islam. The city has many mosques, or houses of worship for Muslims.
© Charles & Josette Lenars/Corbis

Answer: - phical = caliph - qlra = Iraq
- squome = mosque - dlMled tEas = Middle East



Several cities were located on the shores of Lake Tiberias in northern Israel in ancient times. The lake is called the Sea of Galilee in the Bible.

© David G. Houser/Corbis

SEARCH LIGHT

Fill in the blank: Israel's founding as a Jewish state caused problems for the _____, the Arab people already living in the same area.

The Jewish State







Although Israel did not become a country until 1948, the region where it is located, formerly called Palestine, has a rich history. It was the ancient home of the Jewish people, and for many hundreds of years it has been home to Arabs. The region, especially the city of Jerusalem, is important to people of the Christian, Jewish, and Islamic faiths.

Much of Israel is a desert. But there are also well-watered areas where crops can grow. Israel's major crops are citrus fruits, flowers, and vegetables. An important feature of Israel is the Jordan River. It rises in the north and flows south into Lake Tiberias (the Sea of Galilee) and then into the Dead Sea, a large salt lake.

Israel was created as a country where Jews could rule themselves and live without fear of **persecution**. But this caused problems for the Arabs already living on the land. These people, called Palestinians, felt that the land was being taken away from them. The neighboring Arab countries also objected to a Jewish state in Palestine and tried to overrun the country just after it was founded.

Israel won that war as well as several others. During one war Israel took control of areas called the Gaza Strip and the West Bank. Palestinians there want to form their own state. They also want control of part of Jerusalem, which Israel claims as its capital. The Israelis and the Palestinians have tried to settle their differences peacefully, but conflicts between the two groups continued into the 21st century.

LEARN MORE! READ THESE ARTICLES…
YASIR ARAFAT (VOLUME 4) • JUDAISM (VOLUME 5) • GOLDA MEIR (VOLUME 4)

DID YOU KNOW?
Salt water is buoyant—that is, it makes things float. The Dead Sea is so salty that when you swim in it, you float even if you don't want to.

Answer: Israel's founding as a Jewish state caused problems for the Palestinians, the Arab people already living in the same area.



DID YOU KNOW?

People called Canaanites built the original town of Jerusalem. Their name comes from either a word meaning "merchant" or another word meaning "red wool." The Canaanites were merchants famous for their red and purple dyes.

Holy City

SEARCH LIGHT

Jerusalem is holy to which three religions?
a) Islam, Buddhism, and Hinduism
b) Islam, Hinduism, and Judaism
c) Islam, Christianity, and Judaism

Jerusalem is a very holy city for Jews, Christians, and Muslims. The section of Jerusalem called the Old City is full of churches, **mosques**, and **synagogues**. People have lived in the Old City for nearly 5,000 years.

There are many sounds in the Old City. You can hear the ringing of church bells and the Muslim call to prayer from the **minarets**. You can also hear the sound of chanting at the Western Wall. The wall is the only remaining part of an ancient Jewish temple. Because of the sound of the prayers offered there, the wall is often called the Wailing Wall. Above it is the Temple Mount, which is sacred to Muslims. It is the site of the beautiful gold-capped **shrine** called the Dome of the Rock. It is said that Muhammad, the founder of Islam, made his journey to heaven from this site.



The Church of the Holy Sepulchre.
© Michael Nicholson/Corbis

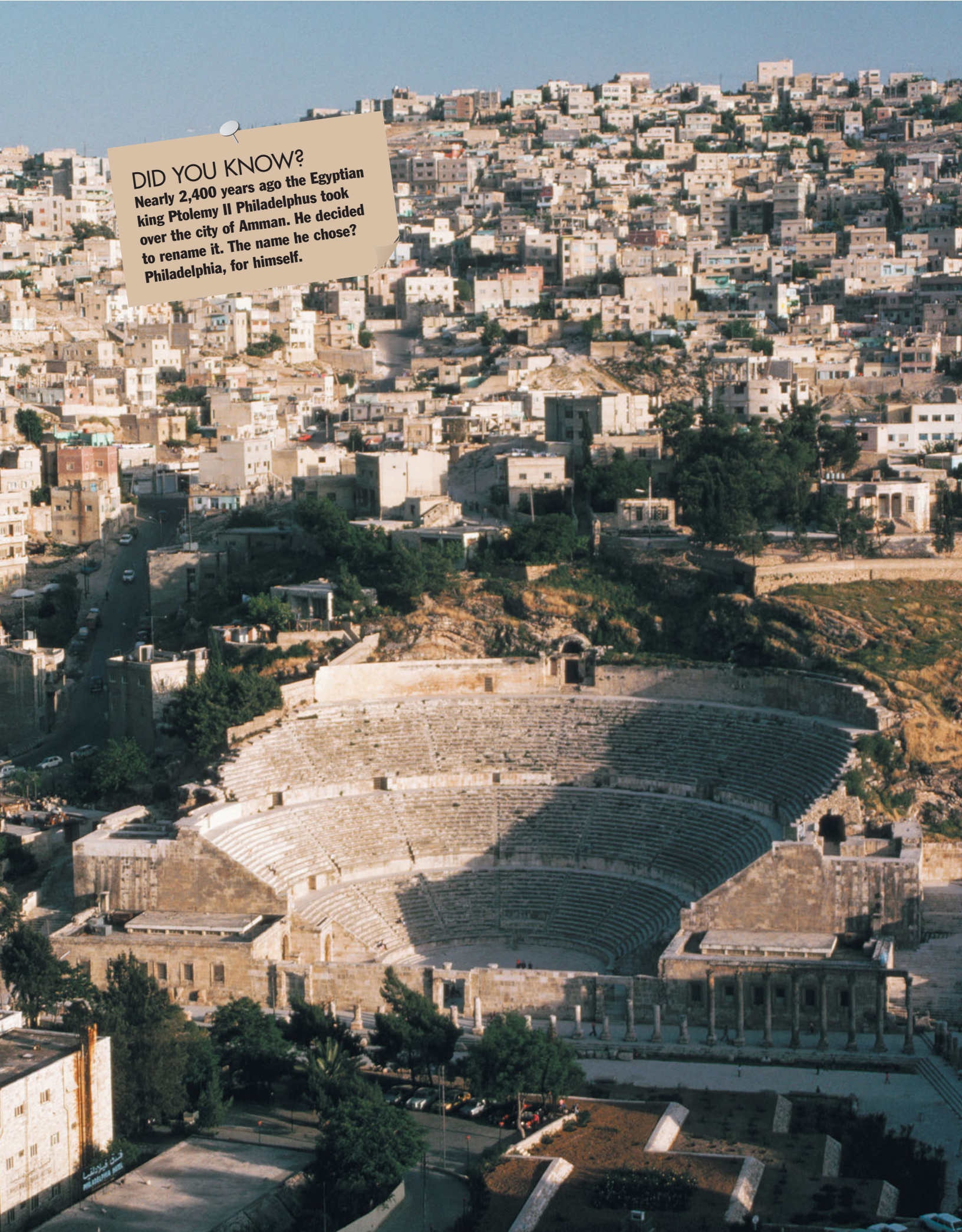
To the north of the Temple Mount lies Via Dolorosa, or Street of Sorrows. This is believed to be the path Jesus walked while carrying the cross. It ends at the Church of the Holy **Sepulchre**. This church is the most important shrine for Christians. It is said to have been built over the place where Jesus died, was buried, and rose from the dead.

Because of Jerusalem's religious importance, control of the city has long been disputed. Israel claims Jerusalem as its capital, but some people disagree with this claim. Among them is a group called the Palestinians, who live in East Jerusalem and nearby territories. Some of them want a separate state created for Palestinians, and they want part of Jerusalem to be its capital.

LEARN MORE! READ THESE ARTICLES…
CHRISTIANITY (VOLUME 5) • ISLAM (VOLUME 5) • JUDAISM (VOLUME 5)

Jews pray at the Western Wall. The Dome of the Rock is in the background.
© Richard T. Nowitz/Corbis

Answer: c) Islam, Christianity, and Judaism



DID YOU KNOW?

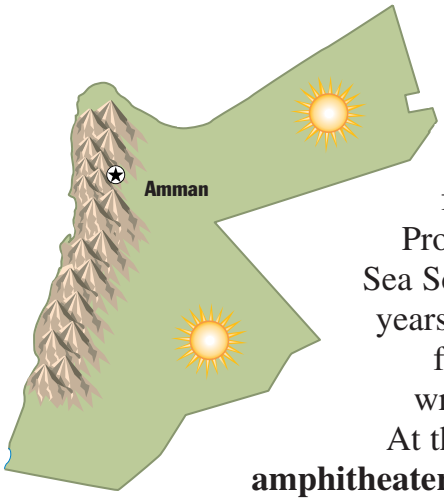
Nearly 2,400 years ago the Egyptian king Ptolemy II Philadelphus took over the city of Amman. He decided to rename it. The name he chose? Philadelphia, for himself.



City on Seven Hills



Amman is the capital of the Hashemite Kingdom of Jordan. "Hashemite" means that the ruling family is **descended** from the Prophet Muhammad. The city is spread over seven hills, called *jabal*s in the Arabic language. Most of Amman's historical sites are clustered in the downtown area, at the bottom of the *jabal*s.



An ancient **citadel** towers over the city of Amman. It is at the top of Al-Qala Hill. Al-Qasr is the most imposing building of the citadel. Al-Qasr means "the palace." Nearby is the Jordan Archaeological Museum. It has many exhibits from the **prehistoric** age up to recent times. Probably its most famous possessions are the Dead Sea Scrolls. These ancient **manuscripts** are about 2,000 years old, and they include parts of the Torah (the first five books of the Hebrew Bible) and other writings.

At the bottom of Al-Qala Hill is a Roman **amphitheater**. The theater was cut into the northern side of a hill and can seat 6,000 people. It is still used to stage shows, and it has two museums. The Jordan Folklore Museum has many things that tell us how the people of Jordan used to live. The Museum of Popular Traditions has traditional costumes and antique jewelry. Many of the costumes feature beautiful **embroidery**. The odeum is another theater, nearly as old as the Roman one. It seats just 500 people. Romans used it as a concert hall, and it's still used for concerts.

Visitors to Amman enjoy the city's many bazaars (markets) called *souk*s. Each *souk* sells different things. The gold *souk* is greatly admired.

SEARCH LIGHT

In the Arabic language, *jabal* means
a) hill.
b) bazaar.
c) theater.

LEARN MORE! READ THESE ARTICLES…
FOLK ARTS AND CRAFTS (VOLUME 3) • JERUSALEM (VOLUME 7)
MUHAMMAD (VOLUME 5)

Houses in Amman, Jordan, cover a hill above an ancient Roman amphitheater. This huge outdoor theater was built more than 1,800 years ago and is remarkably well preserved.
© Adam Woolfitt/Corbis

Answer: a) hill.

The City of Wells



Beirut, the capital of Lebanon, lies on the coast of the Mediterranean Sea. It is the country's chief port and largest city. Until the late 20th century Beirut was a social and cultural center of the Middle East. In many ways, the city was a complicated mix of peoples and ideas. People from all over the world have attended its schools, colleges, and universities, including the American University of Beirut.



Long ago the city was part of a region called Phoenicia. The Phoenicians called the city Be'erot, which means "wells," because of its underground supply of water. It was one of the most attractive cities in the Middle East. And it was the most important port in the eastern Mediterranean for a long time. Its location made it a natural **crossroads** between Asia and Europe.

But Lebanon has been torn apart by many wars and conflicts. Much of Beirut was destroyed in a **civil war** that lasted from 1975 to 1991. Some parts of the city have been rebuilt now. Traditional two-story houses with red-tiled roofs sit side by side with fashionable new houses. Many houses and buildings, though, are still in bad shape and need to be repaired.

SEARCH LIGHT

What event led to the destruction of large parts of the city of Beirut in the late 20th century?

Despite the destruction, there are many things to see in Beirut. The American University of Beirut Museum, the Nicolas Sursock Museum, and the National Museum are some of them. At the National Museum you can see objects that are thousands of years old. The city also has many shopping centers and a large number of cafés where you can relax and enjoy Lebanese food, such as *baba ganouj* (eggplant dip) or *tabbouleh* (cracked-wheat salad).

LEARN MORE! READ THESE ARTICLES…
CEDARS (VOLUME 10) • AMMAN, JORDAN (VOLUME 7)
MEDITERRANEAN SEA (VOLUME 1)

A street vendor carries his goods on a bicycle through the streets of Beirut.
D. Mace/Robert Harding Picture Library

Beirut, LEBANON



DID YOU KNOW?

The city of Beirut has been damaged and rebuilt several times in its long history. Once, about 1,500 years ago, it was destroyed by an earthquake and a tidal wave.

Answer: The civil war in Lebanon, which lasted from 1975 until 1991, destroyed much of Beirut.

Rocky Soils and Oil Riches

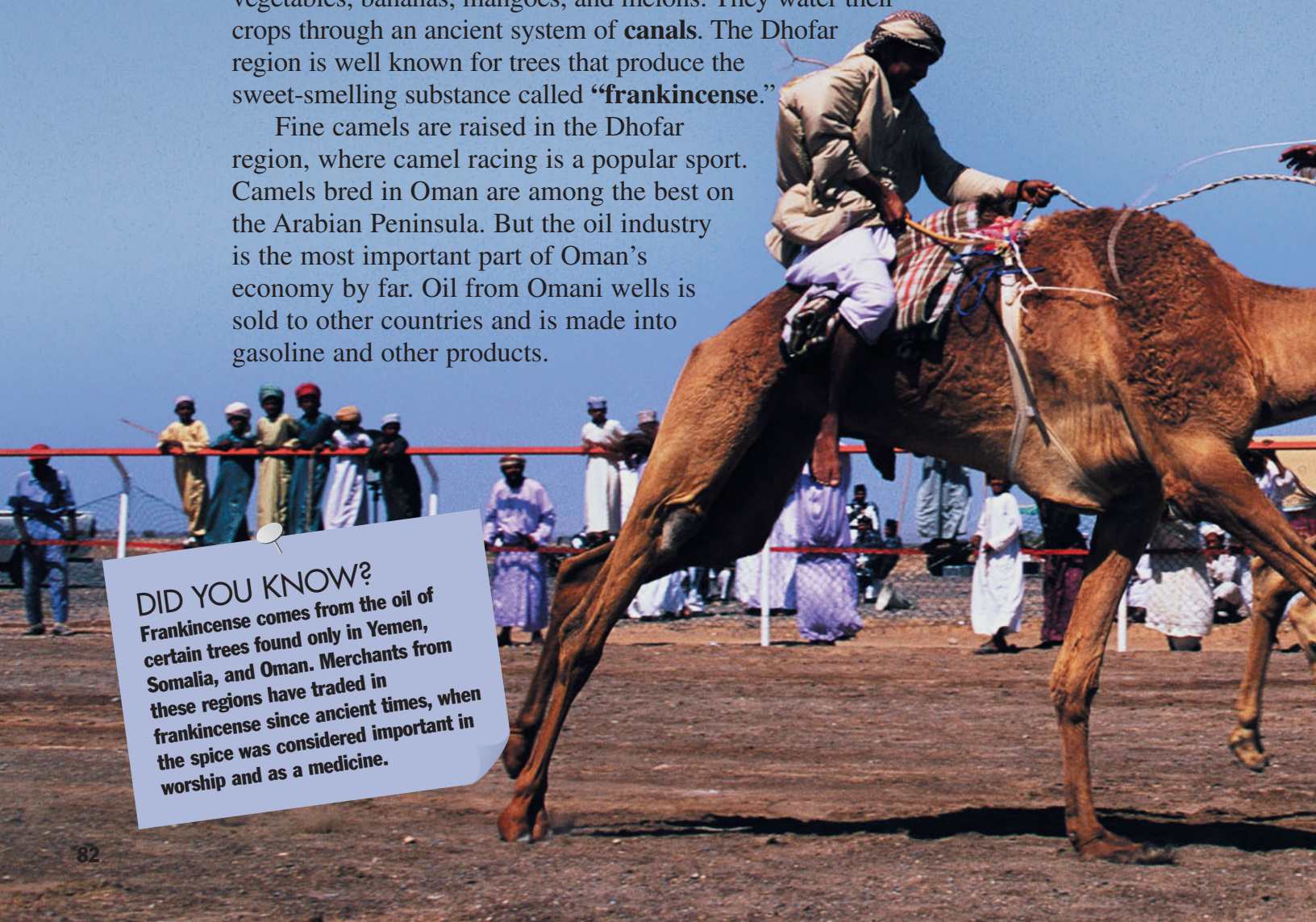


The sultanate of Oman is a country on the eastern coast of the Arabian **Peninsula** in southwestern Asia**.** Oman's leader is called the sultan. He rules the country from a palace in Muscat, the capital city.

Oman is one of the hottest and driest countries in the world. Most of the country is rocky and sandy as well. Farming is possible only on narrow plains along the northern and southern coasts. The Al-Hajar Mountains separate the northern coastal plain, called Al-Batinah, from the vast desert to the southwest. The southern coastal plain lies in the region called Dhofar. Most of the country's people live on these **fertile** plains.

Dates are Oman's most important crop. Omani farmers also grow vegetables, bananas, mangoes, and melons. They water their crops through an ancient system of **canals**. The Dhofar region is well known for trees that produce the sweet-smelling substance called **"frankincense**."

Fine camels are raised in the Dhofar region, where camel racing is a popular sport. Camels bred in Oman are among the best on the Arabian Peninsula. But the oil industry is the most important part of Oman's economy by far. Oil from Omani wells is sold to other countries and is made into gasoline and other products.



DID YOU KNOW?

Frankincense comes from the oil of certain trees found only in Yemen, Somalia, and Oman. Merchants from these regions have traded in frankincense since ancient times, when the spice was considered important in worship and as a medicine.



Camel racing is a traditional sport in Oman.
© Arthur Thévenart/Corbis



Omanis often gather for meals. If you were to join a typical group dinner, you'd probably have rice and spiced lamb or fish. Then you'd have dates for dessert and coffee or tea to drink. After the meal was over, the host might burn **incense**, probably the famous frankincense.

LEARN MORE! READ THESE ARTICLES…
DESERTS (VOLUME 1) • IRAN (VOLUME 7) • OIL (VOLUME 2)

SEARCH LIGHT

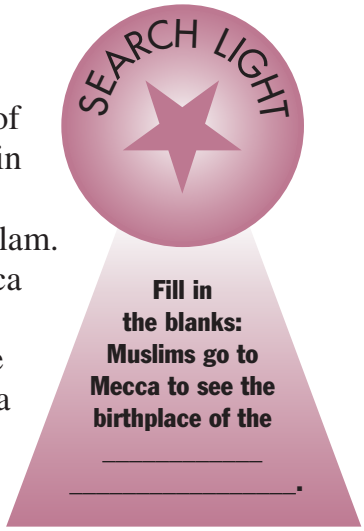
Fill in the blanks: Oman is one of the _____ and _____ countries in the world, with little yearly rainfall.

Answer: Oman is one of the hottest and driest countries in the world, with little yearly rainfall.

Holiest City of Islam



Mecca is the holiest city for followers of the religion of Islam. The city, located in Saudi Arabia, is the birthplace of the **Prophet** Muhammad, the founder of Islam. Muslims all over the world face in the direction of Mecca five times each day to pray.



The Haram, or Great Mosque, and the Kaaba are the most important places in Mecca. The **mosque** can hold a million worshipers. The Kaaba lies in the central courtyard of the mosque. It is a cube-shaped **shrine** made of black stone and wood. This is the holiest shrine of Islam. It is the object toward which Muslims pray when facing Mecca, and it is the most important site for Muslim **pilgrims** to visit when they go to the city. Muslims call the pilgrimage, or journey, to Mecca the *hajj*. All adult Muslims are supposed to try to make the trip at least once.

There are numerous sites from Islamic history in Mecca. Mount Hira, in the northeastern part of the city, has a cave where Muhammad went to **meditate** in private before he became a prophet. Muslims believe he received the first verse of the Koran, the holy book of Islam, in this cave.

Mecca changed greatly in the 20th century. The areas surrounding the Great Mosque were cleared. New houses were built. The streets were made wider, and new tunnels were built to handle more traffic. Like Riyadh (the nation's capital), Mecca is now one of the largest and most modern cities in Saudi Arabia.



LEARN MORE! READ THESE ARTICLES…
AMMAN, JORDAN (VOLUME 7)
MUHAMMAD (VOLUME 5) • VATICAN CITY (VOLUME 6)



DID YOU KNOW?
There are more than 1 billion Muslims in the world today. Every year about 2 million Muslims, from nearly every country of the world, make the pilgrimage to Mecca.

Hundreds of thousands of people gather at the Great Mosque in Mecca on the 27th night of the Muslim holy month of Ramadan. Muslims believe that the Prophet Muhammad first received the Koran on that night many years ago.
© AFP/Corbis

Answer: Muslims go to Mecca to see the birthplace of the Prophet Muhammad.


DID YOU KNOW?
Damascus is believed to be the world's oldest continuously inhabited city. People have apparently lived there since about 2500 BC.

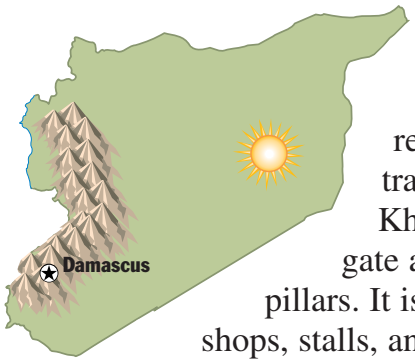


Pearl of the East



Damascus is the capital of Syria and one of the oldest cities in the world. Travelers who visited Damascus in the past wrote about its many trees, its olive groves, and its streams and fountains. Some of these parks and gardens still exist. And for this reason people still call Damascus the "Pearl of the East."

In the old part of Damascus many people live very much as people did hundreds of years ago. Most of them still live in small single-story houses built close together. Rising above them are the graceful minarets (towers) and domes of the city's many **mosques,** where believers in the religion of Islam worship. The Great Mosque of Damascus is the oldest surviving stone mosque in the world.



One of the most colorful areas of Damascus is the region of the *khan*s and **bazaars**. Long ago *khan*s were trade, storage, and resting places for camel **caravans**. The Khan Asa'ad Pasha is a beautiful building. It has a striking gate and a black-and-white marble top supported by marble pillars. It is still a center of trade. The bazaars are lined with shops, stalls, and cafés. They're filled with the noise of people bargaining for the best deal.

Many streets in the bazaar were once devoted to particular trades. You could find the Street of the Saddlers, Street of the Slipper Merchants, and Street of the Water-Pipe Makers. You could also find the Street of the Spice Men, Street of the Dyers, and many others. The longest and busiest of them all was the famous Street Called Straight. It is mentioned in the Bible.

LEARN MORE! READ THESE ARTICLES…
AMMAN, JORDAN (VOLUME 7) • CAMELS (VOLUME 12) • ISLAM (VOLUME 5)

The minarets, or towers, of the Ommayed Mosque rise above the surrounding buildings in Damascus, Syria.
© Charles & Josette Lenars/Corbis

SEARCH LIGHT

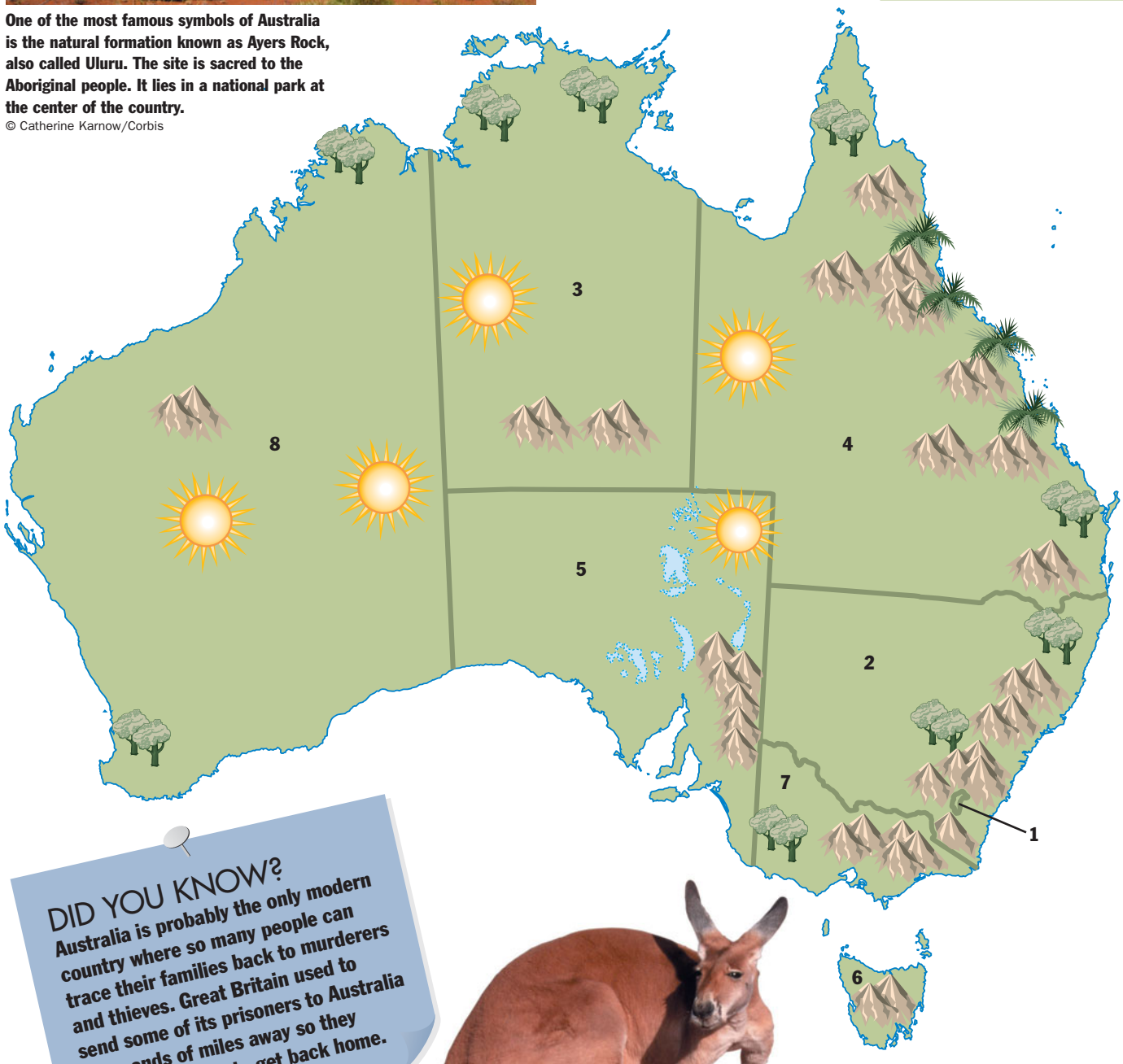
Why would the streets in the Damascus bazaars have names like the Street of the Spice Men?

Answer: Having the streets named after what was sold there made it easier for shoppers to find what they were looking for.



One of the most famous symbols of Australia is the natural formation known as Ayers Rock, also called Uluru. The site is sacred to the Aboriginal people. It lies in a national park at the center of the country.
© Catherine Karnow/Corbis

STATES OF AUSTRALIA
1. Australian Capital Territory
2. New South Wales
3. Northern Territory
4. Queensland
5. South Australia
6. Tasmania
7. Victoria
8. Western Australia

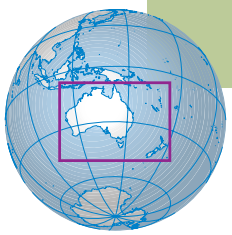


DID YOU KNOW?

Australia is probably the only modern country where so many people can trace their families back to murderers and thieves. Great Britain used to send some of its prisoners to Australia thousands of miles away so they wouldn't be able to get back home.



Male Red Kangaroo at Alice Springs.
© Eric and David Hosking/Corbis



Island Continent



The island continent of Australia lies between the Indian and Pacific oceans. Australia is the smallest, flattest, and driest continent. And it has fewer people than other **inhabited** continents. Australia is both a continent and a country, and the map shows you the country's states.

Australia can be divided into three major parts. The Western **Plateau** covers most of the continent. It gets little rainfall except in its southwest corner. But great forests do grow there. Elsewhere on the plateau, wells are the only way to get water. The Eastern Uplands run along the east coast. And the Interior Lowlands lie in between. There you'll find the colorful 1,100-foot-tall Ayers Rock, also called by its Aboriginal name, Uluru.

More than half of the country has been turned into pastures for animals, mostly sheep. Australia has the largest number of sheep in the world and produces more wool than any other country. Australia also has many animals not found anywhere else in the world. Two well-known ones are the koala and the kangaroo. The duck-billed platypus and echidna are two unusual egg-laying mammals.

Many visitors go diving along Australia's Great Barrier Reef, the largest coral **reef** in the world. It stretches for miles and has an amazing display of fish. However, scientists are worried that the reef may be damaged if world climate changes cause the ocean's temperature to rise.

Australians are often called "Aussies," and most are of European **heritage**. But there is also a large native Aboriginal population. Most Aboriginals live outside the cities, in the inner part of the country called the Outback. Today the Aboriginals make boomerangs to sell to tourists, although they originally used them for hunting.



Find and correct the error in the following sentence: Australia has many animals that are not found anywhere else in the world. Two well-known ones are the buffalo and the spider.

LEARN MORE! READ THESE ARTICLES…
CORAL (VOLUME 11) • GREAT BARRIER REEF (VOLUME 7)
KATH WALKER (VOLUME 3)



Answer: Australia has many animals that are not found anywhere else in the world. Two well-known ones are the koala and the kangaroo.



DID YOU KNOW?

Canberra was a planned city—that is, it was all built at once according to an architect's design. A man named Walter Burley Griffin won the government's contest to see who would design the city. He named Canberra's Lake Burley Griffin after himself.

Meeting Place on a Hill

Canberra is the capital of Australia. Long ago it was just a small settlement called Canberry. The name was later changed to Canberra, which means "meeting place."

Canberra lies in a plain at the foot of the Australian Alps in southeastern Australia. The city spreads on both sides of the Molonglo River. The new **Parliament** House is built into the Capital Hill, the main hill in the city. Its roof is lined with grass so that it appears to blend into the landscape. Inside the Parliament House there are nearly 3,000 works of Australian artists on display.



Aboriginal chalk drawing in front of the Old Parliament House in Canberra.
© Liba Taylor/Corbis

The Old Parliament House is farther down the hill. It's now the home of the National Portrait Gallery. Another interesting museum is the National Gallery of Australia. It contains traditional **Aboriginal** (native Australian) art as well as paintings from different parts of the world. Sculptures, drawings, photographs, furniture, pottery, **textiles**, and silverwork are also on display.

The Questacon near the National Gallery is a science museum for children. Its five **galleries** have more than 200 gadgets that demonstrate natural events and objects. For example, you can find out firsthand what an earthquake feels like.

The National Botanic Gardens are located on the lower slopes of Black Mountain. Here you can see some of the most interesting Australian plants. There's an area that has plants used by the Aboriginals. There are also a rainforest area and a eucalyptus lawn. The lawn has 600 kinds of eucalyptus trees. Some of these trees grow almost 300 feet tall! Near the city is Namadgi National Park, which is popular with mountain climbers.

SEARCH LIGHT

What is special about the roof of the new Parliament House in Canberra?

LEARN MORE! READ THESE ARTICLES…
AUSTRALIA (VOLUME 7) • EUCALYPTUS (VOLUME 10)
CATHY FREEMAN (VOLUME 4)

This painting of the tree of life, by David Malangi, was done on tree bark. It is one of the many artworks by Aboriginal (native Australian) artists on display at the National Gallery of Australia, at Canberra.
© Penny Tweedie/Corbis

Answer: The roof of the new Parliament House is covered with grass so that it blends in with its surroundings.

Island of Reefs Within Reefs

The Great **Barrier** Reef is one of the great natural wonders of the world. It is actually a system of many individual reefs and islets (small islands). Altogether there are 2,100 individual reefs in the Great Barrier Reef. This huge ridge of coral reefs is separated from land by a **channel** of water 30 miles wide.

The Great Barrier Reef was formed over millions of years from mounds of coral. A coral is a soft animal that supports its body inside a hard hollow shell. When the coral died, its shell remained, and other corals grew on top of it. Over those millions of years, the corals remained hardened and became cemented together. Slowly they were covered with underwater plants, **debris** from the ocean, and other corals.



Exploring the Great Barrier Reef at low tide.
© Staffan Widstrand/Corbis

The Great Barrier Reef lies in the Pacific Ocean off the coast of Queensland in northeastern Australia. From north to south its length is equal to the entire Pacific Coast of the United States, extending more than 1,250 miles! The water is so clear and pollution-free at the Great Barrier Reef that people can glimpse the wonderful **marine** life deep underwater.

Besides the 400 types of coral, there are such animals as anemones, snails, lobsters, prawns, jellyfish, giant clams, and dugongs. And there are more than 1,500 **species** of saltwater fish. Many of the small fish have brilliant colors and unusual shapes.

The Great Barrier Reef was named a World Heritage site in 1981.

LEARN MORE! READ THESE ARTICLES…
CORAL (VOLUME 11) • ISLANDS (VOLUME 1) • SEAWEED (VOLUME 10)

SEARCH LIGHT

True or false? The Great Barrier Reef is made of rock.

From north to south, the length of Australia's Great Barrier Reef is equal to that of the entire Pacific Coast of the United States!
© Australian Picture Library/Corbis



DID YOU KNOW?

Though it isn't truly a single structure, the 135,000-square-mile Great Barrier Reef is often referred to as the largest structure ever built by living things. And people had no hand in it!

Answer: FALSE. It's made of coral skeletons and live coral.

A Magnificent Harbor City

SEARCH LIGHT

Sydney is
a) the capital of New South Wales and Australia's largest city.
b) the capital and largest city of Australia.
c) the oldest port in the South Pacific.

Sydney is Australia's largest city and one of the most important ports in the South Pacific Ocean. It's also the capital of the state of New South Wales. Sydney is built on low hills surrounding a wonderful harbor on Australia's southeastern coast. Its beaches are very popular, especially for surfing. And in 2000 the city hosted the Summer Olympic Games.

Sydney Cove is the small sheltered inlet where Australia's first permanent European settlement began. It used to be Sydney's shipping center, and its old landing place (or quay) is now a tourist center called Circular Quay. The quay has many walkways, cafés, parks, and docks for the ferries that crisscross the harbor. The nearby Sydney Opera House has a glittering white roof that looks like seashells. Besides opera, the Opera House presents plays, classical music concerts, ballets, and films. Darling Harbour just west of downtown has an aquarium, museums, and gardens.



Sydney Harbour Bridge and The Rocks, a historic district in Sydney.
© Royalty-Free/Corbis

The oldest part of Sydney is called The Rocks. This historic district has **cobbled** streets lined with houses built by the first British settlers. The Rocks draws crowds of shoppers during the weekend market and has many galleries selling arts and crafts. Here you'll also find the Museum of Contemporary Art.

Macquarie Street is known for its early public buildings. The street is named for the governor who had them built. Landmarks include the **Parliament** House, Sydney Hospital, the Mint Building (which used to produce money), and the beautiful Hyde Park Barracks (which used to house soldiers). Nearby, the large grassy field called the Domain, which was once set aside for public ceremonies, today provides a place for lunchtime sports and candlelight Christmas caroling.

LEARN MORE! READ THESE ARTICLES…
CANBERRA, AUSTRALIA (VOLUME 7) • OPERA (VOLUME 3) • WAVES (VOLUME 1)



Boats zoom past the Sydney Opera House, a major center for performing arts of all kinds in Sydney. Its white curved roof looks like seashells or the sails of yachts.
© Paul A. Souders/Corbis

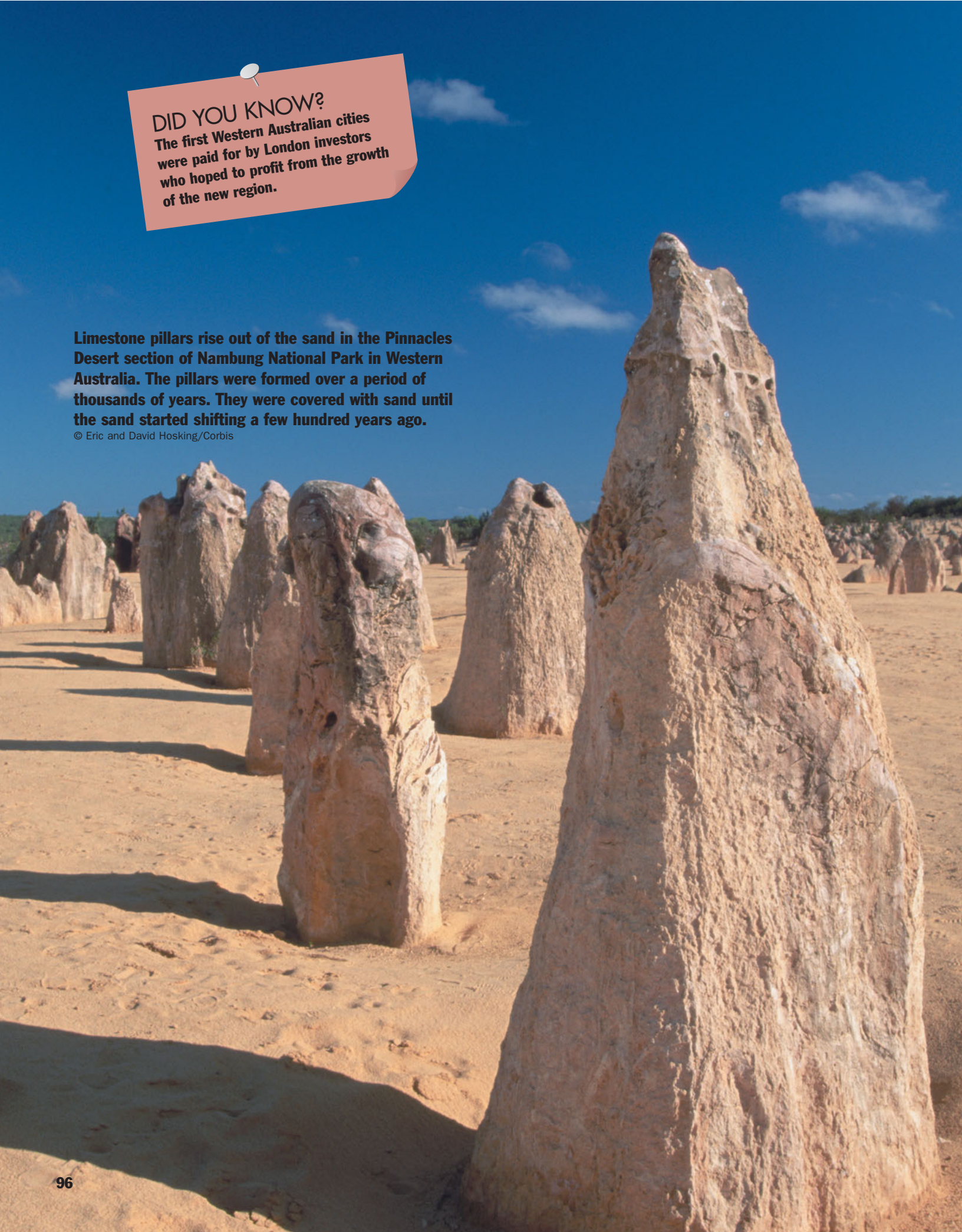
DID YOU KNOW?

Central Sydney is known as "Eora Country." The area's Aboriginal people used the word *eora*, meaning "from this place," to tell the first British settlers where they came from. Today, many Aboriginal people in Sydney call themselves Eora.

Answer: a) the capital of New South Wales and Australia's largest city.

DID YOU KNOW?

The first Western Australian cities were paid for by London investors who hoped to profit from the growth of the new region.



Limestone pillars rise out of the sand in the Pinnacles Desert section of Nambung National Park in Western Australia. The pillars were formed over a period of thousands of years. They were covered with sand until the sand started shifting a few hundred years ago.

© Eric and David Hosking/Corbis

Desert State



Find and correct the error in the following sentence: Many of Perth's roads and buildings were built by Canadians.

Western Australia is Australia's largest state. Much of it is desert. It receives little rainfall, and the temperature often is higher than 100° F. Most of its people live in Perth, a coastal city that is the state capital.

The first people to live in Western Australia moved there at least 40,000 years ago. These **Aboriginal** people probably came from islands in Southeast Asia. As they continued to arrive, they probably introduced to Australia the wild dog called the "dingo."



Traditional Aboriginal (native Australian) face painting.
© Penny Tweedie/Corbis

The first Europeans to see Western Australia were probably Portuguese sailors in the 1520s. But they didn't land. The Dutch East India Company, a trading company, sailed into the Indian Ocean in the early 1600s. The Dutch mapped the coastline, but they didn't stay either.

In 1829 Captain James Stirling of the British Navy started the first permanent European settlement in Australia at what is now Perth. Before then, the only Europeans living in Australia had been British **convicts** sent there by the British government. About 4,000 settlers joined Captain Stirling in the new **colony**.

Because of difficult living conditions, many of the settlers died over the next few years. But things gradually improved, and by 1835 the settlers were able to feed themselves. During the 1850s and 1860s the British forced male convicts to construct many of the colony's roads and public buildings.

Western Australia became a state in 1901. From the 1940s through the 1960s, its population doubled. Today the state is home to about 2 million people, and Perth has one of the highest populations of Australia's cities.

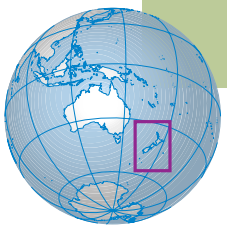
LEARN MORE! READ THESE ARTICLES…
AUSTRALIA (VOLUME 7)
CANBERRA, AUSTRALIA (VOLUME 7) • DESERTS (VOLUME 1)

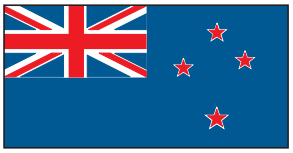


Answer: Many of Perth's roads and buildings were built by convicts.

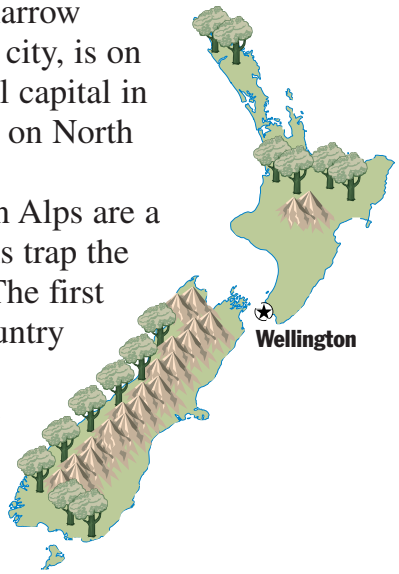

SEARCH LIGHT
Who were the first people to live in New Zealand?

Land of the Long White Cloud





New Zealand is an island country in the South Pacific Ocean. Though it looks close to Australia on maps, the two countries are actually more than 1,000 miles apart. New Zealand has two main islands, called North and South Island. Cook **Strait**, a narrow stretch of sea, separates the two. Wellington, the capital city, is on North Island. It lies farther south than any other national capital in the world. New Zealand's largest city, Auckland, is also on North Island.



Both islands have mountains and hills. The Southern Alps are a long chain of mountains on South Island. The mountains trap the moist ocean air, and they are often wrapped in clouds. The first people to live in New Zealand, the Maori, called the country Aotearoa, meaning "land of the long white cloud."

New Zealand is known for Merino sheep, which are famous for their wool. Huge sheep ranches are scattered among the hills on South Island. New Zealand also produces excellent butter, cheese, and meat.

New Zealand has unique wildlife. The long-beaked kiwi, a bird that cannot fly, is found only in New Zealand. The bird is one of the country's national symbols—and New Zealanders themselves are sometimes even called Kiwis.

Traditional Maori culture has survived, but now it's blended with the European culture of modern New Zealand. You can still hear traditional Maori music played on the flute and see traditional Maori dances. Wood carving, painting, and making things of woven **flax** are Maori crafts.

DID YOU KNOW?
New Zealand is home to a place with one of the longest names in the world, a hill called Taumatawhaka-tangihangakoauauotamateaturipukaka-pikimaungahoronukupokaiwhenua-kitanatahu.

LEARN MORE! READ THESE ARTICLES…
KIWIS (VOLUME 11) • KIRI TE KANAWA (VOLUME 3)
WELLINGTON (VOLUME 7)

A gondola car rides high above the harbor at Queenstown, New Zealand.
© Royalty-Free/Corbis

Answer: Long before Europeans arrived in New Zealand, the islands were inhabited by the Maori. The Maori came to New Zealand from the group of islands called Polynesia.



DID YOU KNOW?

Wellington is a center of New Zealand's growing cinema industry. Many films are shot in and near the city.

Green hills surround the city of Wellington. Its harbor serves as a major port for New Zealand.

© Dallas and John Heaton/Corbis

A Visit to New Zealand's Capital

Wellington is the capital of New Zealand, an island country near Australia. It lies on the shores and green hills surrounding a beautiful bay. The city's center is called Civic Square. It is made up of a group of buildings with an open **plaza** at the center. The buildings include the National Library, the City Gallery, and Capital Discovery Place, a science and **technology** museum for children.

SEARCH LIGHT

Which of the following is not an attraction in Wellington?
a) the Colonial Cottage Museum
b) Capital Discovery Place
c) the Louvre
d) Bolton Memorial Park

From Civic Square, you can reach Lambton Harbour by going across the City-to-Sea Bridge. The bridge is decorated with carvings and lovely artwork, all of it created by Maori artists. The Maori are the original people of New Zealand. From the street named Lambton **Quay**, visitors often take a cable car to reach the **botanical** gardens located in the hills above Wellington. The cable car ride provides some of the best views of the city.

The botanical gardens have many trees and plants not seen elsewhere. They also have many varieties of roses on display. The Bolton Memorial Park, a burial site for some of Wellington's first settlers, is located within the gardens. Along a section of the city's shoreline is the Oriental Parade. It is a beautiful place that is often crowded with joggers, cyclists, sunbathers, and swimmers. Many people swim out to the large fountain anchored offshore.



Botanical gardens in Wellington, New Zealand.
© Paul A. Souders/Corbis

Wellington is home to the National Museum of New Zealand (Te Papa Tongarewa). Also popular is the Colonial Cottage Museum, the family home of Katherine Mansfield, one of New Zealand's most famous authors.

LEARN MORE! READ THESE ARTICLES…
CANBERRA, AUSTRALIA (VOLUME 7)
NEW ZEALAND (VOLUME 7) • ROSES (VOLUME 10)

Answer: c) the Louvre. (The Louvre is a museum in Paris, France.)

GLOSSARY

abominable horrible or disgusting

Aboriginal relating to the original people to live in an area; *especially*, the original peoples of Australia

acid a chemical substance, often producing a burning effect when it interacts with another material

altar raised place on which sacrifices are offered or religious ceremonies are performed

amphitheater building with seats rising in curved rows around an open space where games and plays take place

archaeologist person who studies past human life as shown by the tools, buildings, and other objects left by ancient peoples

architect person who designs and plans buildings and oversees their construction

architecture the art of designing and building structures, especially buildings that can be lived and worked in

autonomous independent and self-governing

barrier object or structure that blocks the ability to reach another object or place

basin the area of land drained by a river and its branches

bazaar marketplace where many kinds of goods are sold; *especially*, such a marketplace in Asia or Africa

botanical (noun: botany) having to do with plant life

canal artificial waterway for boats or for draining or supplying water to land

caravan group of pack animals or of vehicles traveling together one behind the other

cathedral large church where a bishop is in charge

ceramics objects made out of clay baked at high temperatures

channel narrow passageway between two areas of water

citadel castle or fortress that protects a city

civil war war between opposing groups of citizens of the same country or nation

climate average weather in a particular area

cobbled made of rounded stones larger than a pebble and smaller than a boulder

colony (adjective: colonial; verb: colonize) settlement established in a distant territory and controlled by a more powerful and expanding nation

communism (adjective: communist) system of government in which all property is owned by the state or community and all citizens are supposed to have a share in the total wealth

convict (noun) person serving a prison sentence

crossroads place where roads cross; also, a central meeting place or a decision-making point

cuisine style of cooking; also, foods made in that style

customhouse place where duties or taxes are paid on goods coming into or leaving a country

debris trash or fragments

delta large triangular area made of material deposited at the mouth of a river, where it empties into the sea

descended (adjective) related through a long line of ancestors

duct pipe, tube, or channel through which liquid or gases flow

dynasty a series of rulers of the same family

embroidery needlework done to decorate cloth

emperor (feminine: empress) the ruler of an empire

export something that is carried or sent abroad, especially for sale in another country

extinct no longer existing

fertile rich and productive; able to yield quality crops in large quantities

flax the fiber from which linen cloth is made

frankincense a sweet-smelling substance from an African or Arabian tree

gallery room or building that is used to display special objects or works of art

glacier large riverlike body of ice moving slowly down a slope or spreading over a land surface

handicrafts articles, such as pottery, made by hand by an individual person

heritage background or descent

humidity (adjective: humid) moisture or dampness; *especially*, the amount of moisture in the air

incense substance that produces a sweet smell when burned

industry business and manufacturing

inhabited (adjective) occupied; having residents

inlaid decorated with materials set into the surface

legislature organized government group with the power to make laws

loot to steal from a home or public place, especially during rioting or wartime

mangrove tropical tree or shrub that has partly exposed roots and grows thickly in areas of salty water

manuscript handwritten or typewritten document

marine having to do with the ocean

mausoleum large or fancy tomb

meditation (verb: meditate) quiet focused concentration, meant to calm and clear the mind; sometimes used to reach a spiritual awareness

minaret in Islamic architecture, the tall slender tower of a mosque, from which Muslims are called to prayer

monastery housing for people who have taken religious vows, especially for monks

monk man who lives apart from society, either alone or in a community of men, so that he can devote all his time to religious life

monsoon regular period of heavy rainfall and wind, especially in southern Asia

mosque Muslim place of worship

native (adjective) living or growing naturally in a particular region

natural resources the materials or qualities supplied by nature (such as minerals or water power) that make a place valuable to people, usually for industrial and manufacturing purposes

pagoda towerlike Asian temple or memorial building several stories tall, with the edges of the roof at each level curving upward

parliament the lawmaking body of some governments

peninsula finger of land with water on three sides

persecution cruel or harmful treatment for an extended period of time, often due to one's beliefs

pilgrim person who travels to a shrine or holy place to worship

pilgrimage journey made to a holy place to worship there

plateau wide land area with a fairly level surface raised sharply above the land on at least one side

plaza open place or area formed at the meeting of two or more streets

prehistoric having to do with times before written history

procession group of people moving along in an orderly, often ceremonial way

prophet holy person who acts as a messenger between God and people; also, a gifted person with the ability to correctly predict future events

quay structure built along the bank of a waterway for use as a landing place

reef raised length of rocks, coral, or sand at or near the surface of water

region general area; also, a specific district

regional characteristic of a particular area

republic form of government in which citizens who are allowed to vote elect officials and representatives responsible for governing by law

seclusion isolation or separation from others

secretariat a department that handles an international or government organization

sepulchre place of burial

shrine place where honor or worship is offered to a saint or deity

species group of living things that have certain characteristics in common and share a name

steppe land that is dry, usually rather level, and covered with grass

strait narrow channel connecting two large bodies of water

sultan king or ruler, especially of a Muslim state

synagogue Jewish house of worship

tableland broad flat area of high land

technology scientific ideas and knowledge put to actual use in actions, machines, and processes

temple building used for worship

text written work

textile cloth

typhoon major tropical storm that occurs in the Pacific Ocean and features high winds moving in circular patterns; in the Atlantic Ocean such storms are called "hurricanes"

wildlife sanctuary place of protection for animals and plants

INDEX

Abominable Snowman, *also called* Yeti (legend)
Nepal *page* **55**

Afghanistan (country) *page* **45**

Amman (city in Jordan) *page* **79**

Angkor Wat (temple in Cambodia) *page* **26**

"Arabian Nights" (collection of stories)
Baghdad *page* **73**

Ararat, Mount (mountain in Turkey)
Yerevan *page* **67**

Armenia (country): *look under* Yerevan

Asia (continent) **7**

Australia (island, continent, and country) *page* **89**
LEARN MORE *look under* Great Barrier Reef; Sydney; Western Australia

Australian Aboriginals (people)
artwork in Canberra illustration *page* **90,** photograph *page* **91**
Australia *page* **89**
Did you know? *page* **95**
Western Australia *page* **97,** photograph *page* **97**

Ayers Rock (rock formation in Australia)
Australia photograph *page* **88**

Baghdad (city in Iraq) *page* **73**
LEARN MORE *look under* Fertile Crescent

Bangkok, *also called* Krung Thep (city in Thailand) *page* **39**

Bangladesh (country) *page* **47**

bazaars (markets)
Amman *page* **79**
Damascus *page* **87**

Beijing, *also called* Peking (city in China) *page* **11**

Beirut (city in Lebanon) *page* **80**

Bhutan (country): *look under* Thimphu

Byzantine Empire (historic empire)
Istanbul *page* **69**

Cambodia (country): *look under* Angkor Wat; Phnom Penh

Canaanites (people)
Did you know? *page* **76**

Canberra (city in Australia) *page* **91**

Ceylon (island country): *look under* Sri Lanka

China (country) *page* **8**
Great Wall *page* **13**
Seoul *page* **23**
LEARN MORE *look under* Beijing

colonialism
Sri Lanka *page* **62**
Western Australia *page* **97**

Constantinople (historic city in Turkey): *look under* Istanbul

coral reef: *look under* Great Barrier Reef

Damascus (city in Syria) *page* **87**

Dead Sea (lake in the Middle East)
Israel *page* **75**

Dead Sea Scrolls
Amman *page* **79**

Dhaka (city in Bangladesh)
Bangladesh *page* **47**

Dome of the Rock (shrine in Jerusalem, Israel)
Jerusalem *page* **77,** photograph *page* **76**

Dong Kinh (city in Vietnam): *look under* Hanoi

East Pakistan (historic region): *look under* Bangladesh

Everest, Mount, *also called* Sagarmatha (mountain in Asia)
Nepal *page* **55**
LEARN MORE *look under* Himalayas

farming
China photograph *page* **9**
Nepal photograph *page* **54**
Vietnam photograph *page* **41**

Fertile Crescent (region of the Middle East) *page* **65**

Filipinos (people): *look under* Philippines

fishing
Japan *page* **16**
Sri Lanka photograph *page* **63**

folk music
Korean Peninsula *page* **19**

Forbidden City (palace area in Beijing, China)
Beijing *page* **11,** photograph *page* **11**

frankincense (spice)
Did you know? *page* **82**

Fuji, Mount (mountain in Japan)
Japan *page* **15,** photograph *page* **15**

Galilee, Sea of (lake in Israel): *look under* Tiberias, Lake

Great Barrier Reef (reef in Australia) *page* **92**
Australia *page* **89**
LEARN MORE *look under* Australia

Great Wall (wall in China) *page* **13**

Hanoi, *also called* Dong Kinh, *or* Tonkin, *or* Tonquin (city in Vietnam) *page* **42**

Harappa (ancient city in Pakistan)
Pakistan *page* **60**

Himalayas (mountains in Asia)
Nepal *page* **55**
Pakistan *page* **59**
Thimphu *page* **49**

India (country) *page* **51**
LEARN MORE *look under* Taj Mahal

Indonesia (country) *page* **29**

Indus civilization
Pakistan *page* **60,** photograph *page* **61**

Iran, *also called* Persia (country) *page* **71**

Iraq (country): *look under* Baghdad; Fertile Crescent

Islamabad (city in Pakistan)
Pakistan *page* **59**

Israel (country) *page* **75**
LEARN MORE *look under* Jerusalem

Istanbul, *also called* Constantinople (city in Turkey) *page* **69**

Jakarta (city in Indonesia)
Indonesia *page* **29**

Japan (country) *page* **15**
culture *page* **16**
Pyongyang *page* **20**
Seoul *page* **23**

Jerusalem (city in Israel) *page* **77**
Israel *page* **75**

Jordan (country): *look under* Amman

Kabul (city in Afghanistan)
Afghanistan *page* **45**

Karakoram Range (mountains in South Asia)
Pakistan *page* **59,** photograph *page* **58**

Kathmandu (city in Nepal) *page* **56**

Khmer (people)
Angkor Wat *page* **26**

Korean Peninsula (peninsula in Asia) *page* **19**
LEARN MORE *look under* Pyongyang; Seoul

Korean War (1950–53)
Korean Peninsula *page* **19,** photograph *page* **18**

Krung Thep (city in Thailand): *look under* Bangkok

Lebanon (country): *look under* Beirut

Manila (city in the Philippines)
Philippines *page* **33,** photograph *page* **32**

Maori (people)
New Zealand *page* **99**

Mecca (city in Saudi Arabia) *page* **84**

monsoons (weather)
Thailand *page* **37**

mosques (places of worship)
Afghanistan photograph *page* **44**
Baghdad photograph *page* **72**
Damascus *page* **87,** photograph *page* **86**

mountains: *look under* Himalayas; Karakoram Range

Myanmar (country)
Yangon *page* **30**

Nepal (country) *page* **55**
LEARN MORE *look under* Kathmandu

New Delhi (city in India)
India *page* **51,** photograph *page* **51**

New Zealand (country) *page* **99**
LEARN MORE *look under* Wellington

North Korea (country)
Korean Peninsula *page* **19**
LEARN MORE *look under* Pyongyang

Oman (country) *page* **82**

pagodas (architecture)
Japan photograph *page* **15**

Pakistan (country) *page* **59**
Bangladesh *page* **47**
Indus Civilization *page* **60**

palaces
Kathmandu *page* **56**
Seoul *page* **23,** photograph *page* **22**
Thailand *page* **37**
LEARN MORE *look under* Forbidden City

Palestine (region in the Middle East)
Israel *page* **75**

Peking (city in China): *look under* Beijing

Persia (country): *look under* Iran

Perth (city in Australia)
Western Australia *page* **97**

Philippines (country) *page* **33**

Phnom Penh (city in Cambodia) *page* **24**

Pyongyang (city in North Korea) *page* **20**

Rangoon (city in Myanmar): *look under* Yangon

reefs: *look under* Great Barrier Reef

rice
China *page* **8,** photograph *page* **9**
Vietnam photograph *page* **41**

Sagarmatha (mountain in Asia): *look under* Everest, Mount

Saudi Arabia (country): *look under* Mecca

Seoul (city in South Korea) *page* **23**

Singapore (island country and city) *page* **35**

South Korea (country)
Korean Peninsula *page* **19**
LEARN MORE *look under* Seoul

Sri Lanka, *also called* Ceylon (island country) *page* **62**

Sumerians (people)
Did you know? *page* **64**

Sydney (city in Australia) *page* **95**

Syria (country): *look under* Damascus; Fertile Crescent

Taj Mahal (building in India) *page* **52**
India *page* **51**

Taliban (Afghan group)
Afghanistan *page* **45**

Tehran (city in Iran)
Iran photograph *page* **70**

Thailand (country) *page* **37**
LEARN MORE *look under* Bangkok

Thimphu (city in Bhutan) *page* **49**

Tiberias, Lake, *also called* Sea of Galilee (lake in Israel)
Israel *page* **75,** photograph *page* **74**

Tokyo (city in Japan)
Japan *page* **16,** photograph *page* **16**

Tonkin, *also called* Tonquin (city in Vietnam): *look under* Hanoi

Turkey (country): *look under* Istanbul

Vietnam (country) *page* **40**
LEARN MORE *look under* Hanoi

Vietnam War
Hanoi *page* **42**
Vietnam *page* **40**

Wailing Wall (prayer site in Jerusalem): *look under* Western Wall

Wellington (city in New Zealand) *page* **101**

West Pakistan (country): *look under* Pakistan

Western Australia (state in Australia) *page* **97**

Western Wall, *also called* Wailing Wall (prayer site in Jerusalem)
Jerusalem *page* **77,** photograph *page* **76**

World Heritage sites
Did you know? *page* **27**
Great Barrier Reef *page* **92**
Great Wall *page* **13**
Taj Mahal *page* **52**

Yangon, *also called* Rangoon (city in Myanmar) *page* **30**

Yerevan (city in Armenia) *page* **67**

Yeti (legend): *look under* Abominable Snowman

Visit countries, cities, and famous sites in ASIA, AUSTRALIA, AND NEW ZEALAND


Volume 1: **The Earth and Earth Sciences**


Volume 2: **Physical Sciences and Technology**


Volume 3: **The Arts**


Volume 4: **People in History**


Volume 5: **Folklore and Religions**


Volume 6: **Europe**


Volume 7: **Asia, Australia, and New Zealand**


Volume 8: **Africa**


Volume 9: **The Americas**


Volume 10: **Plants**


Volume 11: **Birds, Insects, Reptiles, and Aquatic Life**


Volume 12: **Mammals**


Volume 13: **Reference Guide and Index**

ENCYCLOPÆDIA
Britannica®

My First Britannica



Africa

8

My First Britannica

Africa

8



Chicago London New Delhi Paris Seoul Sydney Taipei Tokyo

© 2008 by Encyclopædia Britannica, Inc.

International Standard Book Number: 978-1-59339-476-9 (set)

No part of this work may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, recording, or by any information storage and retrieval system, without permission in writing from the publisher.

My First Britannica:
Volume 8: Africa 2008

Britannica.com may be accessed on the Internet at http://www.britannica.com.

Encyclopædia Britannica, Britannica, and the Thistle logo are registered trademarks of Encyclopædia Britannica, Inc.

Africa

TABLE OF CONTENTS

INTRODUCTION 5

Africa: Land of Splendor 6

Central and Western Africa

Congo: Two Countries, One Name 8

Ghana: Gold Coast of Africa 10

Accra, Ghana: From Trading Post to Modern City 12

Guinea: Forests and Minerals 14

Liberia: Africa's Oldest Republic 16

Monrovia, Liberia: Freedom City 18

Nigeria: Land of 500 Languages 20

Senegal: Land of *Teranga* 22

Dakar, Senegal: City of the Tamarind Tree 24

Eastern Africa

Ethiopia: Ancient Country in Africa's Horn 26

Addis Ababa, Ethiopia: The City Called "New Flower" 28

Kenya: Cradle of Humanity 30

Nairobi, Kenya: From Swamp to Capital City 32

Seychelles: An Island Paradise 34

Somalia: Land of Nomads 36

Tanzania: Land of Natural Wonders 38

Uganda: Country of Lakes and Rivers 40

Kampala, Uganda: City on the Hill of Antelopes 42

North Africa

Algeria: Desert Land on the Sea 44

Algiers, Algeria: The Island City on the Hills 46

Egypt: The Pharaohs and the Pyramids 48

Egypt: Cultural Center, Past and Present 50

Cairo, Egypt: City of the Nile 52

Nile River: Egypt's Gift 54

Suez Canal: Joining Two Seas for a Shortcut 56

Libya: Oil Country of Africa 58

Tripoli, Libya: Ancient Walled City 60

Rabat, Morocco: Built for Victory 62

The Sudan: Giant of Africa 64

Southern Africa

Angola: Land of Oil and Diamonds 66

Luanda, Angola: A Portuguese Legacy 68

Botswana: The Jewel of the Kalahari 70

Madagascar: Island Sanctuary 72

Malawi: Lakeside Country 74

Lilongwe, Malawi: On Malawi's Fertile Plains 76

Namibia: A Beautiful, Arid Place 78

Windhoek, Namibia: Namibia's Windy Corner 80

South Africa: Diamond Country 82

South Africa: A People Apart 84

South African Cities: Mixed Urban Histories 86

Zimbabwe: From Colony to Independent Country 88

Harare, Zimbabwe: City in a Garden 90

Victoria Falls: "The Smoke That Thunders" 92

GLOSSARY 94

INDEX 95

Africa

I N T R O D U C T I O N

Who were the pharaohs? What country was created as a home for freed slaves? On what river would you find the Aswan High Dam? What was apartheid?

In Volume 8, ***Africa,*** you'll discover answers to these questions and many more. Through pictures, articles, and fun facts, you'll learn about the people, traditions, landscapes, and history that make up many of the countries and cities of Africa.

To help you on your journey, we've provided the following guideposts in *Africa*:

■ **Subject Tabs**—The colored box in the upper corner of each right-hand page will quickly tell you the article subject.

■ **Search Lights**—Try these mini-quizzes before and after you read the article and see how much—*and how quickly*—you can learn. You can even make this a game with a reading partner. (Answers are upside down at the bottom of one of the pages.)

■ **Did You Know?**—Check out these fun facts about the article subject. With these surprising "factoids," you can entertain your friends, impress your teachers, and amaze your parents.

■ **Picture Captions**—Read the captions that go with the photos. They provide useful information about the article subject.

■ **Vocabulary**—New or difficult words are in **bold type**. You'll find them explained in the Glossary at the back of this volume. And there's a complete listing of all Glossary terms in the set in the ***Reference Guide and Index***, Volume 13.

■ **Learn More!**—Follow these pointers to related articles throughout the set.

■ **Maps**—You'll find lots of information in this volume's many maps.

■ The **Country Maps** point out national capitals. **Globes** beside Subject Tabs show where countries are located in the world.

■ The **Continent Maps** have a number key showing the location of all countries.

Cover photos (top): river running through Masai Mara National Reserve, Kenya, © Galen Rowell/Corbis; (center): Zimbabwean pots for sale at market, Johannesburg, South Africa, © Neil Beer/Corbis; (bottom): Verreaux's sifaka, South Africa, © Martin Harvey—Gallo Images/Corbis

■ The **Icons** on the maps highlight major geographic features and climate. Here's a key to what the map icons mean:

- Deserts and Other Dry Areas
- Polar Regions and Other Frozen Areas
- Mountains
- Rainforests
- General Forests

■ The **Mini-Atlas**, found in Volume 13, offers detailed maps, useful data tables, and assorted photographs of each continent.

And don't forget: If you're not sure where to start, where you saw something before, or where to go next, the Index at the back of this volume and the ***Reference Guide and Index*** (Volume 13) will point the way.



Verreaux's sifaka, South Africa
© Martin Harvey—Gallo Images/Corbis

Have a great trip!

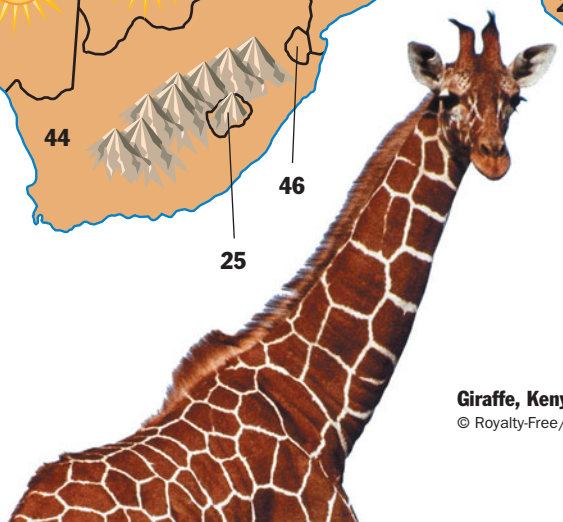
MY FIRST BRITANNICA



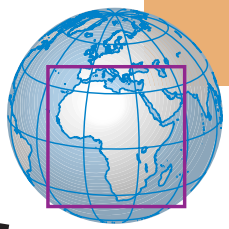
Alabaster sphinx at Memphis, Egypt.
© Roger Wood/Corbis

COUNTRIES OF AFRICA	
1. Algeria	28. Madagascar
2. Angola	29. Malawi
3. Benin	30. Mali
4. Botswana	31. Mauritania
5. Burkina Faso	32. Mayotte (France)
6. Burundi	33. Morocco
7. Cameroon	34. Mozambique
8. Central African Republic	35. Namibia
9. Chad	36. Niger
10. Comoros	37. Nigeria
11. Congo, Dem. Rep. of the*	38. Rwanda
12. Congo, Republic of the	39. São Tomé and Príncipe
13. Côte d'Ivoire	40. Senegal
14. Djibouti	41. Seychelles
15. Egypt	42. Sierra Leone
16. Equatorial Guinea	43. Somalia
17. Eritrea	44. South Africa
18. Ethiopia	45. Sudan
19. Gabon	46. Swaziland
20. Gambia	47. Tanzania
21. Ghana	48. Togo
22. Guinea	49. Tunisia
23. Guinea-Bissau	50. Uganda
24. Kenya	51. Western Sahara †
25. Lesotho	52. Zambia
26. Liberia	53. Zimbabwe
27. Libya	

* Full name is the Democratic Republic of the Congo (formerly Zaire)
† Annexed by Morocco
Islands of Cape Verde, Mauritius, Réunion off map



Giraffe, Kenya.
© Royalty-Free/Corbis



Land of Splendor

Africa's **splendor** is seen in its beautiful landscapes, its amazing animal life, and its **diverse** human culture. The African continent is the home of more than 800 million people living in more than 50 countries. Africa is the second largest continent on Earth, after Asia.

Africa's long coastline is shaped by the Atlantic and Indian oceans and the Mediterranean and Red seas. In the north of the continent lies the Sahara. It is the world's largest desert and covers almost all of northern Africa. Located in southwestern Africa are two other major deserts, the Kalahari and the Namib.

The African continent has two major rivers, the Nile and the Congo. The Nile is the longest river in the world. At the southern end of the Nile is Lake Victoria, Africa's largest lake. Not far to the southeast of Lake Victoria is Mount Kilimanjaro, the highest point in Africa. One of the world's major waterfalls, Victoria Falls, is also in Africa.

Africa is known for its wildlife. There are elephants, rhinoceroses, hippopotamuses, lions, and leopards. Other animals include antelope, gazelles, giraffes, baboons, gorillas, hyenas, and chimpanzees. Most of these animals live in Africa's open grasslands or in tropical rainforests.

The people of Africa belong to hundreds of **ethnic** groups. Each group has its own language, traditions, religion, arts, and history. During its political history, Africa has been the site of Egyptian **dynasties**, African kingdoms, European **colonies**, and independent countries.

DID YOU KNOW?

Surprisingly, the coastline of Africa is shorter than the coastline of Europe, the second smallest continent. This is because Africa has few inlets, large bays, or gulfs—features that add to coastal length by causing "detours" away from a straight coastline.

LEARN MORE! READ THESE ARTICLES…
ASIA (VOLUME 7) • CONTINENTS (VOLUME 1)
EUROPE (VOLUME 6)

SEARCH LIGHT

Find and correct the error in the following sentence: Africa is one of the smallest continents.

Answer: Africa is one of the largest continents.



SEARCH LIGHT

How did the Congo get its name?

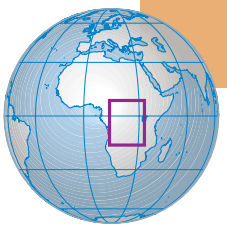
DID YOU KNOW?

The Congo River is one of the great rivers of the world. Only the Amazon River (in South America) drains a larger area than the Congo River does.

Women gather firewood in the Democratic Republic of the Congo, which is also called Congo (Kinshasa). More than two-thirds of the people live in small towns and villages.

© Gallo Images/Corbis

Two Countries, One Name





Congo (Brazzaville).



Congo (Kinshasa).

As long as 25,000 years ago, people began to live in the forests of the Congo River **basin** in west-central Africa. They gathered food from the forests and dug up roots to eat.

Today the Congo basin contains two countries separated by the Congo River. Both of the countries are called Congo. To tell them apart, they are sometimes referred to by the names of their capital cities. One of the countries is called Congo (Brazzaville), and the other is Congo (Kinshasa). Congo (Brazzaville) is officially known as the Republic of the Congo. Congo (Kinshasa) is officially called the Democratic Republic of the Congo.

The Congo region got its name from the Kongo, or Bakongo, one of the main groups of people who live there. These people have been in the area for centuries, from the time when the Congo was ruled by various kingdoms.

The Portuguese arrived in the kingdom called Kongo in 1483. At first the newcomers were friendly to the people of the kingdom. But by the 1530s the Portuguese were sending the Kongolese away as slaves.

By the late 1800s other European countries had become interested in the Congo region. They valued the Congo River as a route for trade between the west coast of Africa and the interior part of the continent. The French and the Belgians took over different parts of the Congo. The local people didn't win their independence until 1960. Though free, each of the two Congos faced many problems. Both countries experienced periods of fierce internal fighting and struggles for power.



LEARN MORE! READ THESE ARTICLES…
AFRICA (VOLUME 8)
PORTUGAL (VOLUME 6)
RIVERS (VOLUME 1)

Answer: It was named for the Kongo, or Bakongo, people, who have lived there for centuries.



These miners work at the Ashanti gold mine in Obuasi, Ghana. Ghana has long been one of the world's leading producers of gold. Mining provides work for many of Ghana's people.

© Penny Tweedie/Corbis

SEARCH LIGHT

Why do you think people from so many other countries wanted to take over Ghana? (Hint: Think of Ghana's former name.)

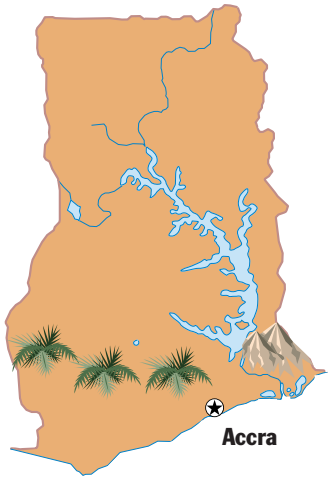
Gold Coast of Africa





The country of Ghana has so much gold that it was once called the Gold Coast of Africa. It still has the largest gold **reserves** in the world. Ghana is in western Africa. Accra is its capital and largest city.

Ghana has coastal plains in the south, **savanna** in the north, and hills and rainforests in between. The oddly shaped baobab tree grows in the savanna and coastal plains. There you will also find giant anthills, some of which are 14 feet high. In the rainforests are tall trees such as the mahogany. And there are many kinds of animals—lions, leopards, elephants, buffalo, monkeys, and snakes, to name a few.



Many of Ghana's people work in fishing, logging, or gold mining. Farming is very important as well. Much of the farmland is used for growing cacao. These trees produce cocoa beans, which are used to make chocolate. Cacao, timber, and gold are sold to other countries.

Long ago the Almoravids from northern Africa conquered Ghana and forced its people to become slaves. Since then, many other groups have gone to Ghana. The Portuguese arrived in the 1400s. They traded in gold, ivory, and slaves. Later came the British, the French, the Dutch, the Swedes, and the Danes. In 1901 the British made the Gold Coast a **colony**. In 1957 the colony won its independence and became the new country of Ghana. Today Ghana is one of Africa's leading **democracies**.

DID YOU KNOW?
Ghana's weavers are famous for their colorful kente cloth, which is made in narrow strips in beautiful patterns. The patterns have such names as "thousand shields," "the lion catcher," and "gold dust." The strips are sewn together to make clothing.

LEARN MORE! READ THESE ARTICLES…
ACCRA, GHANA (VOLUME 8)
CACAO (VOLUME 10)
RAINFORESTS (VOLUME 1)

Answer: Ghana was called the Gold Coast because of its vast reserves of gold. Many different people have wanted to control Ghana over the years so that they could take its gold.

From Trading Post to Modern City

Accra is the capital of the West African country of Ghana. It lies on the coast of the Gulf of Guinea, which is part of the Atlantic Ocean. The city is built partly on a low cliff. The rest spreads northward across the Accra plains.

Accra reflects the cultures of the many people who have settled in the area where it now stands. The Ga people had villages there when the Portuguese arrived in 1482. The British, the Danes, and the Dutch came later. The Europeans built **fortified** trading posts along the coast. They traded in gold, ivory, and slaves. Because of the area's gold, it became known as the Gold Coast. In 1877 Accra became the capital of the British Gold Coast **colony**.



Children in Ghana enjoying a game called *mancala*, played with stones and cups.
© Margaret Courtney-Clarke/Corbis

The Gold Coast gained its independence from British rule in 1957 and took the name Ghana. Accra became the capital of the new country. Today it is a modern city of more than 1.5 million people.

Accra is Ghana's business and educational center. The national museum and national **archives** and the Accra Central Library are located in the city. The University of Ghana is in nearby Legon. Black Star Square is the site of the Independence Arch. This large square is used for parades. For those who like sports, Accra has a football (soccer) stadium and a racecourse. Not far from Accra are the Aburi **Botanical** Gardens, which were created by the British more than 100 years ago. And the city's large open markets receive most of the food supply each day.

LEARN MORE! READ THESE ARTICLES…
GHANA (VOLUME 8)
ROCKS AND MINERALS (VOLUME 1)
A STORY FROM GHANA: ANANSE AND THE WISDOM POT (VOLUME 5)

DID YOU KNOW?
Accra's name comes from *nkran*, a word in the language of the Akan people of Ghana. *Nkran* are black ants that are found all over the city and the surrounding area.



Accra lies along the Gold Coast, an area in southern Ghana that has rich deposits of gold. The Portuguese built this strong fort, now called Elmina Castle, in the Gold Coast in 1482. They wanted to keep all of the area's gold trade for themselves.

© Liba Taylor/Panos Pictures

Answer: The British once ruled there. Part of the city is built on a cliff.

Forests and Minerals





Guinea is a country in western Africa on the Atlantic Ocean. Its capital city, Conakry, is a major port. Ships stop there to load up on Guinea's minerals and other products and transport them to markets around the world.

The land is divided into four main areas. A flat plain lies along the coast. Northern Guinea has open grasslands called savannas. The grass there grows as high as ten feet during the rainy season. To the east the Fouta Djallon **highlands** rise sharply from the plain. In the southeast is a hilly area with large forests. There are valuable teak, mahogany, and ebony trees in this area. But much of the forest is becoming open grassland. People have cut down many of the trees so that they can use the land for farming.

Most people in Guinea work as farmers, growing their own food. They grow rice, cassava, sweet potatoes, bananas, coffee, pineapples, peanuts, yams, and corn. Some crops are grown for export, or to sell to other countries. Guinea also has large amounts of such minerals as bauxite, iron ore, gold, and diamonds. These are mined and exported.

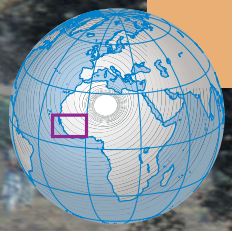
The people of Guinea belong to several different groups. In the Fouta Djallon region many people are Fulani. In northern Guinea are the Malinke. Other major groups in the country are the Susu, the Kissi, and the Kpelle. Until 1958 Guinea was a **colony** of France. Because of that the official language in Guinea is French. But many African languages are spoken there as well.



LEARN MORE! READ THESE ARTICLES…
AFRICA (VOLUME 8) • ATLANTIC OCEAN (VOLUME 1)
ROCKS AND MINERALS (VOLUME 1)

The savannas of northern Guinea have some trees scattered among the grasses.
© David Reed/Panos Pictures

GUINEA



DID YOU KNOW?

All three of western Africa's major rivers begin in Guinea. The country's Fouta Djallon region is the source of the Niger, the Gambia, and the Senegal rivers.

Answer: FALSE. Most of the country's people are farmers.

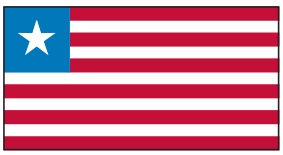


DID YOU KNOW?
Liberia means "land of the free," a fitting name for a country created for freed slaves.

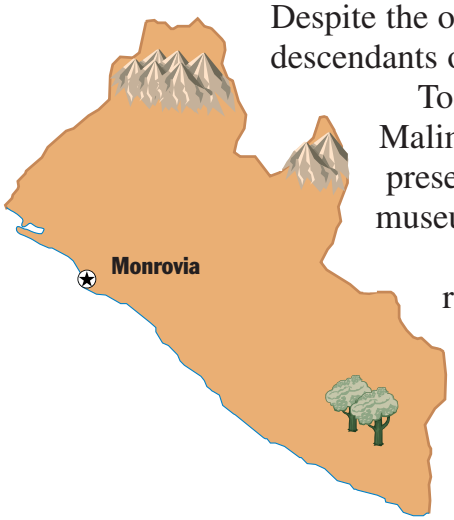
Women try to catch fish in a small pond north of Monrovia, Liberia. Fish are a major source of protein for many Liberians.
© Jan Dago/Magnum Photos



Africa's Oldest Republic



In the 1820s some Americans who opposed slavery bought land in West Africa. They used it to create a new country for freed slaves, whose ancestors had been taken from Africa. This country was called Liberia. Its government was set up as a **republic** modeled on the United States government. Liberia is now the oldest republic in Africa. Despite the origins of the country, most of its citizens are not the descendants of former slaves.



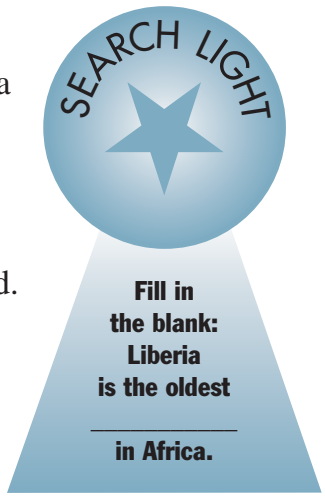
Today you can find out about Liberia's past by visiting the Malima Gorblah Village and Besao Village. These villages preserve the country's old culture. They are like living museums of Liberia's past.

Liberia's climate is warm and humid all year and rainy from May to October. The country's forests and rolling hills are home to such wild animals as monkeys, chimpanzees, antelopes, elephants, crocodiles, and poisonous snakes. There are two rare animals found in Liberia. One is the pygmy hippopotamus, which looks like a baby hippo even when it's full-grown. The other is the manatee, a big seal-shaped **mammal** that lives in the water.

The rubber trees, coffee, and cocoa that grow in Liberia provide products that can be sold to other countries. Liberian farmers also grow rice, sugarcane, bananas, and yams. Liberia is rich in mineral resources. It is one of the world's leading producers of iron ore.

Liberia suffered through a **civil war** in the early 1990s. It made life dangerous and difficult for many people. The war officially ended in 1996, but some fighting continued.

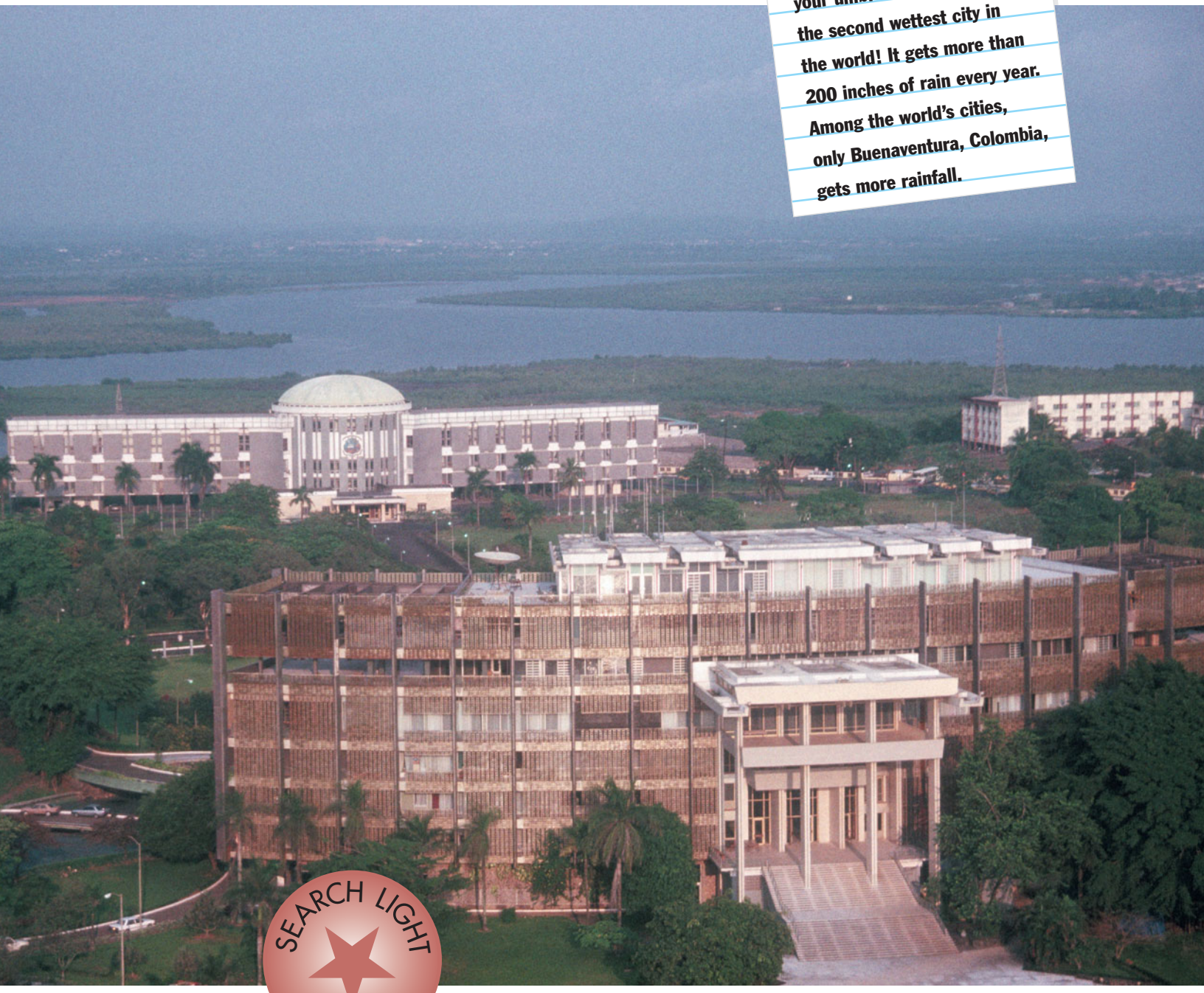
LEARN MORE! READ THESE ARTICLES…
MANATEES (VOLUME 12)
MONROVIA, LIBERIA (VOLUME 8)
RAINFORESTS (VOLUME 1)



Answer: Liberia is the oldest republic in Africa.

DID YOU KNOW?

If you visit Monrovia, take your umbrella. Monrovia is the second wettest city in the world! It gets more than 200 inches of rain every year. Among the world's cities, only Buenaventura, Colombia, gets more rainfall.



As the capital of Liberia, the city of Monrovia is home to the country's most important government buildings. The Executive Mansion (at the front of the photo) is where the president lives.
© Albrecht G. Schaefer/Corbis

SEARCH LIGHT

Where does the name Monrovia come from?

Freedom City

Monrovia is the capital of Liberia, a country in western Africa. It is also the largest city in the country. Monrovia is located on the coast, where the Mesurado River meets the Atlantic Ocean. It is Liberia's main port. Monrovia is not as old as many other cities, but its short history makes an interesting story of new beginnings.

A group known as the American Colonization Society founded the city. They set up a whole new country so that freed slaves from the United States could move to Africa, the home of their ancestors. Monrovia was named after the U.S. president James Monroe. He was the president at the time Liberia was founded.



Fishermen in Monrovia hauling in their nets.
© Eldad Rafaeli/Corbis

The first settlement was established in 1822. It later developed into the city of Monrovia. Liberia became an independent republic in 1847, with Monrovia as its capital. Most of the settlers from the United States arrived between 1830 and 1871. No longer enslaved, they were full of hope for making a fresh start at life. Many people who already lived in Africa also moved to Monrovia and to the other new towns in Liberia.

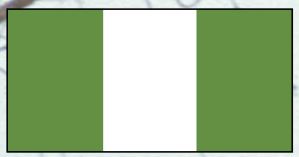
In 1851 the government of Liberia established a college in Monrovia. That college, now called the University of Liberia, also has a medical school. Today many people go to college in Monrovia.

A hospital in Monrovia is named after another U.S. president, John F. Kennedy. Other important buildings in the city are the capitol, city hall, and the Temple of Justice. But many of these buildings were damaged or destroyed during Liberia's **civil war**, which began in 1990. A **truce** was declared in 1996, but some fighting continued.

LEARN MORE! READ THESE ARTICLES…
ATLANTIC OCEAN (VOLUME 1) • LIBERIA (VOLUME 8) • SENEGAL (VOLUME 8)

Answer: Monrovia was named for the U.S. president at the time Liberia was founded, President James Monroe.

Land of 500 Languages



Nigeria is a country on the west coast of Africa. It's a place of great variety, in both land and people. More people call Nigeria home than any other country on the continent. There are about 250 different groups of people living there. Each has its own traditions and ways of life. And each group has its own language. More than 500 different languages are spoken in Nigeria. But English is the official language.

The weather is not the same in all parts of the country. Some areas get a lot of rain. Other areas are very dry. Because there are different kinds of weather in different parts of the country, there are many kinds of animals and plants. There are thick **rainforests** as well as **mangrove** and freshwater swamps. There is also open grassland called "savanna." There are small trees all over the **vast** savanna.

DID YOU KNOW?

It is said that more twins are born in Nigeria than anywhere else in the world. Twins are so common that they usually get the same set of names. For example, the Yoruba people usually name their twins Taiwo and Kehinde.



Wase Rock rises sharply above the surrounding countryside near Wase, Nigeria. This part of the country consists of savanna, or open grassland, with scattered short trees.
© Bruce Paton/Panos Pictures



Once, camels, antelope, hyenas, lions, baboons, and giraffes lived in the savanna. Red river hogs, forest elephants, and chimpanzees lived in the rainforest. Animals found in both forest and savanna included leopards, monkeys, gorillas, and wild pigs. Today these animals generally are found only in special parks.

Nigeria has many cities. The capital of Nigeria used to be Lagos. But in 1991 the capital changed to Abuja. Lagos is a very large coastal city with many businesses. But Abuja is in the middle of the country, which makes it easier for people to travel there. Lagos was overcrowded too, and Abuja had more open land for building.

LEARN MORE! READ THESE ARTICLES…
AFRICA (VOLUME 8)
A NIGERIAN FOLKTALE:
THE MONKEY COURT (VOLUME 5)
WOLE SOYINKA (VOLUME 3)

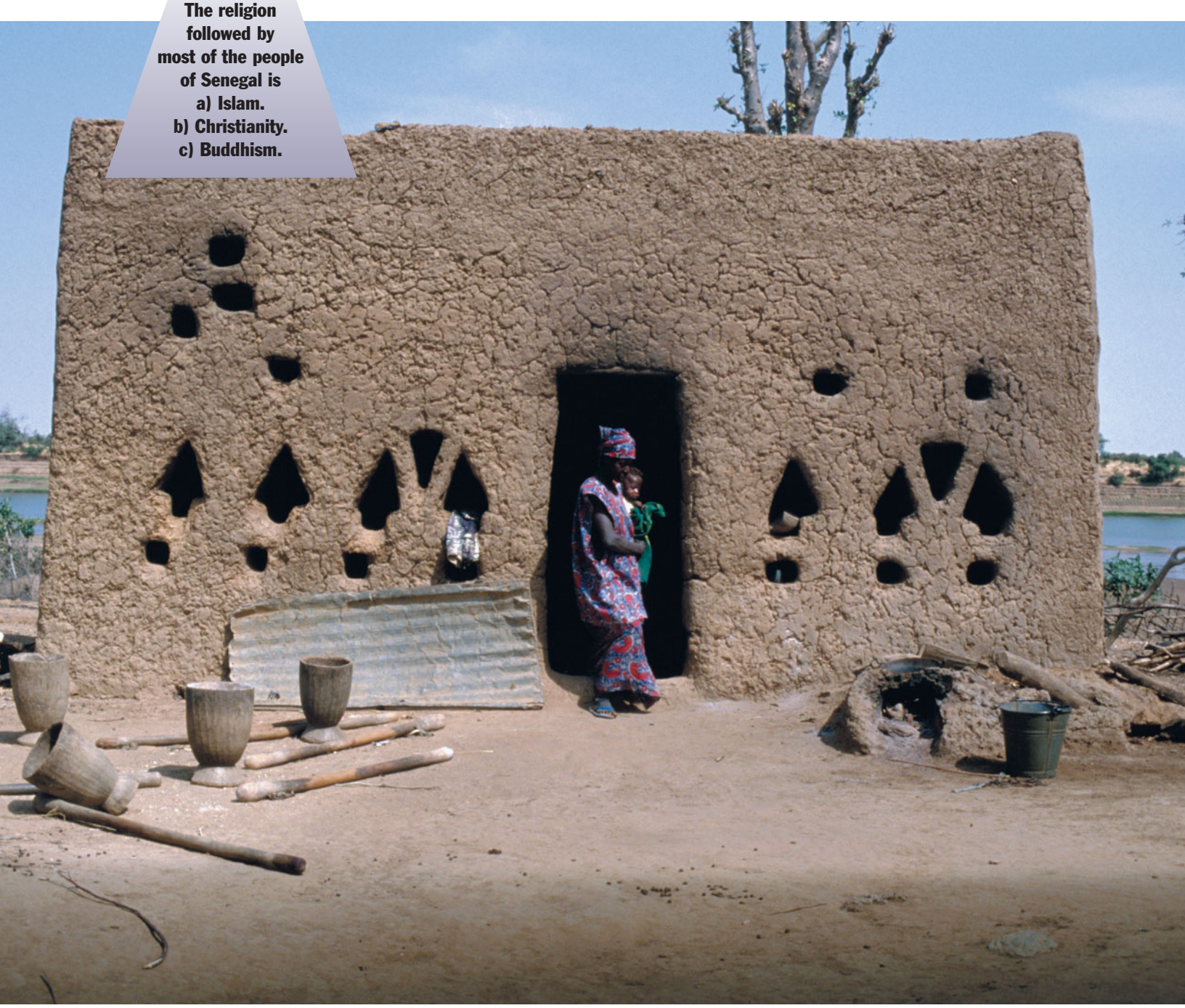
SEARCH LIGHT

True or false? Nigeria is a very rainy country.

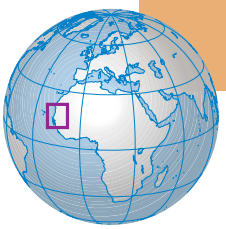
Answer: FALSE. Parts of the country do get a lot of rain, but parts of it are very dry.

SEARCH LIGHT

The religion followed by most of the people of Senegal is
a) Islam.
b) Christianity.
c) Buddhism.



A Soninke mother and child stand in the doorway of a traditional-style mud house on a bank of the Senegal River. Like most of the other peoples in Senegal, the Soninke are Muslim.
© Margaret Courtney-Clarke/Corbis



Land of Teranga





Long ago there was a house packed with men and women. They were inspected and priced like animals. The weaker ones died, and the stronger ones were shipped to the Americas to work as slaves. This slave house was on Gorée Island, which lies off the coast of Senegal, in westernmost Africa. Exactly what went on there is not known for sure. But Senegal was at one time involved in selling Africans as slaves.

But that was long ago. Today Senegal's culture is known for its *teranga,* a spirit of warm welcome toward outsiders. *Teranga* means "hospitality," or "welcoming heart," in the language of the Wolof. Many different groups of people make up the Senegalese nation. The Wolof are one of the largest of Senegal's seven main ethnic groups.

Despite their different backgrounds, the people of Senegal tend to live in similar ways. Most of the people practice Islam. And most live in small villages in the countryside. Each village has a water source, a **mosque**, and a public gathering place. France ruled Senegal until 1960. The different groups of Senegal speak several different African languages, but French is still widely used as a common language. This helps people from different groups talk to each other.

Senegal is one of the world's main producers of peanuts. The country has wide rivers and good soil. The light-colored sandy soil in the northwestern part of the country is especially good for growing peanuts. Dakar, the country's capital, is a major center for the peanut trade.

DID YOU KNOW?

Léopold Senghor, the first president of independent Senegal, was also an important writer. He was a leading poet of a movement that celebrated African culture.

LEARN MORE! READ THESE ARTICLES…
DAKAR, SENEGAL (VOLUME 8) • ISLAM (VOLUME 5)
PEANUTS (VOLUME 10)

Answer: a) Islam.



The small island of Gorée, near Dakar, served as an outpost for slave trading for some three hundred years. Slavery became illegal in Senegal in 1848, and the trading post closed. Today, tourists come to Gorée to visit several museums and the remains of old forts.

© Marcel & Eva Malherbe/The Image Works

DID YOU KNOW?

Dakar is at the heart of Senegal's thriving music scene. One of the city's most famous musicians is Youssou N'Dour. His songs blend a wide range of styles, from traditional African music to Cuban rhythms, Western pop, jazz, and soul.

City of the Tamarind Tree

SEARCH LIGHT

Many of the city's streets and buildings have French names. Can you figure out why?

Dakar is the capital city and business center of Senegal. Its name comes from *dakhar*, a local name for the **tamarind** tree. The city lies on the west coast of Africa, close to the most westerly point on the continent.

The French founded Dakar when they built a fort on the site in 1857. Even earlier they had begun to establish trade in the area. Dakar has since become one of the chief seaports of western Africa. It has a fine harbor. Natural limestone cliffs protect the harbor from the force of the waves.

The French opened West Africa's first railway line in 1885. The railway connected Dakar with the nearby island city of Saint-Louis. This helped Dakar grow into a center for the **export** of peanuts. The city now has an international airport too.

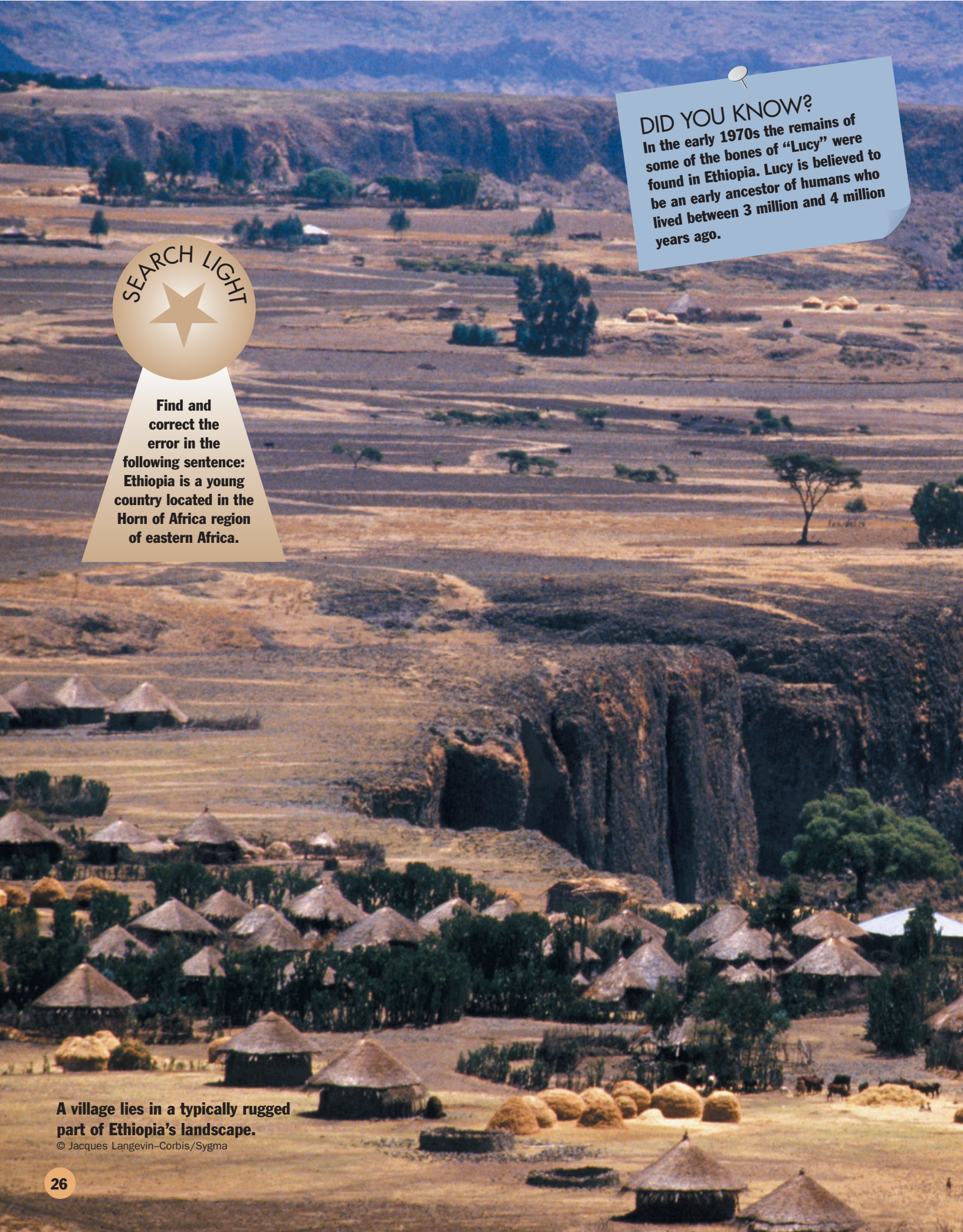


Flower merchants in Dakar.
© Wolfgang Kaehler/Corbis

If you visit Dakar, you might enjoy seeing the IFAN Museum. It has a fine collection of art from Senegal and other African countries. On the nearby island of Gorée is the Slave House, built in 1786. Many thousands of slaves passed through it on their way to being shipped away from Africa. The Slave House is now a museum where you can see the tiny cells where the slaves were kept. There are also several old forts, a women's museum, and a maritime museum (about ships). Gorée is a tiny island with only about 1,000 people. It has beaches and a high rocky area called Le Castel, which offers good views of the island and Dakar.

LEARN MORE! READ THESE ARTICLES…
LIBERIA (VOLUME 8) • PEANUTS (VOLUME 10) • SENEGAL (VOLUME 8)

Answer: The French founded Dakar in 1857. They gave French names to many places in the city. These names are still used today.



DID YOU KNOW?

In the early 1970s the remains of some of the bones of "Lucy" were found in Ethiopia. Lucy is believed to be an early ancestor of humans who lived between 3 million and 4 million years ago.

SEARCH LIGHT

Find and correct the error in the following sentence: Ethiopia is a young country located in the Horn of Africa region of eastern Africa.

A village lies in a typically rugged part of Ethiopia's landscape.

© Jacques Langevin–Corbis/Sygma

Ancient Country in Africa's Horn



Not very long ago, a lot of people in Ethiopia, a country in eastern Africa, went hungry. In 1992-93 the Ethiopian government had to ask countries to donate food for its people. Some 10 million people faced starvation. Although many countries helped, hundreds of thousands of Ethiopians still suffered. Many later died because they had no food.

Most Ethiopians are farmers. But sometimes the government makes bad decisions on how to use the country's farmland. That's one reason why there's not always enough food. Another reason is lack of rain. Ethiopia has two rainy seasons. But once in a while it suffers from droughts, times when it does not rain enough. Often Ethiopia must buy food from other countries. But Ethiopia sells things such as sugarcane, beeswax, leather goods, and coffee. Ethiopia is the place where coffee first came from.

Ethiopia is one of the oldest countries in Africa. It lies within a region that's called the Horn of Africa because on a map it looks like an animal's horn. The capital is Addis Ababa. Most of the people in Ethiopia are Christian. Some follow Islam. Others follow traditional animism, the belief that there is life in the forces of nature or even in **inanimate** objects.

One of the exciting things in Ethiopia is the rich variety of wildlife. But many of the animals have become rare, including lions, leopards, elephants, giraffes, rhinoceroses, and wild buffalo. In order to protect the remaining animals, the government has set aside 20 special parks and **sanctuaries**.



LEARN MORE! READ THESE ARTICLES…
ADDIS ABABA, ETHIOPIA (VOLUME 8)
CHRISTIANITY (VOLUME 5) • COFFEE (VOLUME 10)

Answer: Ethiopia is an ancient country located in the Horn of Africa region of eastern Africa.



DID YOU KNOW?

Many of the places in Addis Ababa don't have regular addresses. Many of the city's streets don't even have names. So if you go to Addis Ababa, be sure to get a guide.

SEARCH LIGHT

How did Addis Ababa get so many eucalyptus trees?

The City Called "New Flower"

If you visit Ethiopia by airplane, you will probably land in Addis Ababa. The city is the capital of Ethiopia and its largest city. Addis Ababa sits high in the mountains at an **elevation** of about 8,000 feet above sea level. It is the highest city in Africa.

At one time in Ethiopia's history, a town called Entoto was the capital. This town had a cold **climate** but lacked enough firewood to provide heat for the people. The wife of Emperor Menilek II wanted him to build a house at a nearby hot springs. The emperor did so, and a new city was founded around it in 1887. The emperor's wife named the new city Addis Ababa, which means "New Flower."



Wedding party, Addis Ababa.
© Michael S. Lewis/Corbis

As the population of Addis Ababa grew, that city experienced a shortage of firewood too. To help solve this problem, a large number of eucalyptus trees were imported from Australia. The eucalyptus trees eventually grew in number and now provide a forest for the city's needs.

Today Addis Ababa is the **headquarters** of several international organizations. One of them is the United Nations Economic Commission for Africa. Another one is the African Union. This league includes many African nations that work together to improve their economies and governments.

As a national capital, Addis Ababa has many of Ethiopia's government buildings. The city is also an important educational and commercial center. Addis Ababa University was started in 1950. And goods such as textiles, plastics, and wood products are **manufactured** in the city. Addis Ababa is also the site of one of Africa's largest open-air markets.

LEARN MORE! READ THESE ARTICLES…
ETHIOPIA (VOLUME 8) • EUCALYPTUS (VOLUME 10) • MOUNTAINS (VOLUME 1)

Merchants sell traditional textiles at an outdoor market in Addis Ababa.
© Carl & Ann Purcell/Corbis

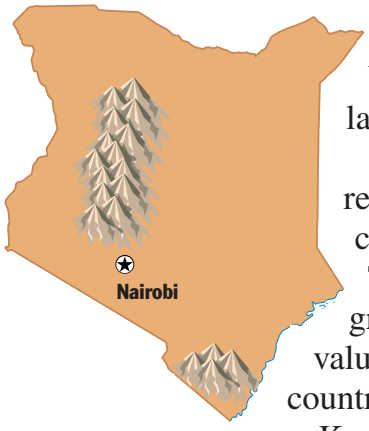
Answer: The city had many of the trees brought over from Australia to provide a source of firewood. Over time, the trees grew in number.

Cradle of Humanity



Some of the very earliest humans are believed to have lived in Kenya. That is why some people call the country the "cradle of humanity."

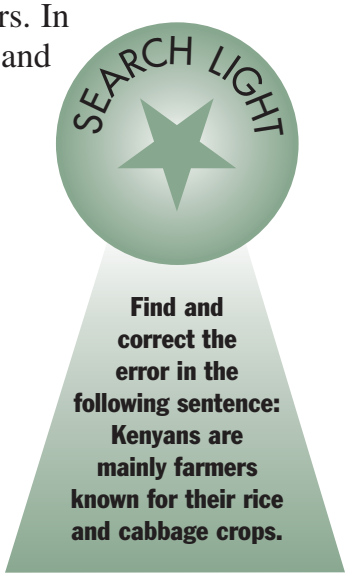
Kenya is a country in East Africa. Its capital is Nairobi. The country has a beautiful natural landscape with great variety. There are sandy beaches, huge mountains, rolling grassland, and deserts. A long deep valley cuts through western Kenya. It is part of the Great Rift Valley, a very long series of cracks in the Earth's surface. It runs from southwestern Asia through East Africa. Part of Kenya's southeastern border lies along the Indian Ocean. Lake Victoria makes up part of Kenya's western borders. It's the largest lake in Africa.



The Kenyans are mostly farmers. In the Mount Elgon region, coffee and tea are grown and then sold to other countries. Mount Elgon is a volcano that no longer erupts. The soil in this volcanic region is especially good for growing crops. In the evergreen forests in the west are valuable trees such as cedar and podo. In the south of the country, most of the forests have been cut down.

Kenya's wildlife safaris are world famous. Many tourists visit the country to see the wide range of wild animals, including lions, leopards, elephants, giraffes, gazelles, baboons, and many others. In the rivers there are hippopotamuses, crocodiles, and many fish and spiny lobsters. Many of the animals that live in Kenya are very rare. The country has set up more than 50 national parks and preserves to protect its wildlife.

LEARN MORE! READ THESE ARTICLES…
COFFEE (VOLUME 10) • MOUNTAINS (VOLUME 1)
NAIROBI, KENYA (VOLUME 8)

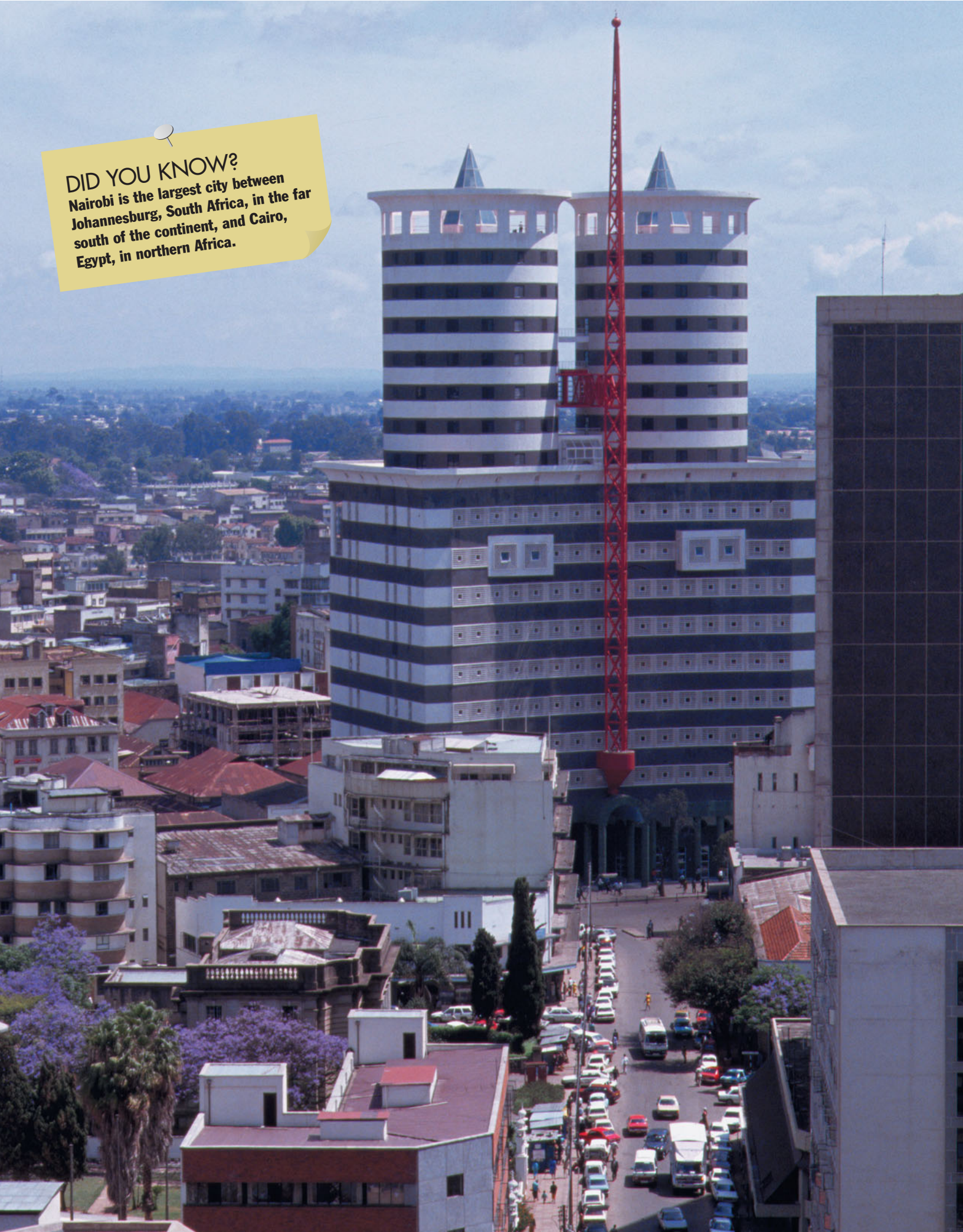




A group of Masai men perform a traditional dance in Kenya. All young Masai men are brought up to learn the group's customs. They are also encouraged to develop strength, courage, and endurance—traits for which the Masai warriors are noted throughout the world.
© Wendy Stone/Corbis

DID YOU KNOW?
Every year more than a million wildebeests, a kind of African antelope, pass through Kenya.

Answer: Kenyans are mainly farmers known for their coffee and tea crops.



DID YOU KNOW?

Nairobi is the largest city between Johannesburg, South Africa, in the far south of the continent, and Cairo, Egypt, in northern Africa.

From Swamp to Capital City

Nairobi used to be a swampy place. But this swamp would one day become the capital city of Kenya, in East Africa. The name Nairobi comes from a water hole that the Masai people of Kenya called Enkare Nairobi. Enkare Nairobi means "cold water."

In the late 1890s, the British established a settlement there while building a railway across southern Kenya. This railway still runs through Nairobi. It connects Lake Victoria, on the border with Uganda, to Mombasa, Kenya's major port on the Indian Ocean. When the British took control of Kenya in 1905, Nairobi was made its capital city. Under British rule, Nairobi grew into a trading center and a large city. It remained the capital when Kenya became free from the British in 1963.



A mosque in Nairobi.
© Stephen Frink/Corbis

Today Nairobi is an important center for education. The University of Nairobi and its Kenyatta University College are among the major schools in the city. Visitors go to see the National Museum of Kenya, McMillan Memorial Library, and Kenya National Theater. The **tourism** industry is important to the city's economy.

Just a few miles south of the city is Nairobi National Park. It's a large beautiful park set aside to protect the area's wild animals. It was the first such park established in Kenya. Tourists go to see the park's lions, black rhinoceroses, gazelles, giraffes, antelope, and zebras, as well as hundreds of kinds of birds. Near the main gate is a small zoo. Keepers there take care of baby elephants and black rhinoceroses.

LEARN MORE! READ THESE ARTICLES…
ENGLAND (VOLUME 6) • KENYA (VOLUME 8) • SWAMPS (VOLUME 1)

Once just a swamp, Nairobi is now a large city with modern buildings.
© Adrian Arbib/Corbis

SEARCH LIGHT

Enkare Nairobi means
a) swampy place.
b) cold water.
c) hot city.

Answer: b) cold water.

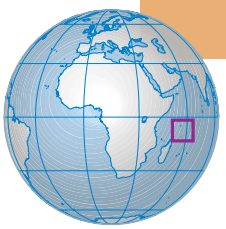


SEARCH LIGHT

About how many islands make up the Republic of Seychelles?

The rocky islands of Seychelles are rugged and beautiful.
© Nik Wheeler/Corbis

An Island Paradise





The Republic of Seychelles is a country made up of about 115 islands in the Indian Ocean off the east coast of Africa. Victoria is its capital city and only shipping port. It lies on Mahé, the country's largest island.

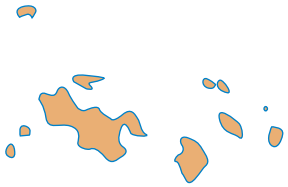
DID YOU KNOW?
The coco de mer, or double coconut tree, is found only in Seychelles. Its fruits take about 10 years to ripen.

Seychelles is made up of two main island groups. The Mahé group has 40 islands. These islands are rocky and hilly, with narrow strips of coastline. The other group consists of low islands built up from the rock-hard skeletons of countless coral animals. These coral islands have almost no water. Very few people live on them.

Mahé is home to the great majority of the country's people. Most of the people are Creole, with a mixture of Asian, African, and European heritage. The French and then the British used to rule the islands. Seychelles was given its independence by Britain in 1976. Creole, English, and French are all national languages.

The islands have very little good farmland. Tree products such as coconuts and cinnamon bark are the main crops. Fishing is a very important industry. The people catch the fish, pack them into cans, and ship them around the world.

The islands are especially rich in beautiful **tropical** scenery. Coconut palm trees grow along the coast on most of the islands. Giant tortoises and green sea turtles live along the coasts. Sharks are found in the ocean. The seafaring frigate bird spends time on the islands. Tourism is Seychelles' biggest industry, with visitors attracted by the country's beaches, wildlife, and greenery.

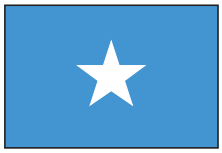


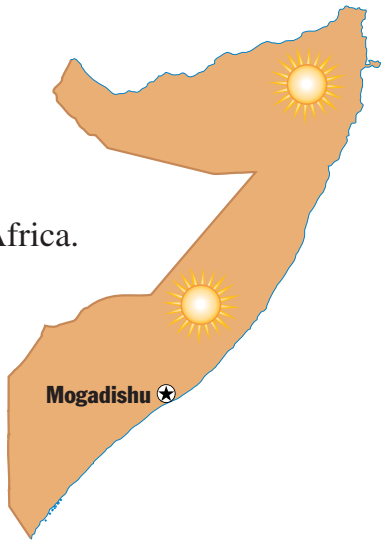


LEARN MORE! READ THESE ARTICLES…
CORAL (VOLUME 11) • ISLANDS (VOLUME 1) • PALM (VOLUME 10)

Answer: The country consists of about 115 islands.

Land of Nomads





Somalia is a country on the eastern coast of Africa. It occupies a region known as the Horn of Africa. It is called that because on a map it looks something like an animal's horn. The capital city is Mogadishu.

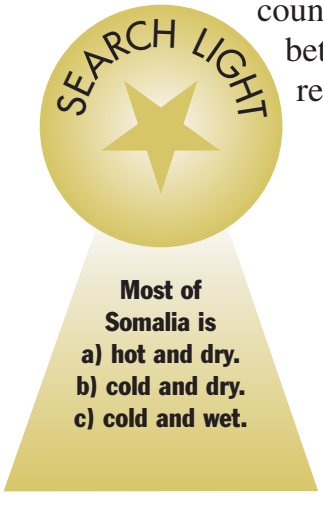
Somalia has flatlands in the south and areas of rocky highlands in the north. It has a narrow sandy coast along the Gulf of Aden called the Guban. Most of the country is too hot and dry to have a great variety of plants. Forests exist only in the highlands. But in certain seasons there is rain. During the rainy seasons cars and trucks can get stuck in the mud. Because of this, camels, cattle, and donkeys are still used for transportation.

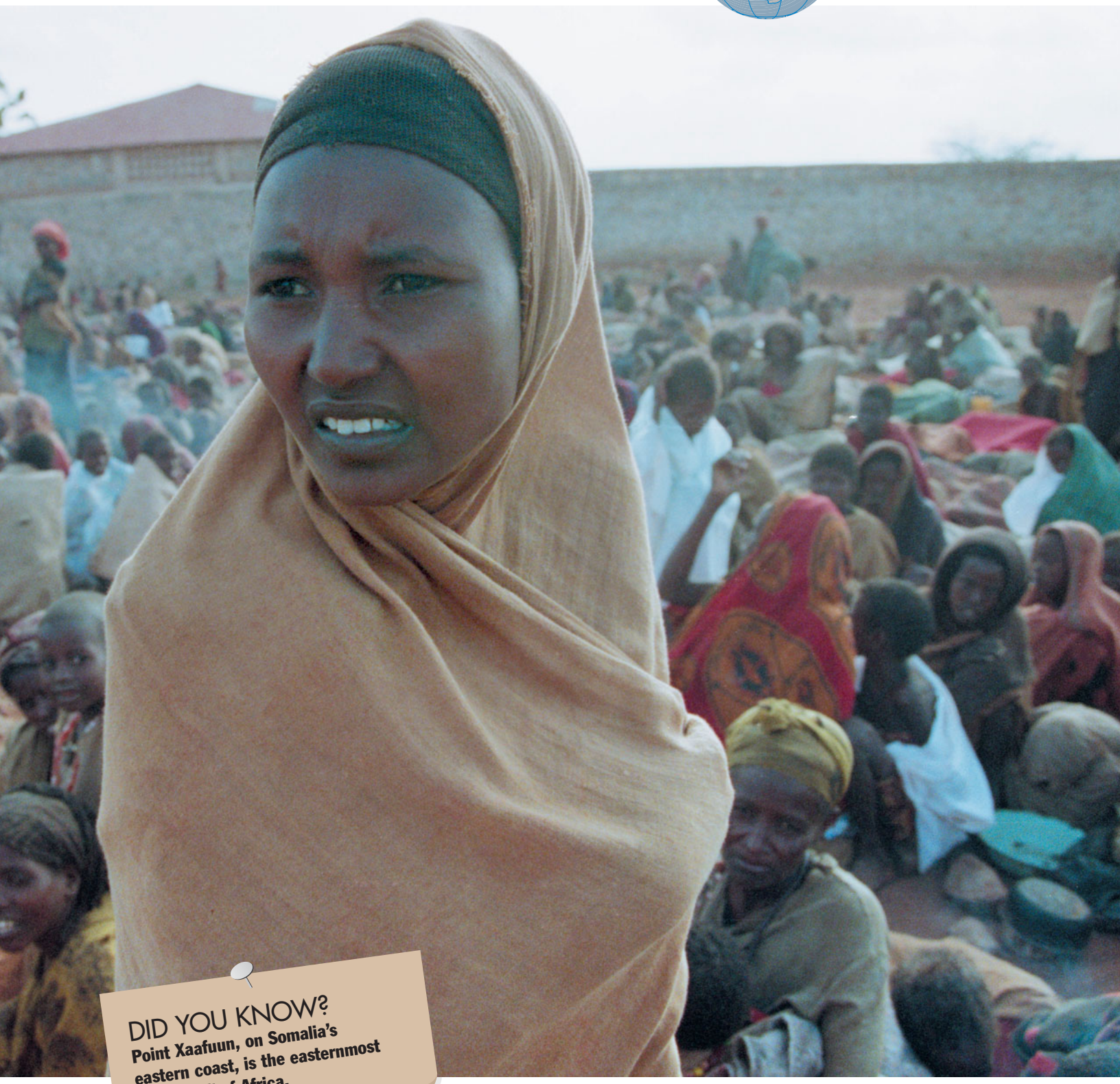
Somalia has many kinds of animals, including hyenas, foxes, leopards, lions, ostriches, and antelope. Such other animals as giraffes, zebras, hippopotamuses, rhinoceroses, and elephants have been hunted until they are almost **extinct**.

Many Somalis don't live in one place for the entire year. Instead, they move frequently to find grass for their animals to eat. People who regularly move around like this are called nomads. For support and protection the people look to big family groups called clans. Most Somalis follow the religion of Islam.

Foreign powers, including England, Italy, and Ethiopia, controlled Somalia for a long time. Somalia became independent in 1960. But the country suffered through many wars, often involving fighting between different clans. Partly because of all the fighting, Somalia remained a poor country. The people have often faced hunger.

LEARN MORE! READ THESE ARTICLES…
CAMELS (VOLUME 12) • ISLAM (VOLUME 5)
KENYA (VOLUME 8)





DID YOU KNOW?
Point Xaafuun, on Somalia's eastern coast, is the easternmost point in all of Africa.

Years of fighting in Somalia have left many of the country's people poor and hungry.
© David Turnley/Corbis

Answer: a) hot and dry.

Land of Natural Wonders



The East African country of Tanzania is known for its stunning natural features. It has the tallest peak in Africa (Mount Kilimanjaro) and the world's largest volcano crater (Ngorongoro Crater). Along its borders with neighboring countries are three large lakes. Lake Victoria, in the north, is the second largest lake in the world. The longest and second deepest is Lake Tanganyika, in the west. Lake Nyasa is in the south.



The government of Tanzania has created several national parks to protect the country's animals. The Serengeti National Park is the most famous. The Serengeti Plain, in the northern part of the country, is a large area of grasslands that is home to many animals. The plain stretches across the border into Kenya. It has also been home for thousands of years to a group of people called the Masai. The name Serengeti comes from a Masai word that means "endless plains." There thousands of zebras, gnus (wildebeests), gazelles, lions, and many other animals live in large herds.

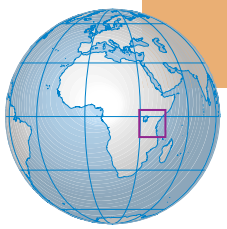
In the eastern part of the Serengeti Plain is the Olduvai Gorge. This is a narrow valley with steep sides where some of the earliest human remains have been found. Scientists have discovered that early human ancestors lived and used tools in that area more than 2 million years ago.

Several islands in the Indian Ocean are also part of the country. The island of Zanzibar is the most notable. It was once a major trading port. Many Africans were sent into slavery from there. Today many people from all over the world travel to Tanzania to see its splendid scenery and wildlife.

SEARCH LIGHT

Find and correct the error in the following sentence: Mount Kilimanjaro is the tallest peak in Asia.

LEARN MORE! READ THESE ARTICLES…
KENYA (VOLUME 8) • LIONS (VOLUME 12) • MOUNTAINS (VOLUME 1)

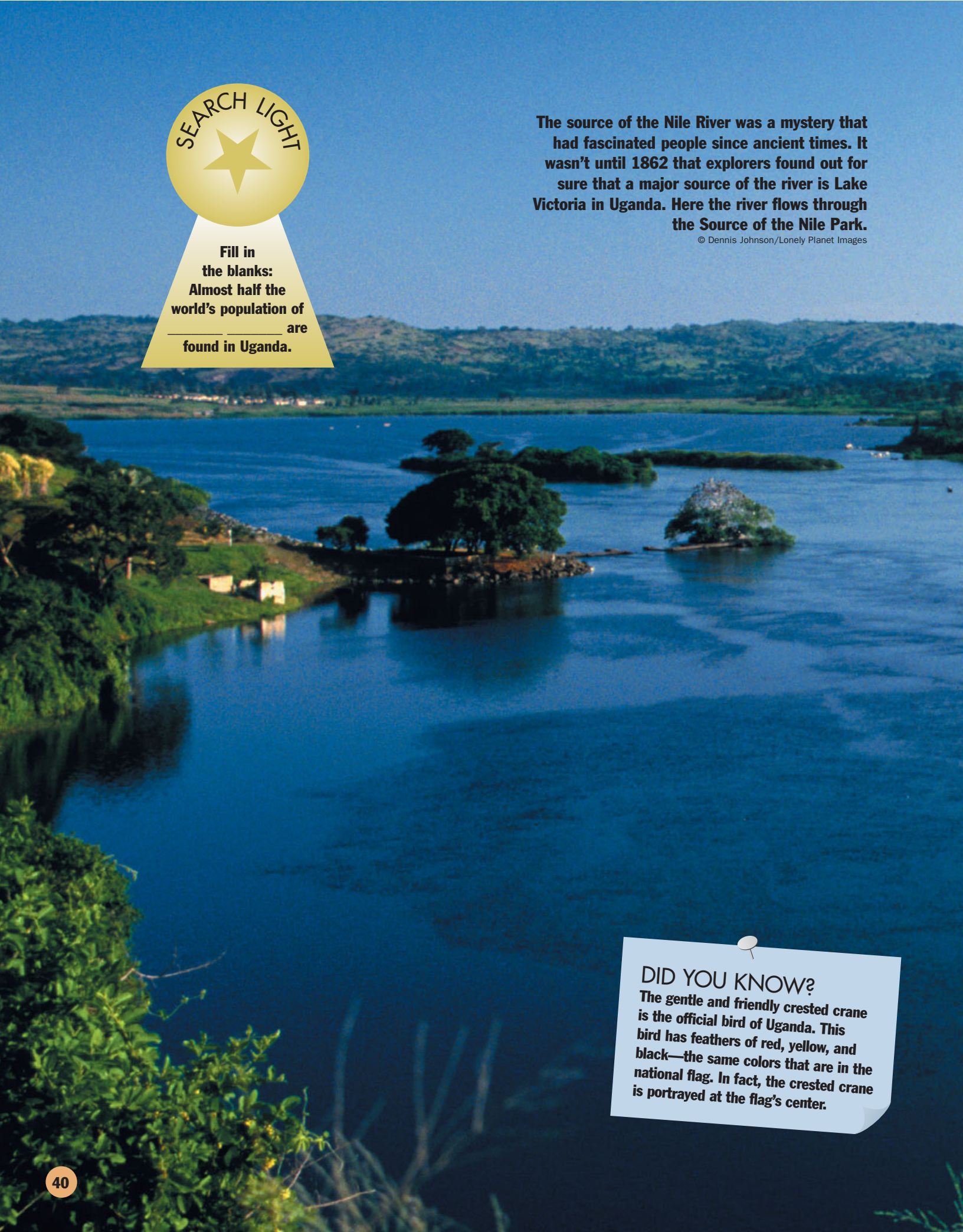


A pair of giraffes is at home near Mount Kilimanjaro in Tanzania.
© Daryl Balfour—Stone/Getty Images

DID YOU KNOW?

The scientist Jane Goodall studied chimpanzees for many years in Tanzania's Gombe Stream National Park, along Lake Tanganyika.

Answer: Mount Kilimanjaro is the tallest peak in Africa.



The source of the Nile River was a mystery that had fascinated people since ancient times. It wasn't until 1862 that explorers found out for sure that a major source of the river is Lake Victoria in Uganda. Here the river flows through the Source of the Nile Park.

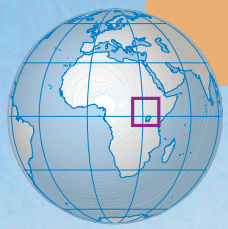
© Dennis Johnson/Lonely Planet Images

SEARCH LIGHT

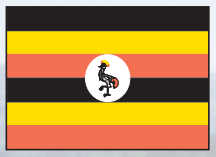
Fill in the blanks: Almost half the world's population of _____ _____ are found in Uganda.

DID YOU KNOW?

The gentle and friendly crested crane is the official bird of Uganda. This bird has feathers of red, yellow, and black—the same colors that are in the national flag. In fact, the crested crane is portrayed at the flag's center.



Country of Lakes and Rivers

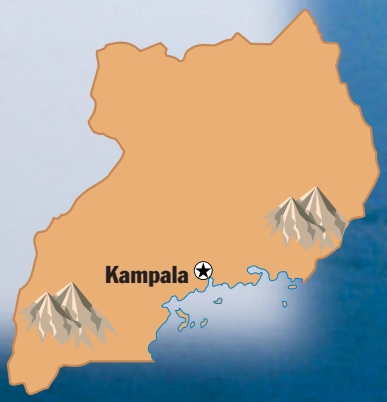


Uganda is a beautiful country in East Africa with many lakes and rivers, vast grasslands, and some forests. Most of the country lies on a **plateau** bordered by mountains and valleys. The capital city, Kampala, is built on seven hills.

Water is plentiful in Uganda. There are eight main rivers and six major lakes. Among the main rivers are two sections of the Nile River. Lake Victoria is the world's second largest freshwater lake. About half of it lies within Uganda. The area around this lake has some of the best soil in the world for growing crops. Most of the country receives plenty of rainfall too.

Uganda is home to many kinds of animals. There are hippopotamuses and crocodiles in most of the lakes and rivers. Zebras, giraffes, and antelope roam the grasslands. The country has developed several national parks to protect its animals. In these parks live lions, leopards, rhinoceroses, elephants, and chimpanzees. The Bwindi Impenetrable National Park contains nearly half the world's population of mountain gorillas, an **endangered species**.

At one time Uganda was a dangerous country to visit. In 1971 Idi Amin, an army officer, took power and became the country's **dictator**. The people welcomed him at first. But he was a cruel ruler, and the Ugandans suffered greatly. Amin started a war with Tanzania in 1978. The following year he was forced to leave the country. Afterward Uganda experienced yet more fighting, but peace eventually returned to the country.



LEARN MORE! READ THESE ARTICLES…
GORILLAS (VOLUME 12) • KAMPALA, UGANDA (VOLUME 8)
RIVERS (VOLUME 1)

Answer: Almost half the world's population of mountain gorillas are found in Uganda.


SEARCH LIGHT
Fill in the blank: Kampala is built on a series of ____.

City on the Hill of Antelopes

Kampala is the capital and largest city of Uganda, a country of East Africa. It lies in the southern part of the country, north of Lake Victoria. Kampala spreads over a number of hills. The rulers of the powerful Buganda kingdom of the 1800s kept antelope on the slopes. In the local language, Kampala means "the hill of antelopes."



Kibuli Mosque, Kampala.
© Jack Fields/Corbis

Buganda came under the control of the British in the 1890s. The British chose Kampala as the site of their headquarters. For a while they controlled all of what is now Uganda from a fort on Old Kampala Hill. When Uganda gained independence from Great Britain in 1962, Kampala became the capital.

Kampala is Uganda's center for business. It lies on **fertile** farmland and is the main market for the Lake Victoria region. Coffee, cotton, tea, tobacco, and sugar are sold there. And most of Uganda's large companies have their offices in the city.

Kampala serves as the religious center for Uganda as well. Some well-known Christian churches in the city include the Namirembe Anglican **Cathedral** and Rubaga and St. Peter's Roman Catholic cathedrals. Kampala's many **mosques** include the white Kibuli Mosque. It also has Hindu temples.

If you ever visit Kampala, make sure to go to the Uganda Museum. It has a collection of historical musical instruments that you can play. You'll also find a number of art galleries in the city. Northeast of Kampala, a place called Nyero is famous for a different kind of art. There you can see rock paintings that date back hundreds of years. No one knows for sure who made them.

DID YOU KNOW?

The Kasubi Tombs, on a hill overlooking Kampala, are the burial place of the kings of the Buganda kingdom.

LEARN MORE! READ THESE ARTICLES…
ENGLAND (VOLUME 6) • NAIROBI, KENYA (VOLUME 8) • UGANDA (VOLUME 8)

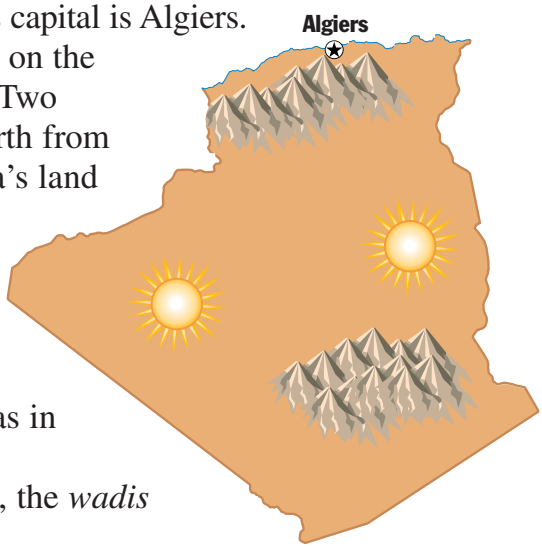
Ugandans shop for bananas at a market in Kampala. The city lies within Uganda's most important farming region.
© David and Peter Turnley/Corbis

Answer: Kampala is built on a series of hills.

Desert Land on the Sea



Algeria is a country on the north coast of Africa. It is the second largest country in Africa and the 11th largest country in the world. The country's capital is Algiers.



The northern part of Algeria is on the Mediterranean Sea. This area is known as the Tell. Two mountain ranges separate the coastal area in the north from the Sahara in the south. About four-fifths of Algeria's land lies within the Sahara, the largest desert in the world. Two huge sandy areas known as "ergs" cover most of Algeria's desert. Not much grows on the desert's surface. But there are valuable minerals, **petroleum**, and gas underground.

Rainfall is very rare in the desert. At times, areas in the Sahara get no rain for years. There are also dry streambeds known as *wadis* in the desert. If it rains, the *wadis* quickly fill with water.

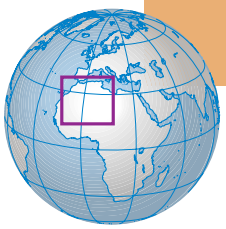
Most of Algeria's people live in the northern part of the country, where the climate is mild. That area receives enough water from rivers and rainfall to water the crops and provide people with water for drinking and industry. The people in Algeria are mostly Arabs, but many are Berbers. The ancestors of the Berbers lived in the area before the Arabs arrived.

Algeria was a French **colony** for more than 100 years. Hundreds of thousands of French people settled there. After a war against the French, the Algerians gained their independence in 1962. Most of the French then left the country.



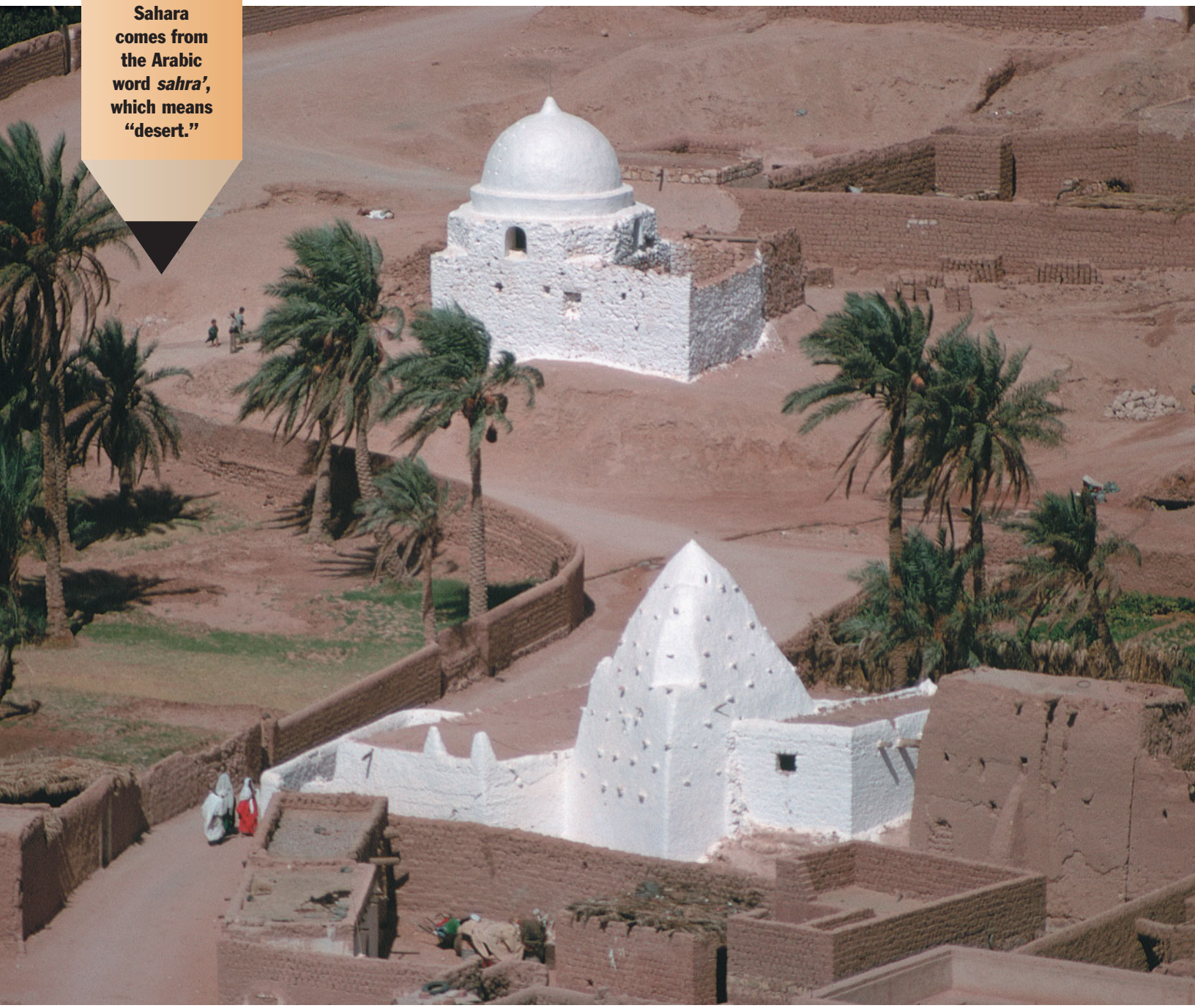
A *wadi*
is a
a) northern part of the country.
b) dry streambed.
c) wide field of sand.

LEARN MORE! READ THESE ARTICLES…
ALGIERS, ALGERIA (VOLUME 8) • DESERTS (VOLUME 1)
FRANCE (VOLUME 6)



DID YOU KNOW?

The name Sahara comes from the Arabic word *sahra'*, which means "desert."



This trans-Saharan highway winds through the desert in Algeria. Historically, traveling through the Sahara was very slow and dangerous. But year by year modern roadways have been extended further along the ancient trade routes into the desert.

© Robert Holmes/Corbis

Answer: b) dry streambed.


SEARCH LIGHT
Algiers is located along what body of water?
a) the Algiers River
b) the Atlantic Ocean
c) the Bay of Algiers

The Island City on the Hills

Algiers is located along the **Bay** of Algiers in the North African country of Algeria. Much of it was built on the slopes of the Sahel Hills. From the harbor it looks like a large theater with dazzling white buildings rising in steps.

The city has a long history. It was founded more than 2,000 years ago and has changed hands several times. In the 1500s the Ottoman Turkish Empire gained control, and the French captured the city in 1830. The French made Algiers a headquarters for a large territory they controlled in North and West Africa. The city became the capital of Algeria when the country gained independence from the French in 1962.

The city has two sections, one built when Ottoman Turkey controlled the country and the other built when the French ruled. The old Turkish city is on the upper slopes of the hills. It is full of high blank-walled houses standing on narrow winding streets. Much of it looks like it must have when it was first built. The most prominent building here is the fortress of the Casbah. This is where the last two Turkish governors of Algiers lived.

The French section of Algiers is built along the lower slopes of the hills closer to the harbor. This part of the city is full of big squares and wide streets. At the heart of the modern city center are the University of Algiers, many foreign **embassies**, and a few skyscrapers. There are also the old palace of the archbishop and the Winter Palace, which used to be the home of the French governor-general.

DID YOU KNOW?

Algiers' name comes from the Arabic word *al-jaza'ir*, which means "the islands." This name may refer to the many small islands that used to be in the bay. Today most of those islands are connected to the mainland.

LEARN MORE! READ THESE ARTICLES…
ALGERIA (VOLUME 8) • ISLANDS (VOLUME 1) • RABAT, MOROCCO (VOLUME 8)

The city of Algiers stretches for 10 miles along the Bay of Algiers.
© Getty Images

Answer: c) the Bay of Algiers



DID YOU KNOW?

More than 2 million blocks of stone had to be cut, transported, and assembled to create the Great Pyramid.

The Pharaohs and the Pyramids

Nearly 5,000 years ago there was a kingdom by the Nile River in a place called Egypt. The king was known as the pharaoh. People thought of him as a god.

The people of Egypt developed a great **civilization**. They built ships and sailed to other countries. They made great buildings. They carved and painted lovely pictures. And they developed a system of writing.

Three Egyptian kings—Khufu, his son Khafre, and his grandson Menkure—each ordered the people to build him a pyramid. The pyramids were to be the kings' **tombs**. A pyramid is a large structure with a square base and four sides shaped like triangles. The sides slope upward and meet in a point at the top.

SEARCH LIGHT

Fill in the blank: Three kings of Egypt ordered that giant _____ be built to use as their tombs.

After a king died, his body was carefully prepared and wrapped in many layers of cloth. (A body prepared in this way is called a mummy.) Then it was placed in a splendid coffin that was placed in a room in the middle of the pyramid. The Egyptians believed in an afterlife. So they put all the pharaoh's treasures in the room too, for him to use in the afterlife. After that, the doors were sealed with stones.

The pyramids of the pharaohs can still be seen today. They stand by the Nile River near a town called Giza. The first pyramid to be built is perhaps the largest structure ever made by people. It is called the Great Pyramid. The other two pyramids stand beside it. It took thousands of workers many years to build the pyramids. But since the Egyptians had no heavy machinery, no one knows exactly how they were built.

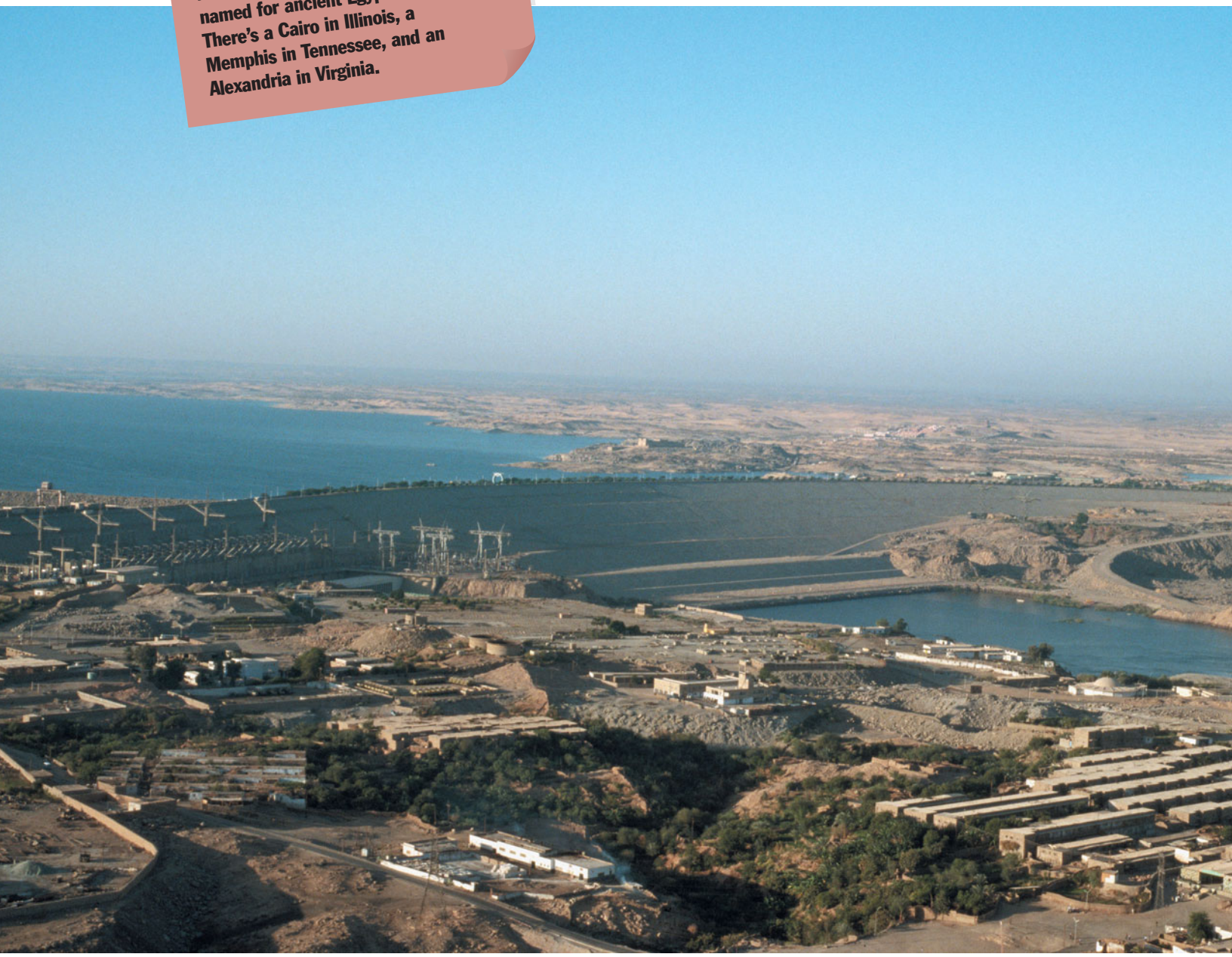
LEARN MORE! READ THESE ARTICLES…
ARCHITECTURE (VOLUME 3) • CAIRO, EGYPT (VOLUME 8)
EGYPT: CULTURAL CENTER, PAST AND PRESENT (VOLUME 8)

In ancient times the pyramids built near Giza, Egypt, were counted among the Seven Wonders of the World.
© Larry Lee Photography/Corbis

Answer: Three kings of Egypt ordered that giant pyramids be built to use as their tombs.

DID YOU KNOW?

Many cities in the United States are named for ancient Egyptian cities. There's a Cairo in Illinois, a Memphis in Tennessee, and an Alexandria in Virginia.



The Aswan High Dam has allowed the people of Egypt to control the flooding of the Nile River for the first time in history. Now farmers can use the river's water for their crops year-round.

© Lloyd Cluff/Corbis



Cultural Center, Past and Present



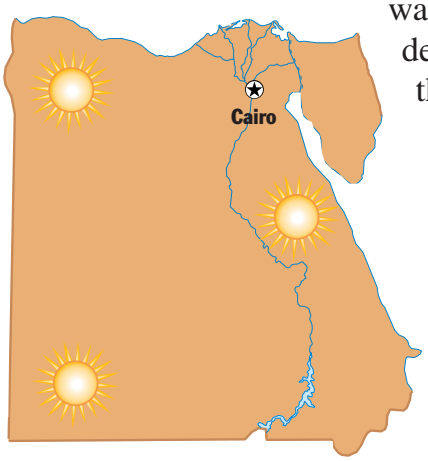
Egypt is a large country in northeastern Africa. Its capital is Cairo. Most of Egypt is dry and rocky. But the Nile River, the longest river in the world, runs through it. In the north the Nile forms a **delta** before it flows into the Mediterranean Sea. The delta has Egypt's best farmland.

Because of the Nile and the water it brings, Egypt has one of the largest populations in the Middle East. People have lived there since ancient times. In fact, ancient Egypt was one of the world's earliest **civilizations**. The ancient Egyptians built large cities and many great monuments, including the pyramids of Giza.

Almost 1,400 years ago, people from the Arabian Peninsula invaded Egypt. After that, most of the people of Egypt began to speak Arabic. Most of them also accepted the religion of Islam. But a group called the Copts kept their native beliefs. The Copts belong to one of the oldest Christian churches in the world.

For much of Egypt's history, foreigners ruled it. Since 1952 Egyptians have governed themselves. One of Egypt's great achievements was the building of the Aswan High Dam on the Nile River. Egypt also controls the Suez Canal, a major transportation route. Egypt is considered a leader among the Arab states. And many of the greatest Arab writers and scholars are from there.

But Egypt has faced a number of problems. The country fought several wars with neighboring Israel. And there has been a great deal of political violence by those wishing to change the government.



SEARCH LIGHT

Most Egyptians today speak
a) Arabic.
b) Aswan.
c) Coptic.

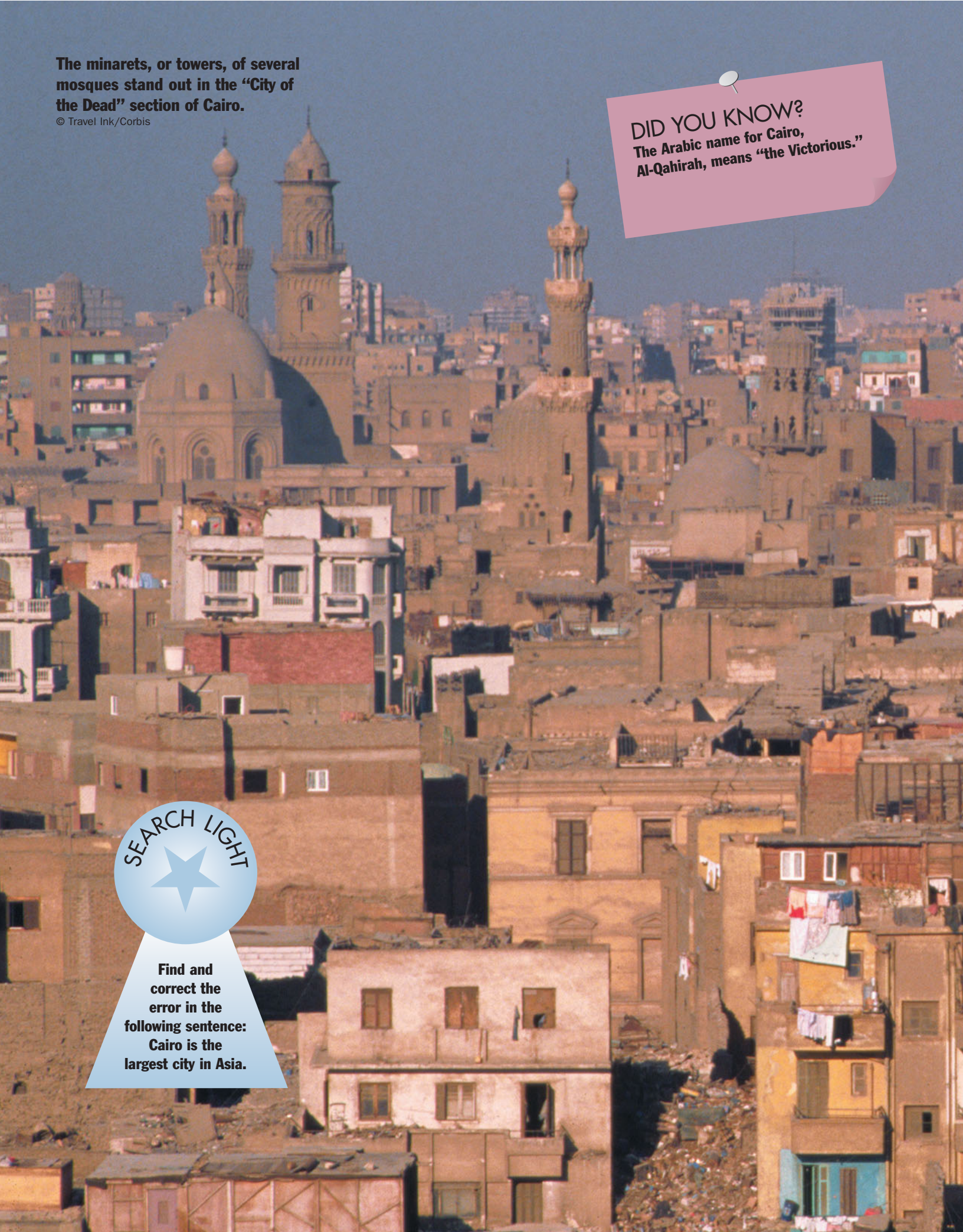
LEARN MORE! READ THESE ARTICLES…

CAIRO, EGYPT (VOLUME 8)

EGYPT: THE PHARAOHS AND THE PYRAMIDS (VOLUME 8)

RIVERS (VOLUME 1)

Answer: a) Arabic.



The minarets, or towers, of several mosques stand out in the "City of the Dead" section of Cairo.
© Travel Ink/Corbis

DID YOU KNOW?

The Arabic name for Cairo, Al-Qahirah, means "the Victorious."

SEARCH LIGHT

Find and correct the error in the following sentence: Cairo is the largest city in Asia.

City of the Nile

Cairo is the largest city in Africa. It is the capital of Egypt and is very old, dating back more than a thousand years. It stands on the banks of the Nile River.

Cairo has old and new sections. The old part of the city is very crowded. Most of Cairo's historic monuments are in this area. Along the eastern side of Cairo is the "City of the Dead." This area is the burial place of early religious leaders and **sultans**. But it's also home to hundreds of thousands of Egyptians who live in and around the tombs. The new part of Cairo faces the Nile River. It has broad streets with modern apartment buildings, skyscrapers, government buildings, theaters, and shops.



Cairo and the Nile River.
© Robert Holmes/Corbis

Shopping can be an exciting experience in Cairo. Khan al-Khalili is one of the world's oldest markets. It was set up more than 600 years ago. You'll find other markets selling things made of gold, silver, and copper. There are also places where you can get clothes, rugs, spices, and leather goods.

Cairo is known for its museums as well. The Egyptian Museum has the famous treasures of King Tutankhamen. The Museum of Islamic Art has many beautiful items made of wood, brass, and glass from different periods of Egypt's long history.

On the east side of Cairo are the Muqattam Hills. If you climb up there, you can look across the Nile to the Great Pyramids of Giza.

LEARN MORE! READ THESE ARTICLES…
EGYPT: CULTURAL CENTER, PAST AND PRESENT (VOLUME 8) • RIVERS (VOLUME 1)
ANWAR EL-SADAT (VOLUME 4)

Answer: Cairo is the largest city in Africa.

Egypt's Gift

There's one country that depends almost entirely on the river that flows through it. That country is Egypt, and the river is the Nile.

Life would be **drastically** different in Egypt if there were no Nile River. The river is the source of all the water used for farming in Egypt. That is why people call Egypt the "gift of the Nile."

People farm on the banks of the river. Two of the most important things they grow are rice and cotton. Egyptian cotton is one of the finest cottons in the world.

It rains very little in Egypt. Where it does, it rains not much more than seven inches a year. There are very dry deserts on both sides of the Nile River. The plants you will find there are mostly thorny bushes and desert grass.

Long ago even Egypt's seasons depended on the river. There were just three seasons. *Akhet* was when the river was flooded. During *peret* the land could be seen after the flood. And *shomu* took place when the river's waters were low.

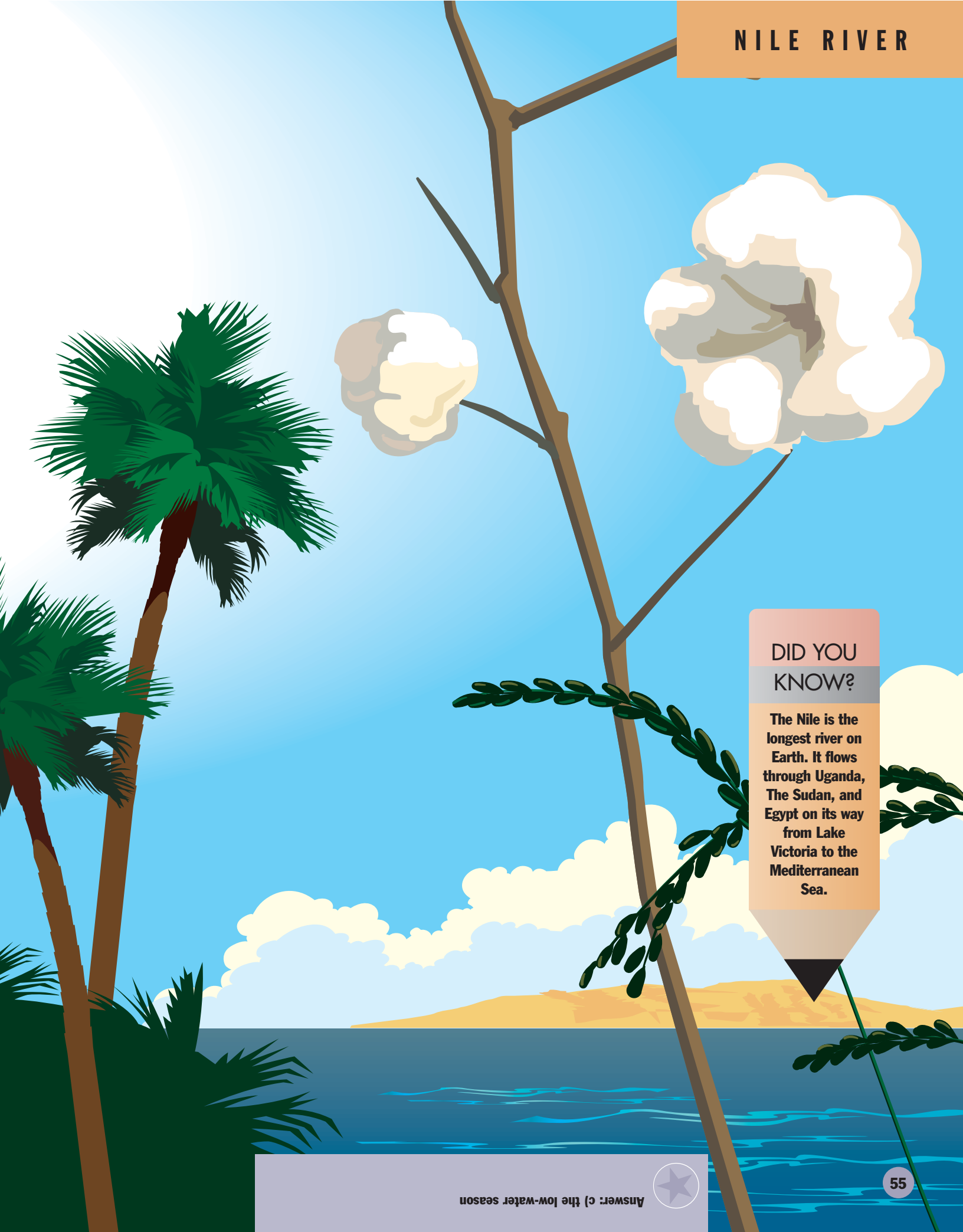
The Nile River is **teeming** with different kinds of fish. The most common is the Nile perch. The river is also an important waterway. Canals, or man-made streams, act as a highway **network** for small boats and ships during the flood season.

After its long journey across North Africa, the Nile empties into the Mediterranean Sea.

LEARN MORE! READ THESE ARTICLES…
AMAZON: THE RAINFOREST RIVER (VOLUME 9)
EGYPT: CULTURAL CENTER, PAST AND PRESENT (VOLUME 8) • RIVERS (VOLUME 1)

SEARCH LIGHT

Which of the following descriptions matches the term *shomu*?
a) gift of the Nile
b) the flooding season
c) the low-water season
d) the season after the flood



DID YOU KNOW?

The Nile is the longest river on Earth. It flows through Uganda, The Sudan, and Egypt on its way from Lake Victoria to the Mediterranean Sea.

Answer: c) the low-water season

Joining Two Seas for a Shortcut

The Suez Canal is one of the most important waterways that people have ever made. The **canal** is located in Egypt. It joins the Mediterranean Sea and the Red Sea and separates the continents of Africa and Asia. It offers the shortest route for ships sailing between Europe and the lands on the Indian and western Pacific oceans, such as Australia and large parts of Asia. Before the canal was built, ships traveling between these parts of the world had to sail all the way around Africa.

Beginning about 3,900 years ago, people dug several canals roughly in the area of the Suez Canal. But none of them joined the Mediterranean and Red seas directly. The Suez Canal was created by joining a series of lakes across the **Isthmus** of Suez to form one long water passage between the two seas.



Watching a ship pass through the Suez Canal.
© David & Peter Turnley/Corbis

The Suez Canal has eight major bends. In some places it has been widened to form double channels called "bypasses." These allow ships traveling in opposite directions to pass each other. In the canal ships travel in groups and follow rules to prevent accidents. Each ship moves at a set speed, leaving a fixed gap between it and the next ship in the group. This keeps the ships from knocking against each other. A tugboat follows each large ship. The entire trip takes between 12 and 18 hours.

On average, 50 ships cross through the Suez Canal each day. Nearly 20,000 trips are made in a year. Most of the vessels using the canal are small tankers and cargo ships. But some passenger liners and warships also use the waterway.

LEARN MORE! READ THESE ARTICLES…
EGYPT: CULTURAL CENTER, PAST AND PRESENT (VOLUME 8)
MEDITERRANEAN SEA (VOLUME 1)
PANAMA CANAL, PANAMA (VOLUME 9)

SEARCH LIGHT

Fill in the blanks: The Suez Canal joins the _____ Sea with the _____ Sea.



Cargo ships like this one make up a large part of the traffic in the Suez Canal.
Hubertus Kauns/Superstock

DID YOU KNOW?

By taking the Suez Canal shortcut, a ship traveling from London, England, to Bombay, India, cuts more than 5,000 miles off its trip.

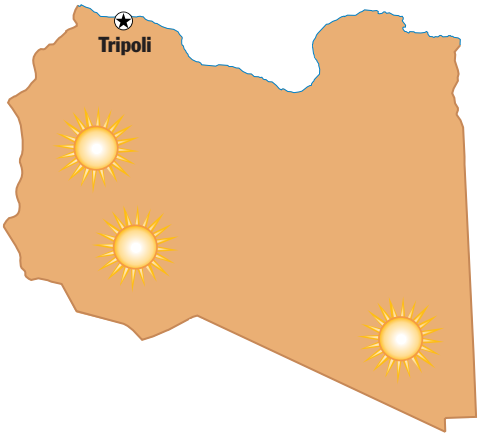
Answer: The Suez Canal joins the Mediterranean Sea with the Red Sea.

Oil Country of Africa



Libya was once a poor country. Then in 1959 oil was discovered in the desert. This made Libya one of the richest countries in North Africa. Some of the largest **petroleum** deposits in the world are in Libya. The capital city of Libya is Tripoli. It is located on the coast of the Mediterranean Sea and is one of Libya's major ports.

Libya has three main regions: the Sahara, Tripolitania, and Cyrenaica. The largest is the desert land of the Sahara, which is one of the driest places on Earth. There are very few plants in the Sahara. But date palms grow in the oases, such as that found around the town of Sabha. An oasis is a **fertile** place in the desert where water can be found. Most Libyans live in Tripolitania, in the northwest. Many of the people keep sheep and goats. They also grow barley, wheat, tobacco, dates, figs, grapes, and olives. In Cyrenaica, in the northeast, the Akhdar Mountains and some oases are the main features.



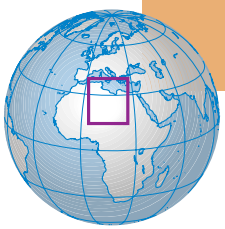
Many people in Libya identify themselves with traditional tribes, or *qabilah*s. The Berbers, the original people of Libya, were mostly coastal farmers. Today, however, most Libyans have a mixed Berber and Arabic **heritage**.

Libya became an independent country in 1951. It was ruled by a king until 1969. In that year a group of army officers led by Muammar al-Qaddafi took control of the country. Many people outside Libya have criticized Qaddafi for supporting terrorists and using his army to attack other countries.

LEARN MORE! READ THESE ARTICLES…
DESERTS (VOLUME 1) • OASIS (VOLUME 1) • TRIPOLI, LIBYA (VOLUME 8)

SEARCH LIGHT

Libya has been a much wealthier country since
a) oil was discovered.
b) gold was discovered.
c) water was discovered.



DID YOU KNOW?

The highest temperature ever recorded on Earth was measured at Al-Aziziyah, Libya. One day in September 1922, the temperature soared to 136° F.



A lake lined with palm trees forms an oasis in the Libyan desert.
Doug McKinlay/Lonely Planet Images

Answer: a) oil was discovered.



A wide street lined with palms leads into the city of Tripoli.
© Jean-Marc Charles—Corbis/Sygma

SEARCH LIGHT

Which answer below lists some of the peoples who occupied Tripoli in order from earliest to most recent?
a) Phoenicians, Romans, Arabs, Turks
b) Romans, Spanish, English, Turks
c) Turks, Romans, Phoenicians, Spanish

Ancient Walled City

Libya's capital city is Tripoli. It lies along the coast of the Mediterranean Sea in North Africa. It is the nation's largest city and chief seaport.

In ancient times the city was called Oea. It was one of three cities in the region that were founded by the Phoenicians more than 2,500 years ago. The other two cities were Sabratha and Leptis Magna. The cities were later ruled by the Romans, who called them Tripolitania (which means "three cities"). Walls were built around each of the three cities to protect them from attackers. These high walls survived many invasions. Eventually, the walls of Sabratha and Leptis Magna were destroyed by invading armies. Tripoli grew more important as a result.



Playing soccer in front of the former royal palace in downtown Tripoli.
AP/Wide World

In the 7th century, Arab Muslims captured Tripoli. They added a wall on the sea side of the city. Three huge gates were built into the old wall for entering the town.

The ancient walls of Tripoli are still standing. But the city spread beyond the old walls long ago. Today the walled part of the city is called the old quarter or the medina. The modern city lies outside the walls.

The medina has narrow streets and is known for its **bazaars**. It also has a number of historic **mosques**. Many of these mosques date from the long period of Turkish rule, from 1551 to 1911. The most prominent structure is the Red Castle, a huge Spanish-style castle from the 1500s. Today it contains a museum about the city's history. From the castle one also gets an excellent view of the whole city, old and new.

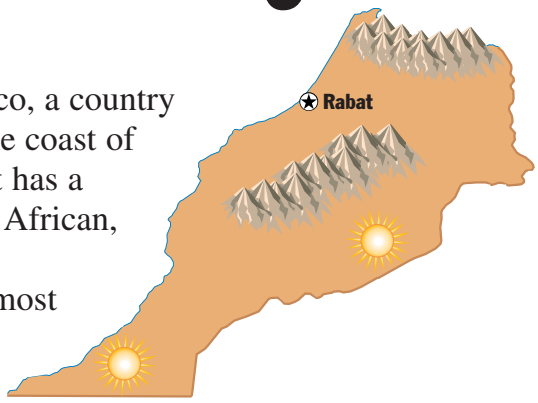
LEARN MORE! READ THESE ARTICLES…
ISLAM (VOLUME 5) • LIBYA (VOLUME 8)
ROME, ITALY (VOLUME 6)

DID YOU KNOW?
Soccer is very popular in Libya. In 2002 Tripoli hosted the Italian Supercup. It was only the second time that the competition was held outside Italy.

Answer: a) Phoenicians, Romans, Arabs, Turks

Built for Victory





Rabat is the capital city of Morocco, a country in North Africa. It is located on the coast of the Atlantic Ocean. Modern Rabat has a rich mixture of cultures reflecting African, Arab, Islamic, and French influences.

Rabat has ancient roots. The city started out almost 900 years ago as a camp for Muslims who wanted to sail across the sea to fight in Spain. Later, the camp was named Ribat al-Fath, which means "camp of victory." A wall was built to protect the camp. Within the wall the city of Rabat began to grow.

Large parts of the old wall are still standing. Within them are the old town and the Jewish quarter. The Oudia Gate and the Tower of Hassan also stand as impressive monuments of the past.

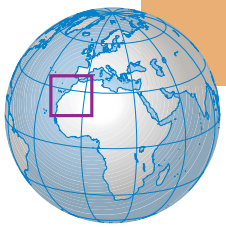
France and Spain each controlled sections of Morocco for part of the 20th century. The country gained its independence in 1956. Rabat now houses government offices, universities, and art schools. The king of Morocco lives in Rabat for part of the year.

It's a short ride by road or rail to Casablanca, which is Morocco's largest city and its chief port. Like Rabat, it was once a base for pirates who attacked European ships. The Portuguese put a stop to the piracy in 1468. They later built a new town in the area called Casa Branca. The French called it Maison Blanche, and the Spanish called it Casablanca. All these names mean the same thing: "white house."



LEARN MORE! READ THESE ARTICLES…
FRANCE (VOLUME 6) • ISLAM (VOLUME 5) • TRIPOLI, LIBYA (VOLUME 8)

Rabat, MOROCCO



DID YOU KNOW?

The name Rabat comes from the Arabic word *ribat*. That word is often translated as "camp" but can also mean "monastery." In North Africa it refers to a place were Muslim soldiers would gather either to study or to prepare for holy war.

A wall built hundreds of years ago still surrounds part of the city of Rabat.
© Nik Wheeler/Corbis

Answer: The king of Morocco lives in Rabat for part of the year.



DID YOU KNOW?

The name "Sudan" comes from the Arabic term *bilad al-sudan*, which means "land of the blacks." This term was once used to describe all settled African lands south of the Sahara (a large desert in northern Africa).

Sudanese men rest on a wall near their camels, which are considered a symbol of wealth. Many people in The Sudan raise camels for their milk and meat as well as for transportation.

© Jonathan Blair/Corbis



Giant of Africa





The largest country in Africa is The Sudan. It is the tenth largest country in the world. The Sudan is located in northeastern Africa. Khartoum is the capital city. It sits at the point where the Blue Nile and White Nile rivers join together to form the mighty Nile River. The Sudan is one of the hottest places in the world. In Khartoum temperatures higher than 100° F may be recorded during any month of the year.

There are 19 major **ethnic** groups in The Sudan. More than 100 languages and **dialects** are spoken in the country. Many of the people either farm or raise camels and cattle. Roughly 10 percent of the people live as **nomads**. Among all groups poetry and song are respected art forms. Both often reflect the country's mixed Arab and African **heritage**.

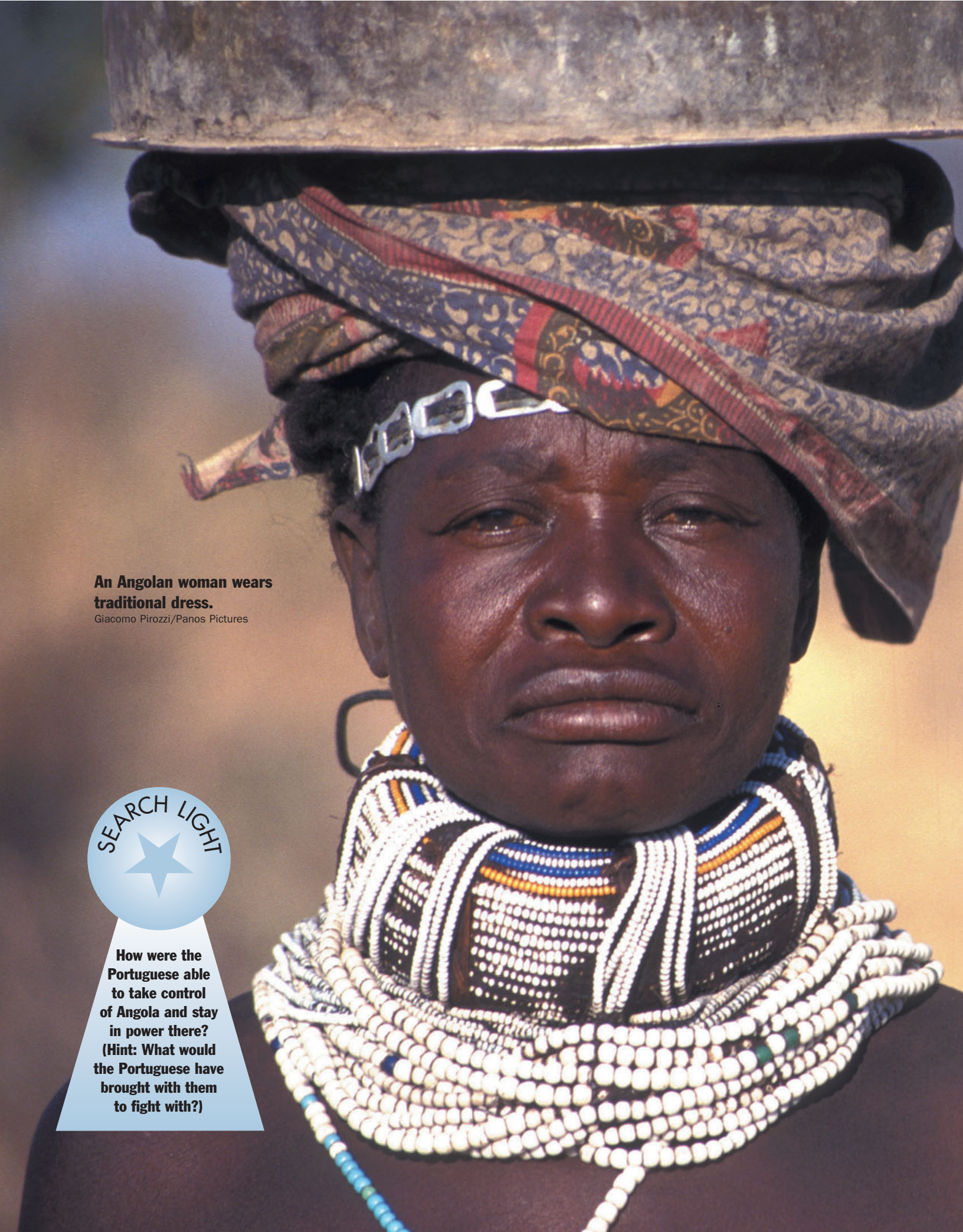
In 1956 The Sudan gained its independence from the United Kingdom. But fighting broke out almost immediately. The people living in southern Sudan opposed the new government, which was controlled by northerners. The southerners are typically black Africans who practice traditional African religions or Christianity. The northerners are typically of mixed ethnic origins. They speak a version of Arabic and practice Islam. The **civil war** continued until 1972, when the southerners were given control of their local government. But war broke out again in 1983. In 2005 the two sides signed an agreement to stop the war, but fighting continued in some parts of the country.



Fill in the blanks: Fighting in The Sudan has been mainly between people living in the ____ and people living in the _____.

LEARN MORE! READ THESE ARTICLES…
CAMEL (VOLUME 12) • NILE RIVER (VOLUME 8) • SAND (VOLUME 1)

Answer: Fighting in The Sudan has been mainly between people living in the north and people living in the south.



An Angolan woman wears traditional dress.
Giacomo Pirozzi/Panos Pictures

SEARCH LIGHT

How were the Portuguese able to take control of Angola and stay in power there? (Hint: What would the Portuguese have brought with them to fight with?)

Land of Oil and Diamonds





Angola is a large country on the southwestern coast of Africa. The Atlantic Ocean is its western boundary. Four countries shape its borders on land. Its capital is Luanda, a large city on the coast.

DID YOU KNOW?
Angola is rich in tropical woods such as mahogany, rosewood, and black ebony. These woods are used to make fine furniture.

Most of Angola is a high **plateau** covered by savannas, which are open grasslands with scattered trees. Roaming this land are leopards, lions, hyenas, elephants, and hippopotamuses. You may also see giraffes, zebras, and monkeys. With such rich wildlife, Angola has many national parks and nature **reserves**. But some of the animals are in danger of disappearing because of hunting and other reasons. These animals include elephants, gorillas, chimpanzees, and black rhinoceroses.

The two largest groups of people in Angola are the Ovimbundu and the Mbundu. These two groups, and others, speak different languages that together are called Bantu languages. Almost all of the people also speak Portuguese, the country's official language.

Angola has many natural resources. Two of them—oil and diamonds—are major parts of the country's **economy**. Angola sells these products to other countries. But more people work in farming than in any other job. They grow **cassava**, corn, sugarcane, bananas, and coffee. In the southwest they raise cattle.



Portuguese explorers reached Angola in 1483. Over time the Portuguese developed a **colony**. They ruled for almost 500 years. During much of this time the Portuguese sent millions of Africans away from the colony to work as slaves. After years of fighting the Portuguese, Angola finally won its independence in 1975. But afterward the country struggled off and on with fighting inside its borders.

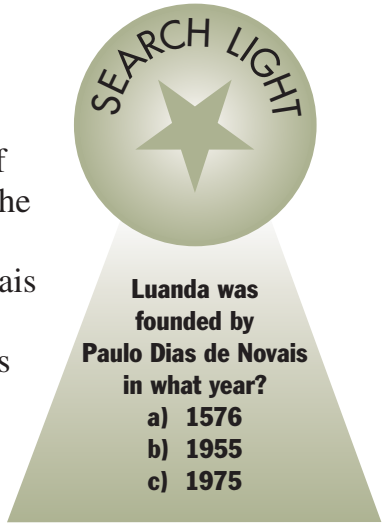
LEARN MORE! READ THESE ARTICLES…
DIAMONDS (VOLUME 1) • LUANDA, ANGOLA (VOLUME 8)
PORTUGAL (VOLUME 6)

Answer: In the 15th century, when Portugal conquered Angola, the Bantu-speaking peoples didn't have guns or cannons. The Portuguese had both.

A Portuguese Legacy

Luanda is the capital of Angola, a country in southwestern Africa. Luanda is in the northern part of Angola. It is the country's largest city. Located near the Atlantic Ocean, Luanda is a busy **seaport**.

Luanda was set up in 1576 by Paulo Dias de Novais from Portugal. The king of Portugal sent him to take over African land. Portugal ruled Angola for hundreds of years. Slaves were sent by boat to the Americas from Luanda. Angola finally became independent from Portugal in 1975.



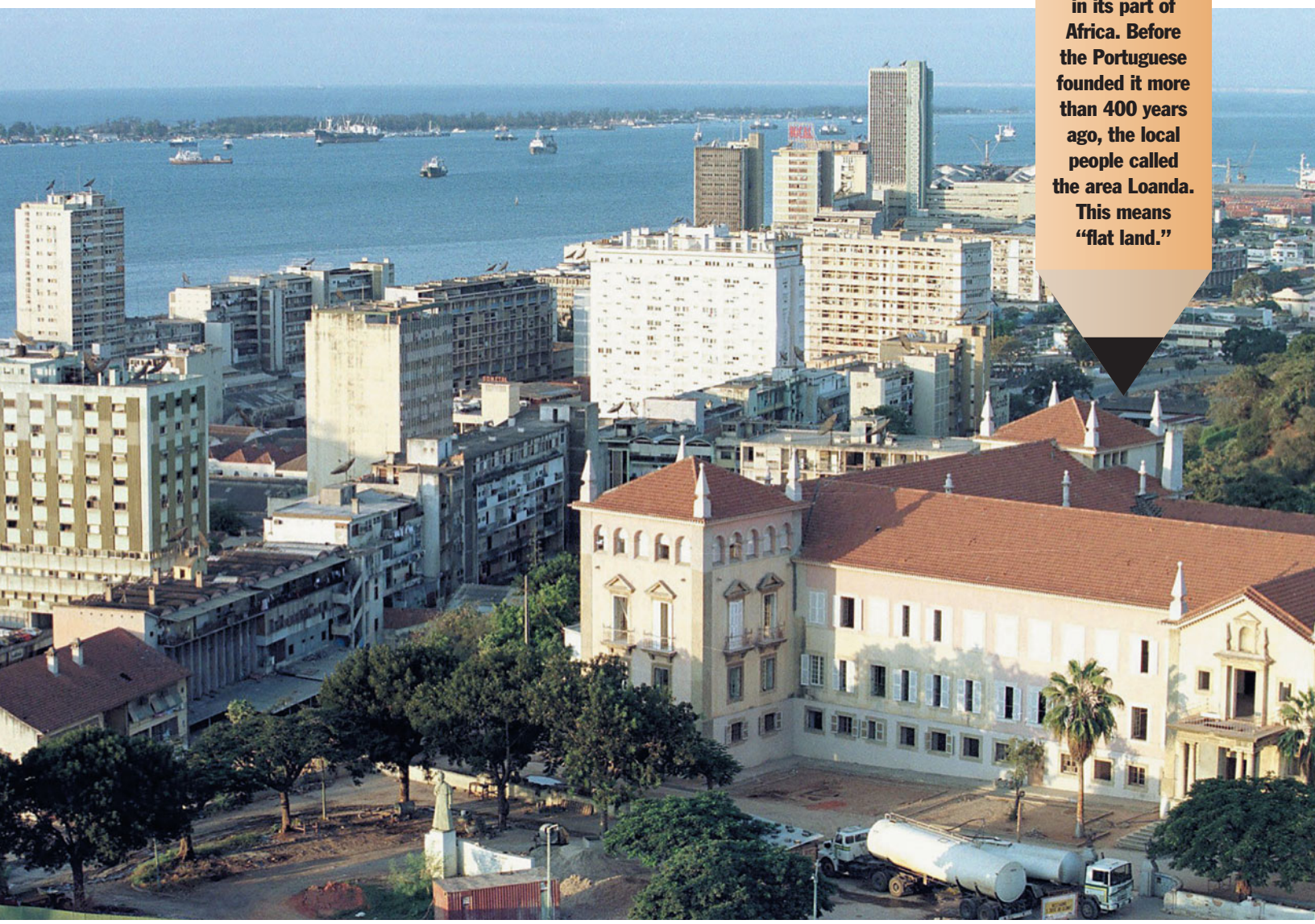
Petroleum, a source of oil, was found in the area in 1955. The Angolans sell this petroleum to other countries. This brings money to the city. Because of this, Luanda now has modern skyscrapers and wide streets. But there was a war in Angola from the middle of the 1970s until 2002. This caused a lot of **poverty** and other problems in the city.

If you visit the city, you'll be able to see the old fortress of São Miguel. You will also see the city's many churches. The churches are a **legacy** of Luanda's Portuguese past. There is also a museum of slavery in the city. Luanda has plenty of supermarkets, shops, and open-air markets. Roque Santeiro is always open and is one of the largest markets in all of Africa. You can buy almost anything there.

LEARN MORE! READ THESE ARTICLES…
ANGOLA (VOLUME 8) • OIL (VOLUME 2) • PORTUGAL (VOLUME 6)

DID YOU KNOW?

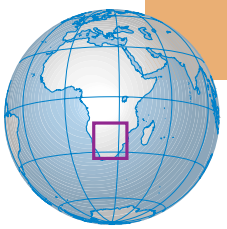
Luanda is one of the oldest cities in its part of Africa. Before the Portuguese founded it more than 400 years ago, the local people called the area Loanda. This means "flat land."



Luanda is a modern city with a busy seaport.
© Adil Bradlow—Trace Images/The Image Works

Answer: a) 1576


SEARCH LIGHT
Why did Botswana become one of Africa's wealthiest countries?



The Jewel of the Kalahari



Botswana was once one of the poorest countries in Africa. It used to be called Bechuanaland. After gaining independence from Great Britain in 1966, it was renamed Botswana. The new name came from that of the main group of people living there, the Tswana, or Batswana. In 1967 large **deposits** of diamonds were discovered in the region. Suddenly Botswana was one of Africa's richest countries.



Botswana is located in southern Africa. Its capital city is Gaborone. Most of the country's area is a dry region called the Kalahari. This is known as the sandveld, or "thirstland." The thirstland is different from a true desert because it has some grass and trees. In eastern Botswana there are rocky ranges of hills.

In the northwest is the Okavango River, which flows in from Namibia. It has been called "the river that never finds the sea" because it ends in Botswana instead of flowing into the ocean. The place where it ends is called the Okavango **delta**. This huge swampy area has thick clumps of **papyrus** and much wildlife, including lions, hippopotamuses, and zebras. Many of the animals are protected in the Moremi Wildlife Reserve.

Botswana has forests in the north and east. Some of the trees produce fruits such as the marula or nuts such as the mongongo, which are important to the diet of the local people. Their diet also includes beans, meat, and **porridge** made with sorghum or corn. Some people eat dried caterpillars as a snack!

DID YOU KNOW?

The San people of the Kalahari speak an unusual language. It's called a "click language" because it has many clicking sounds as parts of words. It is nearly impossible to speak that language if you don't learn it while you are growing up.

LEARN MORE! READ THESE ARTICLES…
DESERTS (VOLUME 1) • DIAMONDS (VOLUME 1)
SOUTH AFRICA: DIAMOND COUNTRY (VOLUME 8)

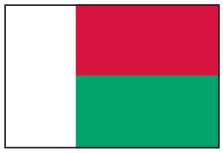
Many people in Botswana live in small towns and villages such as this one in the Okavango delta region of the country.
© Yann Arthus-Bertrand/Corbis

Answer: Diamonds were discovered in Botswana.


SEARCH LIGHT
Where did the first people to live in Madagascar come from?



Island Sanctuary



The Republic of Madagascar lies 250 miles off the southeastern coast of Africa in the Indian Ocean. It occupies the fourth largest island in the world; only Greenland, New Guinea, and Borneo are larger. The capital of Madagascar is Antananarivo. It is located in the center of the country.



Even though Madagascar is so close to Africa, its people are not mainly African. The first people to live on the island were Malagasy people from Indonesia, more than 3,000 miles to the east. They arrived in about AD 700. People from Africa and other parts of Asia came later. The people of Madagascar are still called Malagasy, but today their culture is a unique mix of Asian and African influences.

About half of the Malagasy follow Christianity. Most of the rest practice a traditional religion that has been passed down through the years. These people believe that the dead can reward or punish the living. They bury the dead in richly decorated tombs. They spend more time, money, and care on building tombs than they do on their houses.

For thousands of years Madagascar was covered with forests. But over time most of the trees have been cut down to make room for rice fields. The loss of the forests has been difficult for many of the animals of Madagascar—especially the lemurs. Lemurs look something like monkeys with long bushy tails. They are found in the wild only in Madagascar and on nearby islands. Madagascar also has many unique kinds of birds, chameleons, and butterflies. There are about 800 types of butterflies alone!

DID YOU KNOW?

The coelacanth, a fish thought to have been extinct for 60 million years, was found in the waters near Madagascar in the 1900s. Such animals are sometimes called "living fossils" because their appearance and other physical traits have not changed for millions of years.

LEARN MORE! READ THESE ARTICLES…
BUTTERFLIES (VOLUME 11) • INDONESIA (VOLUME 7)
LEMURS (VOLUME 12)

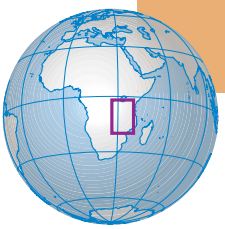
Rice fields line a hillside in Madagascar.
© Chris Hellier/Corbis

Answer: The first people to live in Madagascar came from Indonesia.



Many homes are clustered along the shores of Lake Malawi, a large deep lake in eastern Malawi. It takes up nearly a fourth of Malawi's total area.

© Anthony Bannister—Gallo Images/Corbis



Lakeside Country



Malawi is a long narrow country in southern Africa. Its capital is Lilongwe. The country's name comes from the Maravi, a Bantu-speaking group of people. They invaded the area and settled there about 600 years ago. When the British ruled Malawi, it was called Nyasaland. The name was changed to Malawi in 1964, when the country became independent.

DID YOU KNOW?
The flag of Malawi has three colors: black, red, and green. The black stands for the African people of Malawi. The red stands for the blood of those who died to make Malawi a free country. And the green stands for the natural beauty of the country.

The landscape of the country is made up of wide **plateaus**, deep valleys, and mountains. A large lake stretches along much of the eastern part of Malawi. The people who live in the country call it Lake Malawi, but people in other countries call it Lake Nyasa. It is one of the world's deepest lakes. There are about 200 kinds of fish in this lake. Many of these fish are not found anywhere else in the world.

There are many different kinds of plants and animals in Malawi. There are antelope, buffalo, elephants, leopards, lions, rhinoceroses, and zebras. These animals are found mostly in special parks. Much of the country is covered by grassy **savannas**, but there are also forests and woodlands. Eucalyptus and pine trees have been planted to provide Malawi with wood and paper products.



Most of the people in Malawi today are farmers. They grow corn, beans, peas, and peanuts. There are big tea **plantations** as well. Tobacco is grown in the middle of the country. Malawi sells most of its tobacco to the United Kingdom. Tea, sugar, and cotton are also sold to other countries.

LEARN MORE! READ THESE ARTICLES…
EUCALYPTUS (VOLUME 10) • FISH (VOLUME 11)
LILONGWE, MALAWI (VOLUME 8)

Answer: Lake Malawi is one of the world's deepest lakes.



SEARCH LIGHT

Find and correct the error in the following sentence: Lilongwe is where coffee, the country's main crop, is sold.

On Malawi's Fertile Plains

The capital of Malawi, a country in southern Africa, is Lilongwe. It is largely a planned city. It was not founded until 1947, when it was established as a trading center. The city is in the central part of the country. In the late 1960s the leaders of Malawi decided to try to develop this central area of the country further. As part of their plan, they moved the capital from Zomba to Lilongwe in 1975.

DID YOU KNOW?
Although it is Malawi's capital, Lilongwe is only the second largest city in the country. Blantyre, in the south, is the largest city in Malawi and also the main center of industry and commerce.

In addition to being a government center, Lilongwe provides a market for local farmers to sell their crops. Some of the country's best farmland surrounds Lilongwe. This region produces tobacco, the main crop that Malawi sells to other countries. In Lilongwe you can visit the tobacco auction floors, where large amounts of tobacco are sold.

The city has two main sections, the old city and Capital Hill. The old city has the central market, cafés, and restaurants. People go there regularly to shop. The newer part of the city, on Capital Hill, has government buildings, hotels, and **embassies**. Between the two sections of the city is a nature sanctuary, which provides protection for the native animals and plants. The sanctuary covers about 370 acres and is home to many different kinds of birds.

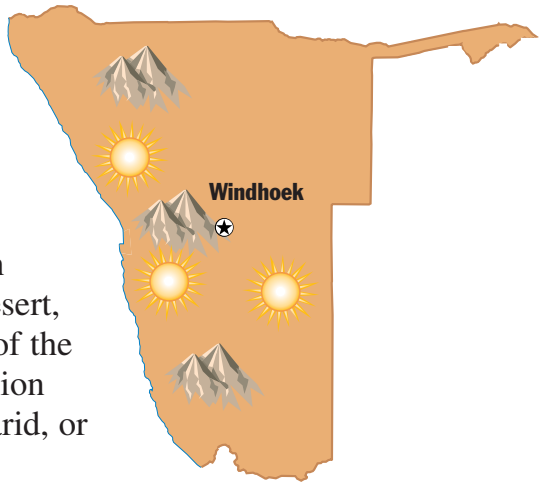
Because of its central location, many people travel through Lilongwe on their way to other parts of the country. The city has an international airport. It also has rail connections to Salima in the east and the Zambian border on the west.

LEARN MORE! READ THESE ARTICLES…
BIRDS (VOLUME 11) • HARARE, ZIMBABWE (VOLUME 8) • MALAWI (VOLUME 8)

Tobacco is sold at an auction in Lilongwe. The city is the center of Malawi's tobacco processing and trading industries. Malawi is one of Africa's top tobacco producers.
David Else/Lonely Planet Images

Answer: Lilongwe is where tobacco, the country's main crop, is sold.

A Beautiful, Arid Place





Namibia is a country in southwestern Africa. It is named for the Namib Desert, which covers much of the west side of the country. The desert is at least 80 million years old. It is huge and empty. It is one of the most arid, or dry, places on Earth.

Namibia is a young country. South Africa controlled Namibia until March 1990, when Namibia gained its independence. Windhoek, in the center of the country, is Namibia's capital city. English is the official language of Namibia. But most of the people usually speak African languages.

Namibia's landscape is beautiful and varied. It has a coastline, deserts, mountains, and canyons. It is usually very dry and hot. In the summer it can get as hot as 120° F in the desert. Sometimes Namibia doesn't have any rain for long periods of time. Most of Namibia's rivers flow only after strong rains. But in the northeast there are tropical swamplands.

Namibia has plenty of wildlife. Etosha National Park is one of the largest parks for wild animals in the world. It is a popular attraction for **tourists**. Antelope, giraffes, impala, lions, leopards, rhinoceroses, and zebras can all be found in the park. It also has more than 600 bird species.

Mining is very important to Namibia's economy. Among the country's most valuable minerals are diamonds, copper, uranium, silver, and gold. But not many people are needed to work in mining. Even though much of the country is desert, more than a third of Namibians are farmers.

SEARCH LIGHT

Which of the following sentences is true?
a) All the land in Namibia is desert.
b) The Namib Desert is very old.
c) Most of Namibia gets plenty of rain.

LEARN MORE! READ THESE ARTICLES…
BIRDS (VOLUME 11) • DESERTS (VOLUME 1)
WINDHOEK, NAMIBIA (VOLUME 8)

Mountains and scattered trees break up the vast desert landscape in parts of Namibia.
© Roger De La Harpe—Gallo Images/Corbis



DID YOU KNOW?

About 650,000 fur seals breed along the coast of Namibia every year. They'd better like the fog, because the coast is covered with fog about 160 days of the year.

Answer: b) The Namib Desert is very old.



DID YOU KNOW?

The country's first university, the University of Namibia, was founded in Windhoek in 1992.

Namibia's Windy Corner

Windhoek is the capital city of Namibia, a country in southern Africa. The city lies at a height of more than 5,000 feet. It is surrounded by a ring of hills. These hills protect it from the most violent of the dry winds blowing in from the Kalahari Desert to the east and the Namib Desert to the west. The city's name comes from a German word that means "windy corner." Windhoek is free of fiercely blowing winds for less than four months of the year.

The Herero and Khoekhoe peoples were among the first settlers in the region. Before the Europeans arrived, the city was called Aigams. This name means "hot water" and referred to the **hot springs** in the area. Germany claimed the town for itself in 1890. South Africa took over the region, then known as South West Africa, 25 years later. When Namibia became independent in 1990, Windhoek was made the nation's capital.

SEARCH LIGHT

Among the area's first residents were
a) Germans and South Africans.
b) Aigams and Namib.
c) Herero and Khoekhoe.

Windhoek is also the country's chief economic center. It sits in the middle of the grazing lands of the Karakul sheep. The skins of very young Karakul lambs are processed and transported by a number of furriers in Windhoek. This business employs many people in the city.



Herero women in traditional dress, Windhoek.
© Kerstin Geier—Gallo Images/Corbis

Windhoek has several interesting places and buildings to visit. The Alte Feste (Old Fort), built by the Germans, is one of the oldest buildings in the city. It is now a history museum. Christuskirche is an attractive church that was also built during German colonial times. And the city's St. George's Cathedral is the smallest functional **cathedral** in southern Africa.

LEARN MORE! READ THESE ARTICLES…
GERMANY (VOLUME 6) • NAMIBIA (VOLUME 8) • SHEEP (VOLUME 12)

These buildings on a street in Windhoek display a mixture of styles, some modern and some from the time when Germany controlled the town.
© Royalty-Free/Corbis

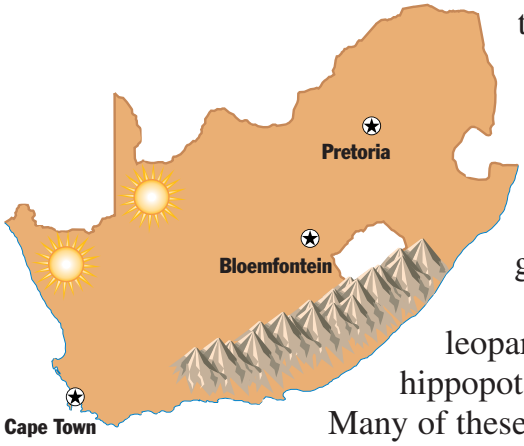
Answer: c) Herero and Khoekhoe.

Diamond Country



South Africa is the southernmost country on the African continent. The Atlantic Ocean and the Indian Ocean lie to its south. Johannesburg is the country's business center and one of its largest cities. South Africa has three capital cities. Pretoria is the **administrative** center, while Cape Town is where the **legislature** meets. The judicial capital, Bloemfontein, is the center of the nation's court system.

South Africa is a beautiful country with many mountains. The tallest peaks are nearly 11,000 feet high. A large part of the country lies on a **tableland** called the Karoo. The rock formations of the Karoo are more than 200 million years old.

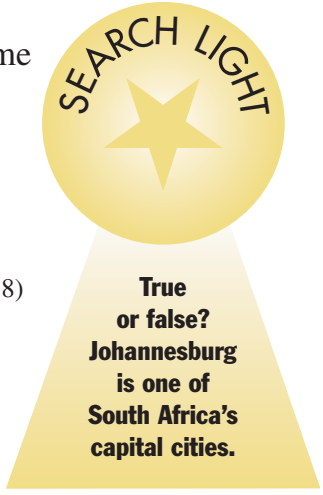


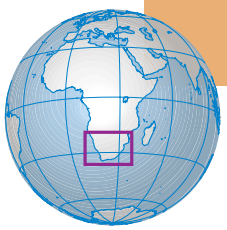
Because South Africa's climate is dry, people have to save water. The limited rainfall supports **savannas** and, in higher areas, grasslands with few trees. The country has more than 20,000 kinds of flowering plants. But only scrub and scattered bush grow in the dry Karoo.

The country's many wild animals include lions, leopards, elephants, and rhinoceroses. There are also hippopotamuses, baboons, antelope, jackals, and buffalo. Many of these animals can be seen in Kruger National Park, a large nature preserve set up to protect wildlife.

Mining is a major industry in the country. Half of the world's known gold deposits are in South Africa. Diamonds and gold were discovered in the area in the late 1800s. South Africa later became wealthy by selling these products to other countries. It's the world's largest producer of the metals platinum, chromium, and gold.

LEARN MORE! READ THESE ARTICLES…
DIAMONDS (VOLUME 1) • SOUTH AFRICA: A PEOPLE APART (VOLUME 8)
SOUTH AFRICAN CITIES (VOLUME 8)





DID YOU KNOW?

In 1905 the world's largest gem diamond was found in what is now South Africa. The huge stone was cut into more than 100 jewels. The largest, the Great Star of Africa, is now part of the British crown jewels.

Diamond mining and cutting are major industries in South Africa. Here a diamond cutter in Johannesburg uses a lens to examine a partly cut diamond. Each cut must be carefully planned.

© Charles O'Rear/Corbis

Answer: FALSE. Johannesburg is the country's business center, but the three capitals are Pretoria, Cape Town, and Bloemfontein.



DID YOU KNOW?

Mahatma Gandhi led his first political protest in South Africa. Before Gandhi began fighting for India's independence from Britain, he lived for a time in South Africa. He helped the Indians who lived there fight for their rights.

A People Apart

For several hundred years, most of South Africa's people had few freedoms. There are four main groups of South Africans today: black Africans, white Africans, people whose families came from India, and people of mixed origins. The whites make up a fairly small number of the country's people. But for a long time they held all the power. Nonwhites had many of their basic rights taken away.

In the 1650s the Dutch set up the first permanent European settlement in South Africa. The British and Dutch fought for control over the area during the 1800s. In 1910 the British established the Union of South Africa. Black Africans, the **majority** of the population, were not allowed to vote or hold political office.



A restroom reserved for whites only during the time of apartheid in South Africa.
© Dave G. Houser/Corbis

In 1948 the government introduced a policy called apartheid. The word apartheid means "apartness" in the Dutch language of Afrikaans. This policy gave most of the country's land to white people. Black Africans and other nonwhites were forced to live in separate areas and could enter areas where whites lived only if they had a pass. They had separate and worse schools and could hold only certain jobs. They could not vote or take part in government.

One of the leaders in the fight against apartheid was Nelson Mandela. Because of this, the government jailed him from 1962 to 1990. But black Africans continued to support Mandela. The country began to do away with apartheid in 1990. Mandela became South Africa's president in 1994, and he became a symbol of freedom throughout the world. The country's laws now support equal rights for everyone. But South Africa is still recovering from the effects of the many years of apartheid.

SEARCH LIGHT

Find and correct the error in the following sentence: Under apartheid, most of South Africa's land was reserved for nonwhites.

LEARN MORE! READ THESE ARTICLES…
LADYSMITH BLACK MAMBAZO (VOLUME 3) • NELSON MANDELA (VOLUME 4)
SOUTH AFRICA: DIAMOND COUNTRY (VOLUME 8)

President Nelson Mandela celebrates with a choir after signing South Africa's new constitution in December 1996. The constitution promised equal rights for all of the country's people.
© Charles O'Rear/Corbis

Answer: Under apartheid, most of South Africa's land was reserved for whites.



Table Mountain provides a scenic backdrop for Cape Town's fine harbor.
© Charles O'Rear/Corbis

DID YOU KNOW?

Johannesburg is the world's largest city that can't be reached by ships. It is located inland and has no major lakes or rivers. But the area's gold attracted many settlers there in the 1890s even though there was no port.

Mixed Urban Histories

Pretoria, the city of jacarandas, is one of the three capitals of South Africa. In the spring you see the purple blossoms of the jacaranda trees all along the city's streets.

Pretoria is a well-planned city. It was founded in 1855 by Marthinus, son of the Boer statesman Andries Pretorius. The Boers were farmers whose families moved from the Netherlands to settle in South Africa. Pretoria became the **administrative** capital of South Africa in 1910. The city boasts several museums, including the home of the famous Boer statesman Paul Kruger. Several monuments also celebrate the city's Boer past. Pretoria has many parks and the national zoo.

Near Pretoria is Johannesburg, one of South Africa's largest cities. Johannesburg was founded in 1886 after gold was discovered there. It is the country's business center.

Just outside Johannesburg is Soweto. The city was developed under South Africa's former system of apartheid and was only for black people. Under apartheid, blacks and whites were kept separate. Blacks lived under very hard conditions and faced **discrimination**.

No visitor should leave South Africa without seeing Cape Town, near Africa's southern tip. It is known as one of the most beautiful cities in the world. In the oldest area of the city lies Table Mountain. It offers fantastic views of the city. It's also a very windy place and has its own cloud cover, called the Tablecloth. Cape Town is the legislative capital of South Africa. It is where the country's leaders make laws.

The country's highest court meets at Bloemfontein, the judicial capital of South Africa. The city's name means "fountain of flowers," and it's known for its parks and gardens.

SEARCH LIGHT

Soweto was a town set aside for
a) Asians.
b) blacks.
c) whites.

LEARN MORE! READ THESE ARTICLES…
THE NETHERLANDS (VOLUME 6) • SOUTH AFRICA: DIAMOND COUNTRY (VOLUME 8)
SOUTH AFRICA: A PEOPLE APART (VOLUME 8)

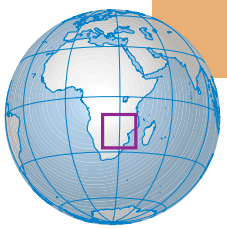
Answer: b) blacks.



DID YOU KNOW?

A musical instrument called the *mbira* has a long tradition among the Shona people of Zimbabwe. It has metal keys attached to a hand-sized board, and it's played with the thumbs and a forefinger. Westerners sometimes call it a "thumb piano."

From Colony to Independent Country







Zimbabwe is a country in southern Africa. For many years it was called Southern Rhodesia. It was named after Cecil Rhodes, who took control of the area for Great Britain. In the late 20th century, the country became fully independent and took the name Zimbabwe. The capital city is Harare.

Most Zimbabweans are black Africans of either the Shona or the Ndebele ethnic group. A small number of the people are white. Although most of the people speak either Shona or Ndebele, English is the official language.

The region spent many years under British colonial rule. In 1965 the small group of white people who ran the country declared it independent. But Britain refused to give up its rule. In 1980 Zimbabwe officially gained independence and **majority rule**. But the country continues to face many internal problems.

Two of Zimbabwe's most interesting geographic features are formed by the Zambezi River. This river flows along Zimbabwe's border with Zambia. At one point the entire river plunges over a steep cliff. This forms one of the world's mightiest waterfalls, Victoria Falls.

Also along this border is one of the world's largest artificial lakes, Lake Kariba. It was created when the huge Kariba Dam was built over the Zambezi River. About a third of Zimbabwe's electric power is generated from **water power** at this dam. Lake Kariba is also a popular fishing spot. Hippopotamuses and elephants live along its shores. And nearby lies the Hwange National Park, one of the last great elephant **sanctuaries** of Africa.

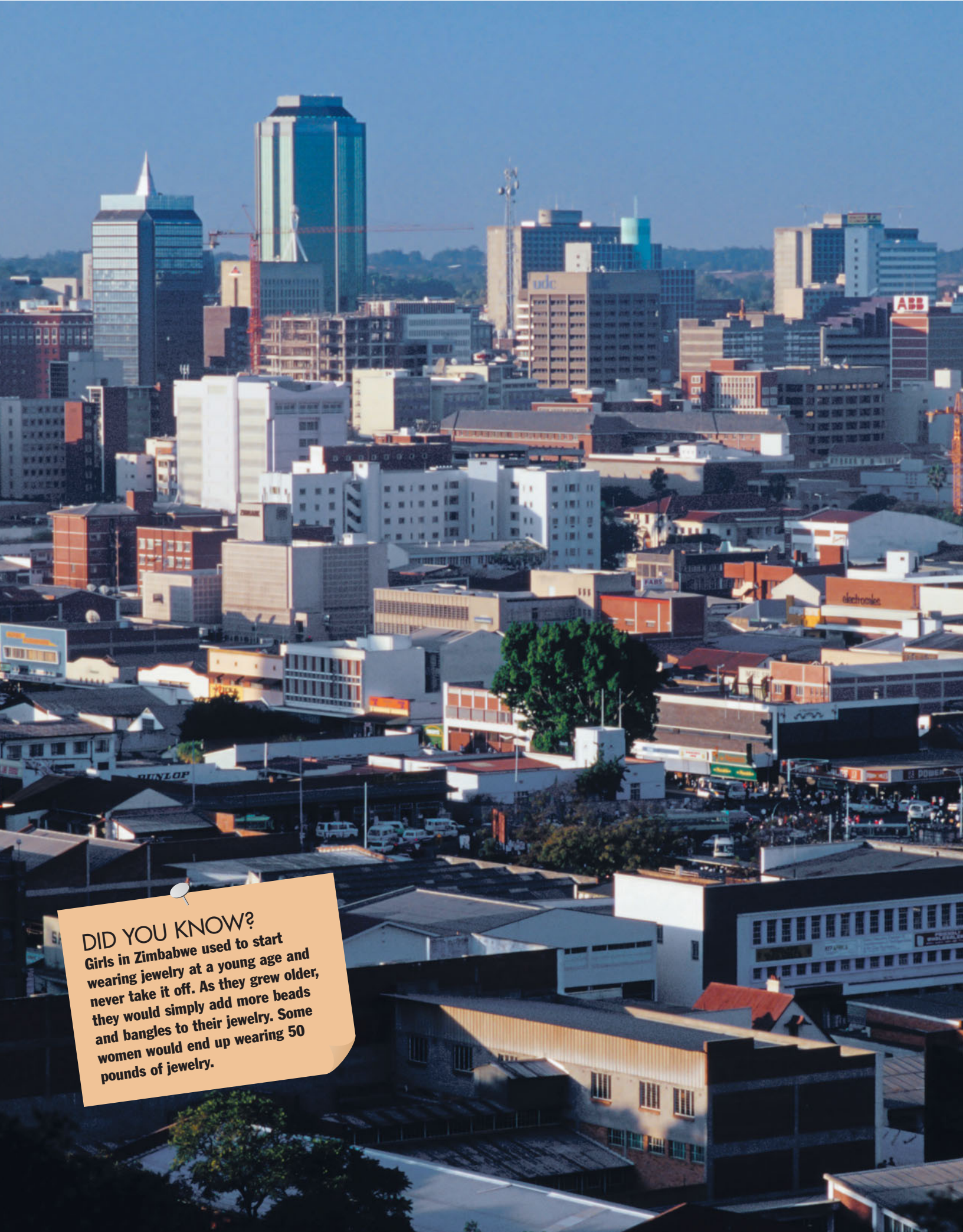
SEARCH LIGHT

Where does about a third of Zimbabwe's electricity come from? (Hint: Think water.)

LEARN MORE! READ THESE ARTICLES…
ENGLAND (VOLUME 6) • HARARE, ZIMBABWE (VOLUME 8)
WATER POWER (VOLUME 2)

The Kariba Dam stretches across the Zambezi River. The statue in the foreground depicts the river god of the local people.
© Roger De La Harpe—Gallo Images/Corbis

Answer: Water power at the Kariba Dam is used to produce about a third of the country's electricity.



DID YOU KNOW?

Girls in Zimbabwe used to start wearing jewelry at a young age and never take it off. As they grew older, they would simply add more beads and bangles to their jewelry. Some women would end up wearing 50 pounds of jewelry.

City in a Garden

Harare is the capital of the African country of Zimbabwe. It lies on a broad high ridge called the Highveld in the country's northeastern garden region. Harare is green with trees and bright with flowers.



Jacaranda trees line the streets of Harare.
Penny Tweedie/Panos Pictures

The city was founded in 1890. It was named Salisbury after Lord Salisbury, the British prime minister. As with much of southern Africa, Zimbabwe came under British rule in the late 1890s. The city developed only after 1899, when a railway line was established from the port of Beira in Mozambique to the east.

There were many industries that were started in Salisbury after World War II. People started moving into this city, and gradually the population grew. The city itself is modern and well planned, with high-rise buildings and tree-lined avenues.

In 1980 the new government of independent Zimbabwe renamed the city Harare. This honored Chief Neharawe, who originally occupied this area with his people. The word Harare means "one that does not sleep" in the Shona language.

Harare is still the center of Zimbabwe's industry and **commerce**. It is the main place where crops from the surrounding farmlands are received and then distributed. There are also important gold mines nearby.

The University of Zimbabwe is located in Harare. The city is also home to the National Archives, which displays historical documents. At the National Gallery of Zimbabwe you can see an impressive collection of African painting and sculpture. And every year the city holds the Harare International Festival of the Arts. At this festival you can see all kinds of artistic performances, from traditional dancing and drumming to the plays of William Shakespeare.



Harare is located on the
a) high seas.
b) Highveld.
c) highway.

LEARN MORE! READ THESE ARTICLES…
ENGLAND (VOLUME 6) • SCULPTURE (VOLUME 3) • ZIMBABWE (VOLUME 8)

Modern high-rise buildings loom over the city of Harare, Zimbabwe.
Richard I'Anson/Lonely Planet Images

Answer: b) Highveld.

"The Smoke That Thunders"

It is difficult to stand in front of this spectacular African waterfall without feeling small. Victoria Falls is about twice as high as Niagara Falls in North America and about one and a half times as wide. It inspires awe and respect in all who see it.

Victoria Falls lies on the border between Zambia and Zimbabwe in southern Africa along the course of the Zambezi River.

The falls span the entire **breadth** of the Zambezi River at one of its broadest points. There is a constant roaring sound as the river falls. A dense blanket of mist covers the entire area. The Kalolo-Lozi people who live in the area call this mist Mosi-oa-Tunya, "the Smoke That Thunders."

The first European to set eyes on this wonder of nature was the British explorer David Livingstone. He named it after Queen Victoria of the United Kingdom.

The waters of Victoria Falls drop down a deep **gorge**. All the water of the Zambezi River flows in through this gorge. At the end of the gorge is the Boiling Pot, a deep pool into which the waters churn and foam during floods. The river waters then emerge into an enormous zigzag channel that forms the beginning of the Batoka Gorge.

The Victoria Falls Bridge is used for all traffic between Zambia and Zimbabwe. When it opened in 1905, it was the highest bridge in the world.

In 1989 Victoria Falls and its parklands were named a World Heritage site.

LEARN MORE! READ THESE ARTICLES…
NIAGARA FALLS (VOLUME 9) • RIVERS (VOLUME 1) • ZIMBABWE (VOLUME 8)

© Patrick Ward/Corbis

DID YOU KNOW?

Victoria Falls is huge, but another waterfall takes the record for being the tallest. Angel Falls in Venezuela dwarfs Victoria at an amazing 3,212 feet tall.



SEARCH LIGHT

The average height of Niagara Falls is about 165 feet. What height would you estimate for Victoria Falls? (Hint: Look in the first paragraph.)

Answer: Victoria Falls is about twice as high as Niagara Falls. So you can estimate Victoria Falls is 330 feet high.

GLOSSARY

administrative having to do with managing or supervising the functions of a business, organization, or government

Arab member of a people originating in the Arabian Peninsula and now inhabiting much of the Middle East and North Africa

archives place where public records or historical documents are kept

basin the area of land drained by a river and its branches

bay part of a coastline that curves in toward land

bazaar marketplace where many kinds of goods are sold; *especially*, such a marketplace in Asia or Africa

Berber member or descendant of a people who originally inhabited North Africa, before the Arab conquest in the 7th century AD

botanical (noun: botany) having to do with plant life

breadth width

canal artificial waterway for boats or for draining or supplying water to land

cassava tropical plant that has a thick underground rootlike part and can be made into a number of foods

cathedral large church where a bishop is in charge

civil war war between opposing groups of citizens of the same country

civilization the way of life of a people at a particular time or place; also, a fairly advanced culture and technology

climate average weather in a particular area

colony (verb: colonize) settlement set up in a distant territory and controlled by a more powerful and expanding nation

commerce (adjective: commercial) the buying and selling of goods, especially on a large scale and between different places

delta large triangular area made of material deposited at the mouth of a river, where it empties into the sea

democracy (adjective: democratic) government in which the highest power is held by the citizens; they either use their power directly (usually by voting) or choose others to act for them

deposit substance laid down by a natural process

dialect one of several varieties of a language used by the members of a particular group or class of people

dictator person who rules with total power, often in a cruel or brutal way

discrimination the treatment of some individuals or groups differently from others without any fair or proper reason

diverse varied; different

drastic huge, extreme, or dramatic

dynasty series of rulers of the same family

economy the system in a country or group by which goods are made, services are offered, and both are sold and used

elevation the height of an object above sea level (that is, the surface of the ocean)

embassy the living quarters or office of an ambassador (a person who officially represents his or her own government in a foreign country)

endangered species a group of plants or animals whose entire survival is threatened

ethnic having to do with a large group of people who share a racial, national, tribal, religious, language, or cultural background

export to carry or send abroad, especially for sale in another country

extinct no longer existing

fertile rich and productive; able to yield quality crops in large quantities

fortify to strengthen with weapons and by military defenses

gorge narrow steep-walled canyon

headquarters the governing and directing center of an organization

heritage background or descent

highland high or mountainous land

hot spring a source of hot water coming from underground

inanimate not living

isthmus narrow strip of land connecting two larger land areas

legacy something handed down from an earlier time or person

legislature organized government group with the power to make laws

majority most; usually, more than half of a group of individual people or things

majority rule system in which the majority (that is, a number over half) of a group is given the power to make decisions that the entire group must accept

mammal class of warm-blooded animals that feed their young with milk from special mammary glands, have an internal backbone, and are more or less covered with hair

mangrove tropical tree or shrub that has partly exposed roots and grows in thickly in areas of salty water

manufacture to make from raw materials, by hand or by machine

meditation (verb: meditate) quiet focused concentration, meant to calm and clear the mind; sometimes used to reach a spiritual awareness

mosque Muslim place of worship

network complex system

nomad member of a people who have no permanent home but instead move from place to place, usually with the seasons and within a specific area

papyrus tall reed plant that grows in the Nile valley and that the ancient Egyptians used to make an early kind of paper

petroleum liquid taken from the ground and not yet cleaned or separated into such products as gasoline and kerosene; also called "crude oil"

pilgrim person who travels to a shrine or holy place to worship

plantation large farming property, usually worked by resident laborers

plateau wide land area with a fairly level surface raised sharply above the land on at least one side

porridge soft food made by boiling grain meal or a vegetable in milk or water until it thickens

poverty the condition of being poor

prophet holy person who acts as a messenger between God and people; also, a gifted person with the ability to correctly predict future events

rainforest dense tropical woodland with a high yearly rainfall and very tall trees

republic form of government in which the leader is not a monarch and is usually a president

reserve area of land set apart for some special purpose; also (usually plural, *reserves*), money or valuable items kept in hand or set apart until needed

sanctuary safe place

savanna hot dry grassland with scattered trees

seaport port, harbor, or town reachable by seagoing ships

shrine place where honor or worship is offered to a saint or deity

splendor something very grand or beautiful

sultan king or ruler, especially of a Muslim state

tableland broad flat area of high land

tamarind tropical tree whose sharp-tasting fruit is used as a flavoring

teeming crowded

tomb special building or room in which a dead person is buried

tourism business of encouraging travel to a specific location and of managing services for visitors (including lodging, transport, food, and activities)

tourist person who travels for pleasure

tropical having to do with the Earth's warmest and most humid (moist) climates

truce temporary stop in fighting during a war or other violent conflict

vast huge or spacious

water power energy produced by moving water that can be used to do physical work; it may come directly from water's own force or from machines run by water that in turn produce even greater power (such as electricity)

I N D E X

Abuja (city in Nigeria)
Nigeria *page* **21**

Accra (city in Ghana) *page* **12**
Ghana *page* **11**

Addis Ababa (city in Ethiopia) *page* **29**

Africa (continent) *page* **7**

Aigams (city in Namibia): *look under* Windhoek

Algeria (country) *page* **44**
LEARN MORE *look under* Algiers

Algiers (city in Algeria) *page* **47**

Algiers, Bay of (bay in Algeria)
Algiers photograph *page* **46**

Amin, Idi (Ugandan leader)
Uganda *page* **41**

Angola (country) *page* **67**
LEARN MORE *look under* Luanda

apartheid (racial segregation in South Africa)
South Africa *page* **85,** photograph *page* **85**

Aswan High Dam (dam in Egypt)
Egypt photograph *page* **50**

Batswana (people): *look under* Tswana

Berbers (people)
Libya *page* **58**

Bloemfontein (city in South Africa)
South Africa *page* **82**
South African cities *page* **87**

Boers (people)
South African cities *page* **87**

Botswana (country) *page* **71**

Buganda (historic kingdom in Africa)
Kampala *page* **43**

Cairo (city in Egypt) *page* **53**

camels
The Sudan photograph *page* **64**

Cape Town (city in South Africa)
South Africa *page* **82**
South African cities *page* **87**

Casablanca (city in Morocco)
Rabat *page* **62**

City of the Dead (district in Cairo, Egypt)
Cairo *page* **53**

click languages
Did you know? *page* **71**

Conakry (city in Guinea)
Guinea *page* **14**

Congo (region in Africa) *page* **9**

Congo River (river in Africa)
Did you know? *page* **8**

Dakar (city in Senegal) *page* **25**
Senegal *page* **23**

dams: *look under* Aswan High Dam; Kariba Dam

Democratic Republic of the Congo (country)
Congo region *page* **9**

deserts: *look under* Kalahari; Namib; Sahara

diamonds
diamond cutter in Johannesburg, South Africa photograph *page* **83**
South Africa *page* **82**

Egypt (country) *page* **51**
Nile River *page* **54**
Pharaohs and the Pyramids *page* **49**
LEARN MORE *look under* Cairo

Ethiopia (country) *page* **27**
LEARN MORE *look under* Addis Ababa

Etosha National Park (park in Namibia)
Namibia *page* **78**

fishing
Liberia photograph *page* **16**

Fouta Djallon (region in Guinea)
Did you know? *page* **15**

Fulani (people)
Guinea *page* **14**

Gaborone (city in Botswana)
Botswana *page* **71**

Ghana (country) *page* **11**
LEARN MORE *look under* Accra

giraffes (animals)
Africa photograph *page* **6**

gold
Ghana *page* **11,** photograph *page* **10**
South Africa *page* **82**

Gold Coast (historic region in West Africa)
Accra *page* **12**

Great Pyramid (pyramid in Egypt)
Egypt *page* **49**

Great Rift Valley (valley in Africa and Asia)
Kenya *page* **30**

Great Star of Africa (gem diamond)
Did you know? *page* **83**

Guinea (country) *page* **14**

Harare (city in Zimbabwe) *page* **91**

Herero (people)
Windhoek, Namibia *page* **81,** photograph *page* **81**

hippopotamuses (animals)
Liberia *page* **17**

human beings
Did you know? *page* **26**
Kenya *page* **30**

Hwange National Park (elephant sanctuary, Zimbabwe)
Zimbabwe *page* **89**

Islam (religion)
Senegal *page* **23**
Somalia *page* **36**

Johannesburg (city in South Africa)
Did you know? *page* **86**
South Africa *page* **82**

Kalahari (desert in Africa)
Botswana *page* **71**

Kampala (city in Uganda) *page* **43**
Uganda *page* **41**

Kariba Dam (dam in Africa)
Zimbabwe *page* **89,** photograph *page* **88**

Karoo (tableland in South Africa)
South Africa *page* **82**

Kenya (country) *page* **30**
LEARN MORE *look under* Nairobi

Khoekhoe (people)

Windhoek, Namibia *page* **81**

Lagos (city in Nigeria)
Nigeria *page* **21**

lakes: *look under* Malawi, Lake; Victoria, Lake

Liberia (country) *page* **17**
LEARN MORE *look under* Monrovia

Libya (country) *page* **58**
LEARN MORE *look under* Tripoli

Lilongwe (city in Malawi) *page* **77**
Malawi *page* **75**

Luanda (city in Angola) *page* **68**

Madagascar (country) *page* **73**

Malagasy (people)
Madagascar *page* **73**

Malawi (country) *page* **75**
LEARN MORE *look under* Lilongwe

Malawi, Lake (lake in Africa)
Malawi *page* **75,** photograph *page* **74**

Malinke (people)
Guinea *page* **14**

manatees (animals)
Liberia *page* **17**

Mandela, Nelson (South African leader)
South Africa *page* **85,** photograph *page* **84**

Masai (people)
Kenya photograph *page* **31**

Mbundu (people)
Angola *page* **67**

Mogadishu (city in Somalia)
Somalia *page* **36**

Monrovia (city in Liberia) *page* **19**

Morocco (country): *look under* Rabat

mosques (places of worship)
Cairo photograph *page* **52**
Nairobi photograph *page* **33**
Tripoli *page* **61**

mummies
Egypt *page* **49**

Nairobi (city in Kenya) *page* **33**

Namib (desert in Africa)
Namibia *page* **78**

Namibia (country) *page* **78**
LEARN MORE *look under* Windhoek

Ndebele (people)
Zimbabwe *page* **89**

Nigeria (country) *page* **20**

Nile River (river in Africa) *page* **54**
Africa *page* **7**
Cairo *page* **53,** photograph *page* **53**
Egypt *page* **51**
Uganda photograph *page* **40**

Okavango River (river in Africa)
Botswana *page* **71**

Ovimbundu (people)
Angola *page* **67**

peoples: *look under* Berbers; Boers; Fulani; Herero; Malagasy; Masai; Mbundu; Ndebele; Tswana; Wolof

pharaohs (Egyptian kings)
Egypt *page* **49**

Point Xaafuun (coastal feature of Somalia)
Did you know? *page* **37**

Portugal (country)
Angola *page* **67**
Congo region *page* **9**
Luanda *page* **68**

Pretoria (city in South Africa)
South Africa *page* **82**
South African cities *page* **87**

Pretorius, Marthinus (Boer South-African leader)
South African cities *page* **87**

pyramids (architecture)
Egypt *page* **49,** photograph *page* **48**

Rabat (city in Morocco) *page* **62**

Red Sea (sea in the Middle East)
Suez Canal *page* **56**

Republic of the Congo (country)
Congo region *page* **9**

Rhodes, Cecil (British leader)
Zimbabwe *page* **89**

rivers: *look under* Congo River; Nile River; Okavango River; Zambezi River

Sahara (desert in Africa)
Africa *page* **7**
Algeria *page* **44,** photograph *page* **45**
Libya *page* **58**

savannas (grasslands)
Guinea *page* **14,** photograph *page* **15**
Nigeria *page* **20**

Senegal (country) *page* **23**
LEARN MORE *look under* Dakar

Senghor, Léopold (Senegalese leader)
Did you know? *page* **23**

Seychelles (country) *page* **35**

Shona (people)
Zimbabwe *page* **89**

slavery
Dakar *page* **25**
Liberia *page* **17**
Monrovia *page* **19**
Senegal *page* **23**

Somalia (country) *page* **36**
LEARN MORE *look under* Mogadishu

South Africa (country) *page* **82**
cities *page* **87**
history *page* **85**
Namibia *page* **78**

Soweto (city in South Africa)
South African cities *page* **87**

sphinxes (mythology)
Africa photograph *page* **6**

Sudan, The (country) *page* **65**

Suez Canal (canal in Egypt) *page* **56**

Table Mountain (mountain in South Africa)
South African cities *page* **87,** photograph *page* **86**

Tanzania (country) *page* **38**

Tripoli (city in Libya) *page* **61**

Tswana, *also called* Batswana (people)
Botswana *page* **71**

Uganda (country) *page* **41**
LEARN MORE *look under* Kampala

Victoria, Lake (lake in Africa)
Africa *page* **7**
Uganda *page* **41**

Victoria Falls (waterfall in Africa) *page* **92**
Zimbabwe *page* **89**

Windhoek, *also called* Aigams (city in Namibia) *page* **81**

Wolof (people)
Senegal *page* **23**

Zambezi River (river in Africa)
Victoria Falls *page* **92**
Zimbabwe *page* **89**

Zimbabwe, *also called* Southern Rhodesia (country) *page* **89**
LEARN MORE *look under* Harare

Visit countries, cities, and famous sites in AFRICA


Volume 1: The Earth and Earth Sciences


Volume 2: Physical Sciences and Technology


Volume 3: The Arts


Volume 4: People in History


Volume 5: Folklore and Religions


Volume 6: Europe


Volume 7: Asia, Australia, and New Zealand


Volume 8: Africa


Volume 9: The Americas


Volume 10: Plants


Volume 11: Birds, Insects, Reptiles, and Aquatic Life


Volume 12: Mammals


Volume 13: Reference Guide and Index

ENCYCLOPÆDIA
Britannica®

AV

My First Britannica



The Americas

9

My First Britannica

The Americas

9



Chicago London New Delhi Paris Seoul Sydney Taipei Tokyo

© 2008 by Encyclopædia Britannica, Inc.

International Standard Book Number: 978-1-59339-476-9 (set)

No part of this work may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, recording, or by any information storage and retrieval system, without permission in writing from the publisher.

My First Britannica:
Volume 9: The Americas 2008

Britannica.com may be accessed on the Internet at http://www.britannica.com.

Encyclopædia Britannica, Britannica, and the Thistle logo are registered trademarks of Encyclopædia Britannica, Inc.

The Americas

TABLE OF CONTENTS

INTRODUCTION 5

North America

North America: Land of Plenty 6
Greenland: Frozen Island 8
Canada: The Land of Long Winters 10
Aklavik, Canada: A Frozen Little Town 12
Ottawa, Canada: A Welcoming Northern Capital 14
Quebec, Canada: La Belle Province 16
Ontario, Canada: The Capital Province 18
Niagara Falls: Thunder of Waters 20
Great Lakes: America's Glacier Leftovers 22
United States of America:
A Wealth of Resources and Beauty 24
United States of America:
A Young and Powerful Nation 26
United States of America:
Melting Pot of Many Cultures 28
Washington, D.C., U.S.: Capital City of the U.S.A. 30
Grand Canyon: Nature's Masterpiece 32
Honolulu, U.S.: Crossroads of the Pacific 34
New York City, U.S.: City of Liberty 36
New York City, U.S.: The Great Culture Mart 38

Mexico and Central America

Mexico: Ring of Fire 40
Mexico City, Mexico: Sinking City of Palaces 42
Central America: The Isthmus Nations 44
Guatemala: Land of the Quetzal 46
Nicaragua:
Volcanoes and Earthquakes in Central America 48
Panama City, Panama: Land of Many Fish 50
Panama Canal: A Major World Waterway 52
West Indies: Caribbean Paradise 54
Puerto Rico: Jewel of the Caribbean 56
Cuba: Sugarcane and Politics 58

South America

South America: The Unknown Continent 60
Amazon: The Rainforest River 62
Amazon: A Close Look at River Life 64
Andes: World-Class Mountains 66
Galapagos Islands:
The Islands at the End of the World 68
Colombia: Columbus' South American Namesake 70
Bogotá, Colombia: Capital City of Churches 72
Peru: Land of the Inca 74
Machu Picchu: Secret of the Andes 76
Brazil: Half of South America 78
Brasília, Brazil: A Bow, a Bird, an Airplane 80
Paraguay: The Once-Forgotten Land 82
Asunción, Paraguay:
Capital of Spanish and Indian Heritage 84
Chile: A Long and Narrow Land 86
Easter Island: Land of Giants 88
Argentina: Home of the Gaucho 90
Buenos Aires, Argentina:
Argentina's Twice-Founded Capital 92

GLOSSARY 94

INDEX 95

The Americas

I N T R O D U C T I O N

Who built Machu Picchu?
Why is the United States called a melting pot?
What's an isthmus? How does the Panama Canal work?

In Volume 9, ***The Americas,*** you'll discover answers to these questions and many more. Through pictures, articles, and fun facts, you'll learn about many of the countries and cities of North, Central, and South America.

To help you on your journey, we've provided the following guideposts in *The Americas*:

■ **Subject Tabs—**The colored box in the upper corner of each right-hand page will quickly tell you the article subject.

■ **Search Lights—**Try these mini-quizzes before and after you read the article and see how much—*and how quickly*—you can learn. You can even make this a game with a reading partner. (Answers are upside down at the bottom of one of the pages.)

■ **Did You Know?—**Check out these fun facts about the article subject. With these surprising "factoids," you can entertain your friends, impress your teachers, and amaze your parents.

■ **Picture Captions—**Read the captions that go with the photos. They provide useful information about the article subject.

■ **Vocabulary—**New or difficult words are in **bold type**. You'll find them explained in the Glossary at the back of this volume. And there's a complete listing of all Glossary terms in the set in the ***Reference Guide and Index***, Volume 13.

■ **Learn More!—**Follow these pointers to related articles throughout the set.

■ **Maps—**You'll find lots of information in this volume's many maps.

■ The **Country Maps** point out national capitals. **Globes** beside Subject Tabs show where countries are located in the world.

■ The **Continent Maps** have a number key showing the location of all countries.

Cover photos (top): Statue of Liberty, New York City, © Richard Berenholtz/Corbis; (center): Quebec City, Quebec, Canada, © Richard T. Nowitz/Corbis; (bottom): gold funerary mask of the South American Chimú Indians, © Gianni Dagli Orti/Corbis

■ The **Icons** on the maps highlight major geographic features and climate. Here's a key to what the map icons mean:

- Deserts and Other Dry Areas
- Polar Regions and Other Frozen Areas
- Mountains
- Rainforests
- General Forests

■ The **Mini-Atlas**, found in Volume 13, offers detailed maps, useful data tables, and assorted photographs of each continent.

And don't forget: If you're not sure where to start, where you saw something before, or where to go next, the Index at the back of this volume and the ***Reference Guide and Index*** (Volume 13) will point the way.



Gold funerary mask of the South American Chimú Indians

© Gianni Dagli Orti/Corbis

Have a great trip!

MY FIRST BRITANNICA

COUNTRIES OF NORTH AMERICA
1. Canada
2. Greenland
3. Mexico
4. United States
5. West Indies
6. Central America*

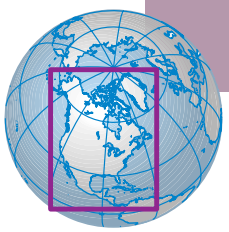
*Countries of Central America are Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and Panama (*see* page 44)
U.S. state of Hawaii off map



Dzoonokwa Totem Pole in Thunderbird Park, Victoria, British Columbia, Canada.
© Gunter Marx Photography/Corbis



Morning light on Mount Rushmore, South Dakota, U.S.
© Paul A. Souders/Corbis



Land of Plenty

North America is the third largest continent. Three countries—Canada, the United States, and Mexico—make up most of it. The countries of Central America are also usually considered part of North America. They occupy a narrow strip of land that connects North America to South America. Several islands, including Greenland in the north and the West Indies in the south, are part of North America too.

Because it's so large, the continent has many different types of climate. Most of Greenland is covered with ice all the time—even in summer. But the southern islands and countries are usually hot and humid. In between there are both deserts and rainy areas, but most places have warm summers and cold winters.

North America is rich in **natural resources**. Forests cover a large part of the land. The **fertile** soils of Canada, the United States, and Mexico produce large amounts of corn, cotton, soybeans, tobacco, wheat, and other crops. The continent is also rich in minerals such as coal, iron ore, copper, natural gas, **petroleum**, and silver.

The history of the continent goes back thousands of years. Scientists believe that people from Asia crossed over to Alaska more than 20,000 years ago and then moved southward. Their **descendants** eventually established great civilizations, such as that of the Maya in Central America and the Aztec in Mexico. The first Europeans in the region were the Vikings, who settled in Greenland in about the 900s. It wasn't until 1492 that explorers from other parts of Europe began to arrive.

SEARCH LIGHT

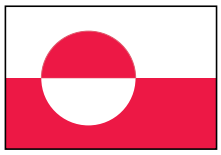
According to scientists, who were the first people to settle in North America?
a) Africans
b) Europeans
c) Asians

LEARN MORE! READ THESE ARTICLES…
CENTRAL AMERICA (VOLUME 9) • CONTINENTS (VOLUME 1)
EUROPE (VOLUME 6)

DID YOU KNOW?
More dinosaur fossils have been found in North America than on any other continent.

Answer: c) Asians

Frozen Island



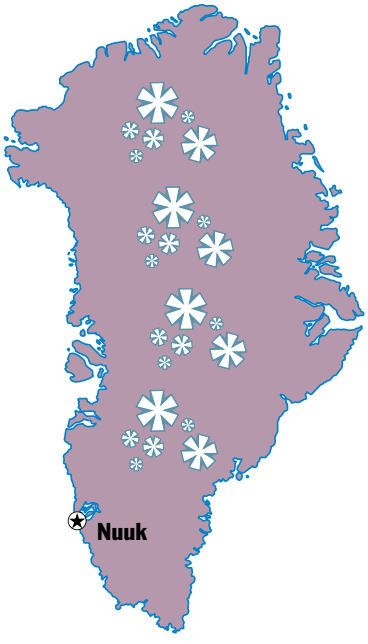
Greenland is the world's largest island. It sits in the North Atlantic Ocean between Iceland (to the east) and the islands of the Canadian north (to the west). Most of Greenland lies within the Arctic Circle. Its northern tip is only 500 miles from the North Pole. The capital city is Nuuk.

Greenland is almost entirely covered in ice. In some places the ice is 10,000 feet thick. Some of the ice is so deep that it is actually below the level of the sea around the island. The people live on the seacoast highlands that are free of ice. Greenland's open land is called "**tundra**." There are very few trees. Grasses, grasslike plants called sedges, and mosslike lichens are the main plants.

The weather in Greenland is cold and may change quickly from sunshine to blizzards. Normal winter temperatures are 21° F in the south and –31° F in the north. Even in the warmest parts of the island, summer temperatures hover around 45° F.

Aside from people, only seven kinds of **mammals** brave Greenland's cold weather on land. They are polar bears, musk-oxen, reindeer, arctic foxes, snow hares, ermines, and lemmings. Seals and whales gather in the ocean waters, and Greenlanders once depended on them for food. Nowadays they are more likely to fish for cod, salmon, flounder, and halibut.

Most Greenlanders are of Inuit (Eskimo) **heritage**. They moved there from North America between 4000 BC and AD 1000. In the early 1700s Denmark **colonized** Greenland, and the Danes still control it today.



LEARN MORE! READ THESE ARTICLES…
DENMARK (VOLUME 6) • ISLANDS (VOLUME 1)
VIKINGS (VOLUME 4)



DID YOU KNOW?

The first European settlement in Greenland was founded in 986 by the Viking explorer Erik the Red. About 15 years later, his son Leif Eriksson sailed west from Greenland and became one of the first Europeans to reach North America.



Fishing boats are moored in a harbor in Sisimiut, Greenland.
© Deanna Swaney/Lonely Planet Images

SEARCH LIGHT

Most of Greenland's surface is covered by
a) rice.
b) ice.
c) trees.

Answer: b) ice.

The Land of Long Winters



Canada is the second largest country in the world in terms of land size, after Russia. But it has fewer people than many other countries that are much smaller. This is because much of Canada is a very cold place with long winters. In the northern islands it is often freezing cold even in summer.

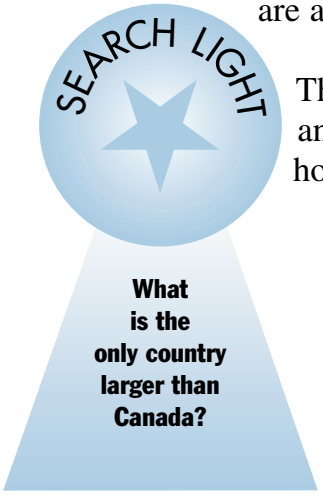


Canada has a low **population** for its size. It is one of the world's wealthier countries. Much of the country's wealth lies in its many mines and forests. Minerals such as coal, copper, nickel, and iron ore are found in the mines. Farming is also very important. Canada grows a large amount of grain. It sells a lot of wheat and other products to other countries.

Most Canadians live in towns and cities. Toronto is the largest city in Canada. If you went there, you could see one of the world's tallest structures, the CN Tower, soaring above the skyline. Montreal is one of Canada's oldest cities and has many historical buildings. It also has an important seaport, even though it is nearly 1,000 miles from the Atlantic Ocean!

Canada's official languages are English and French. But many other languages are spoken there, including Inukitut (the language of the Inuit, or Eskimos) and other Canadian Indian languages. Canadian Indians are also known as First Nations people.

If you visit Canada, you should try to see Niagara Falls. These beautiful waterfalls, on the border between Canada and the United States, were once one of the most famous honeymoon spots in North America.



LEARN MORE! READ THESE ARTICLES…
AN INUIT TALE: HOW CROW BROUGHT DAYLIGHT TO THE WORLD (VOLUME 5)
OTTAWA, CANADA (VOLUME 9) • WHEAT (VOLUME 10)

Banff National Park in Alberta is one of Canada's major tourist destinations.
© David Muench/Corbis

CANADA



DID YOU KNOW?

Churchill, Manitoba, on Hudson Bay, is sometimes called "the polar bear capital of the world." Every fall thousands of bears gather along the shore, waiting for it to freeze so that they can walk out onto the ice to hunt seals.

Answer: Russia.



DID YOU KNOW?

In Aklavik you can see the aurora borealis, or northern lights. These ghostly colors flicker mysteriously in the night sky and have inspired many folk legends.

A Frozen Little Town

SEARCH LIGHT

If it stays dark so much of the time and it's very cold, why would people have moved to Aklavik in the first place? (Hint: There's a clue in the name's meaning.)

The little town of Aklavik is in the Inuvik region, in the Northwest Territories of Canada. It's not far from the place where the Mackenzie River flows into the Arctic Ocean. In the Inuit (or Eskimo) language, *aklavik* means a place "where there are bears."

It is very cold there. The land is mostly frozen. It's above the Arctic Circle, which means that there are winter days when the Sun never rises—and summer days when it never sets. The people who live there are mostly Inuits and First Nations people (the name many Canadian Indians prefer to be called).



Children playing ice hockey in the street, Inuvik, Northwest Territories.
© Lowell Georgia/Corbis

A long time ago the people around Aklavik hunted seals with spears called "harpoons." They also hunted bears and other animals with bows and arrows. They fished from small boats called "kayaks." To travel over land during the long winter, they used sleds drawn by dogs. Today the people of Aklavik still hunt, trap, and fish, but they get around in snowmobiles. The town now also has modern businesses, a radio station, and a weather office.

Aklavik was first set up as a fur-trading post in 1912. Fur garments and Inuit crafts were made there. But by the 1950s flooding and **erosion** had made it difficult to build houses, roads, and sewers in Aklavik. The Canadian government began building a new town called Inuvik about 33 miles away. Many people from Aklavik moved to Inuvik. But others insisted on staying, and the town's motto became "Never say die." In 2001 there were only 632 people left living in this little town.

LEARN MORE! READ THESE ARTICLES…
CANADA (VOLUME 9) • FLOODS (VOLUME 1)
AN INUIT TALE: HOW CROW BROUGHT DAYLIGHT TO THE WORLD (VOLUME 5)

A cold winter comes to the little town of Aklavik, in the Inuvik region of the Northwest Territories. Here you can see the Mackenzie River and the frozen land surrounding the town, as seen from above.
© Lowell Georgia/Corbis

Answer: Aklavik means "where there are bears." The early Inuits were hunters and lived by following bears and seals.

A Welcoming Northern Capital

Ottawa, the capital of Canada, is one of the country's most attractive cities. It is located on the south side of the Ottawa River in the province of Ontario. Across the river is the province of Quebec.

Since Ottawa is the center of the country's government, it is the public face of Canada for many people. The city has been kept lovely and welcoming. It has many parks and rivers, bicycle paths, museums, art galleries, and universities. Some of Ottawa's historic buildings go back to the early 1800s. The Château Laurier is one of these. It is a house built in the style of a grand French **château.** Behind it rises Major's Hill Park, Ottawa's oldest park. This is the best place to view the city and to see up and down the Ottawa River.



Château Laurier, Ottawa, Ontario.
© Richard T. Nowitz/Corbis

Dozens of different languages are spoken in Ottawa. But most people speak either French or English, the official languages of Canada.

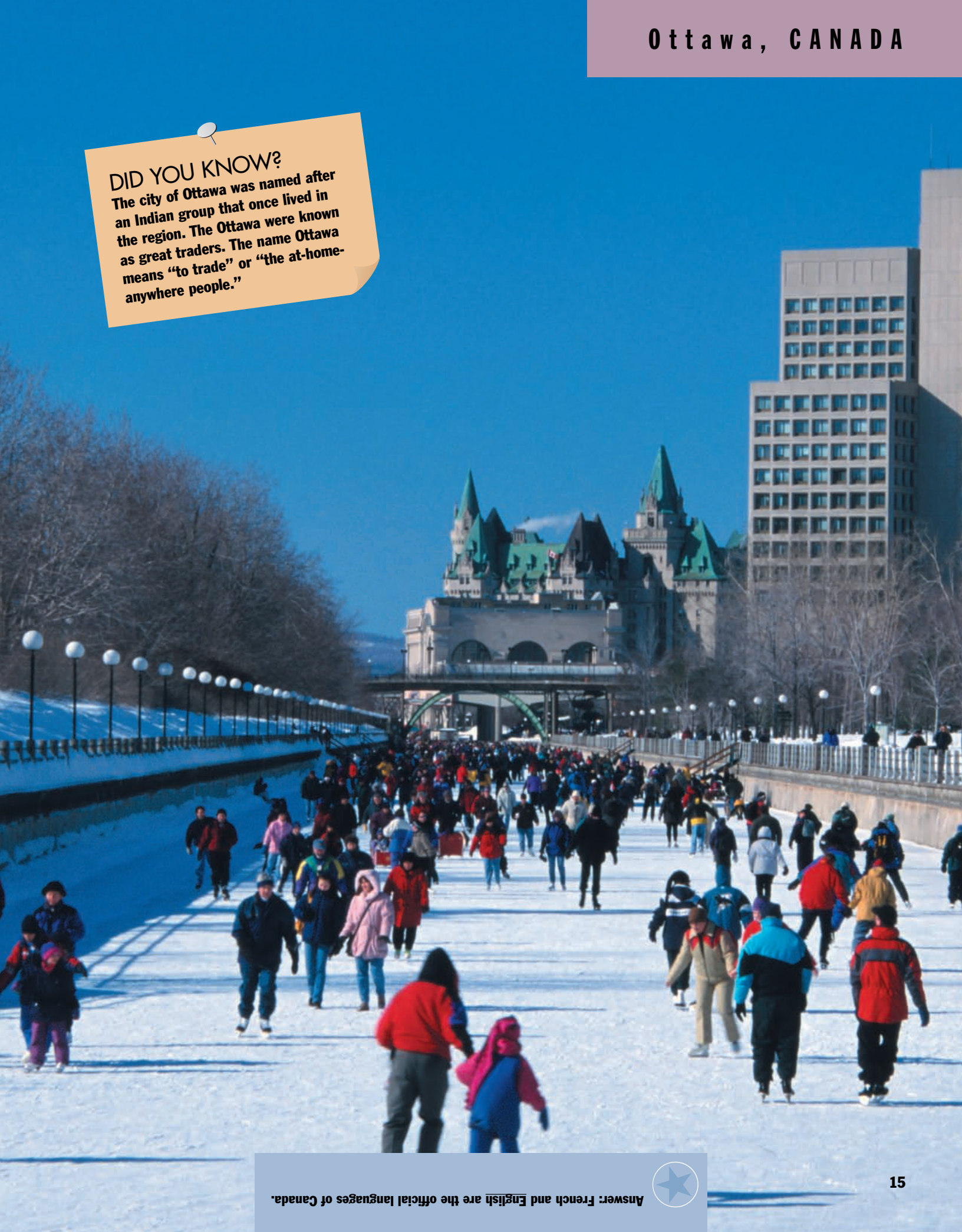
Many years ago French explorers and hunters traveled through the area that is now Ottawa. Only a few people lived there until the early 1800s. By that time the British ruled the territory. They decided they wanted a route for their ships to be able to travel from the Ottawa River to Lake Ontario, so they built the Rideau Canal. The city of Ottawa began as a base for the workers who built the **canal**. It was called Bytown then but later became Ottawa. It became the capital of Canada in the mid-1800s.

SEARCH LIGHT

Find and correct the error in the following sentence: French and Canadian are the official languages of Canada.

LEARN MORE! READ THESE ARTICLES…
CANADA (VOLUME 9) • ENGLAND (VOLUME 6) • FRANCE (VOLUME 6)

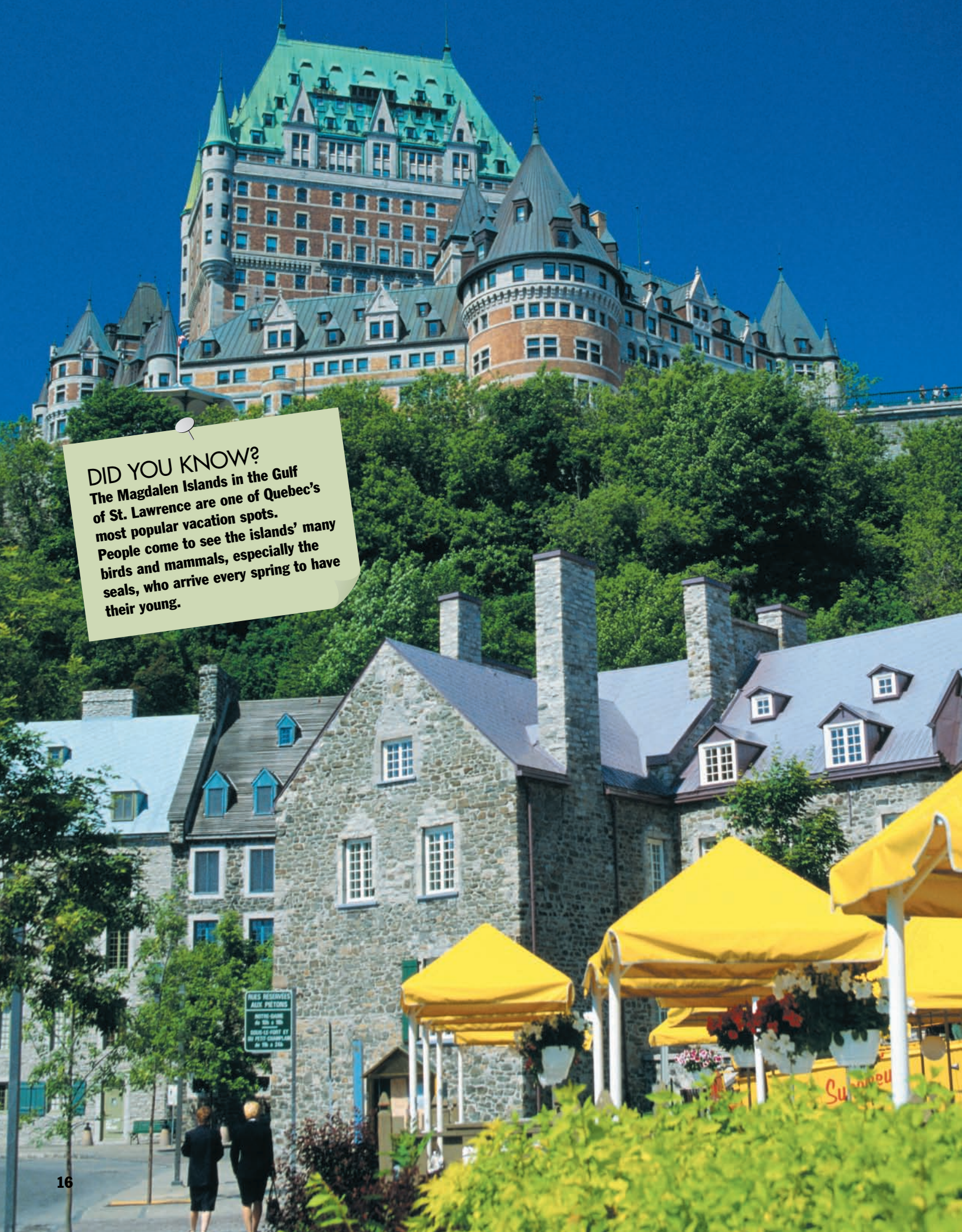
The Rideau Canal in Ottawa is the world's longest outdoor ice-skating rink.
© Cheryl Conlon/Lonely Planet Images



DID YOU KNOW?

The city of Ottawa was named after an Indian group that once lived in the region. The Ottawa were known as great traders. The name Ottawa means "to trade" or "the at-home-anywhere people."

Answer: French and English are the official languages of Canada.



DID YOU KNOW?

The Magdalen Islands in the Gulf of St. Lawrence are one of Quebec's most popular vacation spots. People come to see the islands' many birds and mammals, especially the seals, who arrive every spring to have their young.

La Belle Province

Quebec is both the oldest and the largest in land area of Canada's ten provinces. It's the home of two attractive port cities and a countryside that is covered with forests, rivers, and lakes. No wonder it's known in French as La Belle Province, "the beautiful province."

Quebec City is the capital of Quebec province and the oldest city in Canada. It lies at the point where the St. Lawrence and Saint-Charles rivers meet. The name Quebec comes from the Algonquian Indian word for "where the river narrows." About 150 miles southwest of Quebec City is Montreal, the largest city in the province. It's also Canada's second largest city.

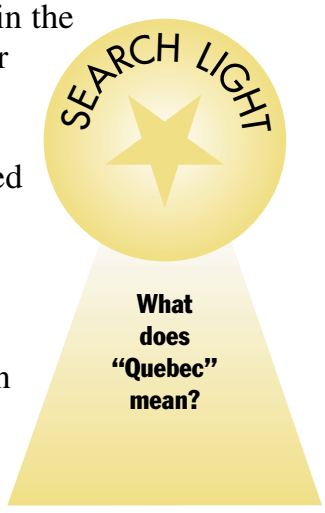


Ice cream sign written in French and English, in Quebec City.
© Richard T. Nowitz/Corbis

The first European to visit the area was Jacques Cartier of France. In 1534 he landed at the site of a Huron Indian village. But it was another 70 years before the French settled in the area. In 1608 Samuel de Champlain founded the city of Quebec, establishing the first permanent **colony** in the region. It served as a fur-trading post for beaver, mink, and other pelts.

During the next 150 years, the French and British fought over Quebec and Montreal. Eventually, a treaty in 1763 granted the area to the British. During the American Revolution, the American colonists tried to seize control of the area. But the British held onto it.

Eight out of every ten people in Quebec are of French **ancestry**. Because of this, both French and English are spoken in Quebec. The people of the province also practice different religions. Generally, the people of French origins are Roman Catholic and those of English origins are Protestant.



LEARN MORE! READ THESE ARTICLES…
AMERICAN INDIANS (VOLUME 4)
CANADA (VOLUME 9) • FRANCE (VOLUME 6)

There are many beautiful buildings in the Old Quebec historic area of Quebec City. The historic hotel Château Frontenac towers over the area.
© Ron Watts/Corbis

Answer: It's an Algonquian Indian word for "where the river narrows."

The Capital Province

Ontario is the second largest of Canada's ten provinces in terms of land size. But with about 12 million people, it has the largest population by far. In fact, more than one-third of all Canadians live in Ontario. Almost all of them live in one of Ontario's many cities.

The largest city in the province, Toronto, is known for its cultural life. It is the headquarters of Canada's national radio and television broadcasting. The city also has orchestras, choirs, national opera and ballet companies, and many art galleries and museums.

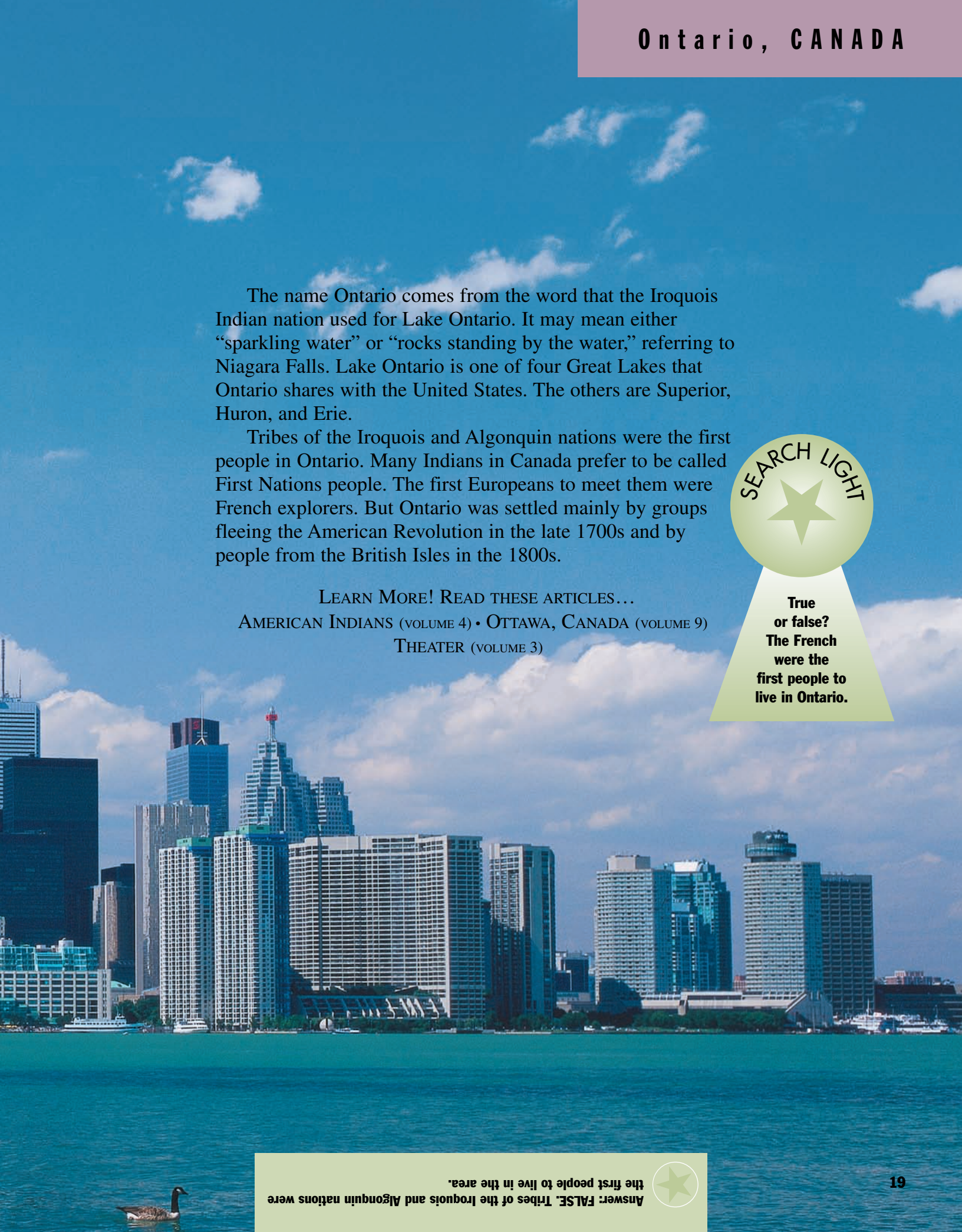
Ontario's other cities have their attractions as well. Ottawa is Canada's capital and is the home of the National Arts Center. Stratford hosts the Stratford Festival, an annual theater festival celebrating the plays of William Shakespeare. Niagara-on-the-Lake is the site of a theater festival featuring the plays of George Bernard Shaw. And the natural beauty of Niagara Falls draws people to Ontario from all over the world.

The CN Tower rises 1,815 feet, above the rest of the Toronto skyline. The communications tower is the world's tallest freestanding structure.

© Royalty-Free/Corbis

DID YOU KNOW?

Ontario has more immigrants than any other province of Canada. The city of Toronto and its suburbs, in particular, are home to more than one third of all the people who moved to Canada from another country.



The name Ontario comes from the word that the Iroquois Indian nation used for Lake Ontario. It may mean either "sparkling water" or "rocks standing by the water," referring to Niagara Falls. Lake Ontario is one of four Great Lakes that Ontario shares with the United States. The others are Superior, Huron, and Erie.

Tribes of the Iroquois and Algonquin nations were the first people in Ontario. Many Indians in Canada prefer to be called First Nations people. The first Europeans to meet them were French explorers. But Ontario was settled mainly by groups fleeing the American Revolution in the late 1700s and by people from the British Isles in the 1800s.

LEARN MORE! READ THESE ARTICLES…
AMERICAN INDIANS (VOLUME 4) • OTTAWA, CANADA (VOLUME 9)
THEATER (VOLUME 3)

SEARCH LIGHT

True or false? The French were the first people to live in Ontario.

Answer: FALSE. Tribes of the Iroquois and Algonquin nations were the first people to live in the area.

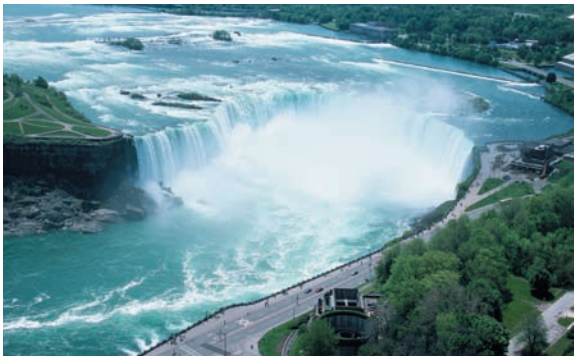


DID YOU KNOW?

The great Niagara Falls once stopped running. On the evening of March 29, 1848, ice blocked the Niagara River, and the falls stopped for about 30 hours.

Thunder of Waters

Niagara Falls, one of the most spectacular natural wonders in North America, is more than 25,000 years old. The falls are on the Niagara River, which flows between the United States and Canada, from Lake Erie to Lake Ontario.



Horseshoe Falls, the Canadian section of Niagara Falls.
© Dave G. Houser/Corbis

It is awesome just to be near the waterfall and watch the force of so many gallons of water plunging down the steep cliff. More than 600,000 gallons per second pour from the falls. As the water thunders down, it fills the air with a silvery mist in which you can see many shining rainbows. A ceaseless roar fills the air as all this water strikes the bottom. The Iroquois Indians called this waterfall Niagara, meaning "thunder of waters."

The falls are divided into two parts by Goat Island. The larger portion is the Canadian section, known as Horseshoe Falls. It measures 2,600 feet along its curve and drops 162 feet. The American Falls are smaller and rockier. Their width is 1,000 feet across, and they drop about 167 feet.

Between the American Falls and Goat Island are the small Luna Island and the small Luna Falls, also called Bridal Veil Falls. There are caves behind the curtain of water of both these falls. One of these is the Cave of the Winds.

The best views of the falls are from Queen Victoria Park on the Canadian side, Prospect Point on the U.S. side, and Rainbow Bridge, which crosses between the two.

LEARN MORE! READ THESE ARTICLES…
ONTARIO (VOLUME 9) • RIVERS (VOLUME 1)
VICTORIA FALLS (VOLUME 8)

SEARCH LIGHT

Find and correct the error in the following sentence: Niagara Falls is more than 2,500 years old.

Answer: Niagara Falls is more than 25,000 years old.

© Hubert Stadler/Corbis



Tall grass covers dunes, or hills of sand, along the shoreline of Lake Michigan.

SEARCH LIGHT

Which of the following lakes are members of the Great Lakes?
Victoria
Michigan
Tahoe
Huron

America's Glacier Leftovers

The Great Lakes are a group of natural freshwater lakes in the middle of North America. These five lakes are Lake Superior, Lake Michigan, Lake Huron, Lake Erie, and Lake Ontario. The total area of the five lakes is larger than that of many countries, such as the United Kingdom.



© AP/Wide World Photos



© Joseph Sohm/Corbis

(Top) Boats in Lake Michigan at the start of a race from Chicago to Mackinac Island, Michigan; (bottom) Split Rock Lighthouse overlooking the waters of Lake Superior.

The lakes were originally formed when **glaciers** retreated during the last Ice Age. The glaciers, giant chunks of ice, dug out the lake beds as they slowly moved. When the glaciers melted, their water filled the lakes.

Four of the five lakes act as a natural border between Canada and the United States. The fifth, Lake Michigan, is totally within the United States. Each one of the five lakes is special in some way. Lake Superior is the biggest as well as the deepest of the lakes. Lake Ontario is the smallest lake. Lake Erie is the shallowest lake. Lake Huron has the longest shoreline.

The water in the Great Lakes comes from many sources. Apart from rainfall, many streams, brooks, and small rivers empty into the lakes. Also, water from a lake at a higher **elevation** can overflow and drain into these lakes. And underground water seeps into the lakes from the surrounding land.

People enjoy visiting the lakes for fun activities such as swimming, motorboating, and sailing. Sandy beaches and parks alongside the lakes provide picnicking and camping areas. But because of **pollution**, the water of the lakes had once become very dirty. This was harming the fish in the lakes and nearby wildlife. Many groups concerned about the pollution are now busy trying to keep the waters clean.

DID YOU KNOW?

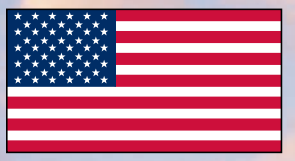
There are more than 30,000 islands in Lake Huron, including Manitoulin Island, the largest freshwater island in the world.

LEARN MORE! READ THESE ARTICLES…
GLACIERS (VOLUME 1) • NIAGARA FALLS (VOLUME 9)
NORTH AMERICA (VOLUME 9)

© David Muench/Corbis

Answer: Michigan and Huron are two of the Great Lakes.

A Wealth of Resources and Beauty



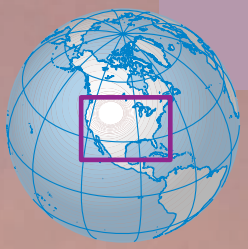
The United States of America is rich in resources and natural beauty. This large country in North America is made up of 50 states, including Alaska and the islands of Hawaii in the Pacific Ocean. Its capital is Washington, D.C.

The United States is a **vast** and varied country, with forests, deserts, prairies, volcanoes, and **polar regions**. The country's mountain ranges include the Rocky Mountains and Sierra Nevadas in the west and the Appalachian Mountains in the east. The country's highest peak is Mount McKinley in Alaska. Native Americans call this mountain Denali, meaning "The High One." The United States has a number of mighty rivers, including the Colorado, the Columbia, and the Mississippi. The Mississippi



SEARCH LIGHT

Which of these is not a river in the United States?
a) the Colorado
b) the Columbia
c) the Mississippi
d) the Seine

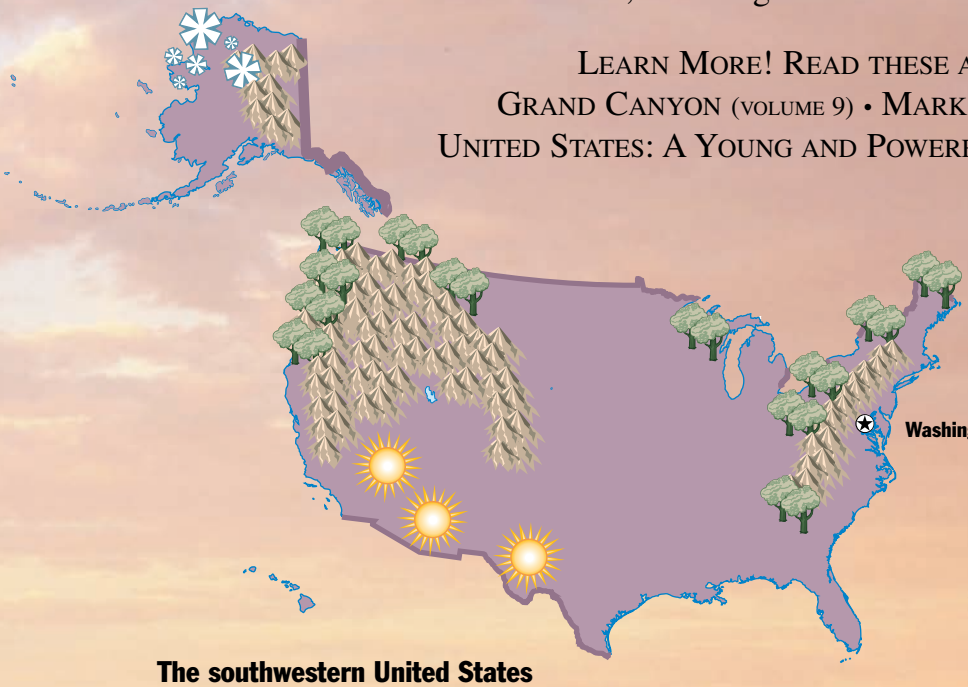


River was the setting for many famous stories by the writer Mark Twain. The largest lakes are the five Great Lakes and the Great Salt Lake.

The country's farmlands produce corn, soybeans, wheat, and other crops that are sold to countries all over the world. With a wealth of forests, the United States is one of the world's leading producers of **timber**. It is also among the leading fishing nations, and it produces large amounts of copper, silver, gold, coal, oil, and natural gas. This **abundance** helped to make it the richest nation in the world.

The United States is also graced with features of great beauty. The major **scenic** attractions include the Grand Canyon in Arizona, Carlsbad Caverns in New Mexico, and Niagara Falls in New York state.

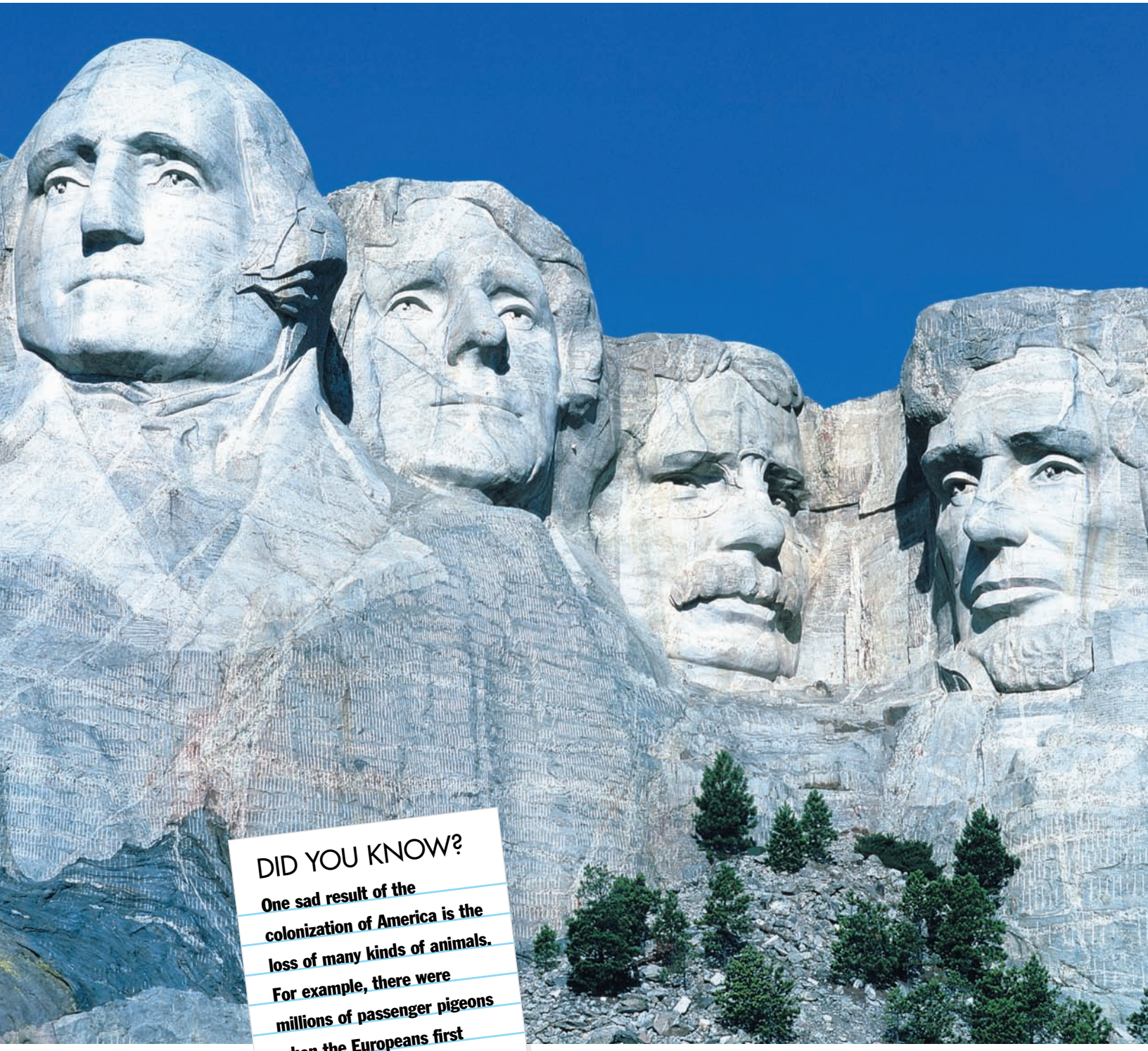
LEARN MORE! READ THESE ARTICLES…
GRAND CANYON (VOLUME 9) • MARK TWAIN (VOLUME 4)
UNITED STATES: A YOUNG AND POWERFUL NATION (VOLUME 9)



DID YOU KNOW?
The United States has almost 4 million miles of paved road.

The southwestern United States has many interesting land formations that were carved by the wind and water over thousands of years. Here two large rock formations known as the Mittens in Arizona's Monument Valley are seen at sunset.
© George H.H. Huey/Corbis

Answer: d) the Seine



DID YOU KNOW?

One sad result of the colonization of America is the loss of many kinds of animals. For example, there were millions of passenger pigeons when the Europeans first arrived. But the last of these birds died out in the 20th century.

Huge sculptures of the heads of U.S. Presidents (from left to right) George Washington, Thomas Jefferson, Theodore Roosevelt, and Abraham Lincoln are carved in granite on the side of Mount Rushmore in South Dakota.
© Owaki-Kulla/Corbis

A Young and Powerful Nation

The history of the Americas changed forever in 1492 when Christopher Columbus sailed there from Spain. Shortly after his voyage, many other sailors arrived from Europe. These explorers and settlers took over the land that would become the United States. But they were not the first people there. The Europeans took the land from the more than 200 different groups of Native Americans, or Indians, who were living there.

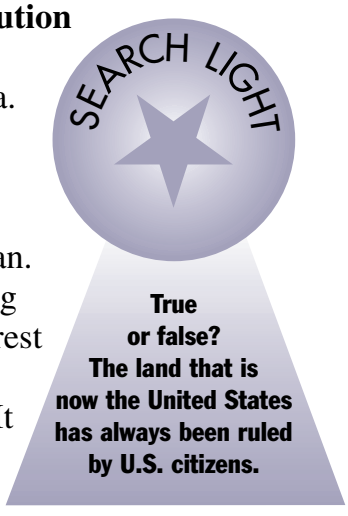


Missouri's famed Gateway Arch in St. Louis.
© Kelly-Mooney Photography/Corbis

The Spanish were among the first Europeans to build **colonies** there. Later the French and the British established colonies of their own. The first lasting British settlement in North America was founded in 1607 in Jamestown, in what was later the state of Virginia. It was quickly followed by other settlements all along the Atlantic coastline. Soon there were 13 colonies. They remained subject to British rule until 1776, when the colonists began a war for independence, called the American Revolutionary War.

Total freedom from the British came in 1783. A new **constitution** was created. George Washington, the leader of the Continental Army, became the first president of the United States of America. Within several years the city of Washington, in the District of Columbia, had been built to be the new nation's capital.

Over the next century and a half, the United States spread westward, gaining new territory, until it reached the Pacific Ocean. The island state of Hawaii, in the central Pacific, and the outlying state of Alaska, which borders northwestern Canada, joined the rest of the United States in the mid-20th century. And millions of **immigrants** from around the world have moved to the country. It has offered many the opportunity for a more comfortable and healthier life.



True or false? The land that is now the United States has always been ruled by U.S. citizens.

LEARN MORE! READ THESE ARTICLES…
AMERICAN INDIANS (VOLUME 4)
UNITED STATES: MELTING POT OF MANY CULTURES (VOLUME 9)
WASHINGTON, D.C., U.S. (VOLUME 9)

Answer: FALSE. American Indian groups lived on the land first. Then Europeans took over various areas. The United States did not become an independent country until the 1700s.

Melting Pot of Many Cultures

Dear Class,

We are in Boston, on the northeastern coast of the United States, visiting my brother Rex after a few busy days of sightseeing. We've already been to New York City and Niagara Falls. Later we're going to take a look at the Grand Canyon, Hollywood, and Disneyland. Rex teaches history in one of the universities here. He's invited some of his friends to meet us. One of them is from Austria, and another is from Poland. The rest are from Japan, India, and Italy. I tell him that I'm confused. "Don't you have any American friends?" I ask Rex.



Italian immigrants arriving at New York's Ellis Island.
© Bettmann/Corbis

He laughs. "They're all Americans."

Helmut, his friend from Austria, says, "Didn't you know that America has people from all over the world?"

"That's why people often describe America as a 'melting pot' of many cultures," says Tajima, from Japan.

"People come here for many reasons. Some become citizens. But students from all over the world also come here to study. I have students from Indonesia, Australia, Iran, and even Iceland in my college," says Rex.

"But who were the first to come here?" Rex's Indian friend, Samir, says the first people who came here were from Asia, more than 20,000 years ago. The American Indians (Native Americans) are their **descendants**. About 500 years ago, Spanish settlers arrived from Europe. Other Europeans followed—from England, Ireland, and Germany and then from Italy, Poland, Russia, Sweden, Greece, and elsewhere. People from Africa were first brought over as slaves. People from every corner of the world have made America what it is today.

Tonight we're going out for a Lebanese meal. I can't wait!

Your classmate,

Lydia

LEARN MORE! READ THESE ARTICLES…
ASIA (VOLUME 7) • EUROPE (VOLUME 6)
UNITED STATES: A YOUNG AND POWERFUL NATION (VOLUME 9)



SEARCH LIGHT

Fill in the blank with the correct phrase: When people call America a "melting pot," they mean people from _____ live there.

DID YOU KNOW?

Christopher Columbus often gets credit as having been the first European in the Americas. But many researchers believe he was about 500 years too late. They think Leif Ericson, the Viking explorer, landed in North America first.

New U.S. citizens recite the Pledge of Allegiance during a ceremony held in Miami, Florida's Orange Bowl Stadium.

© Bettmann/Corbis

Answer: When people call America a "melting pot," they mean people from all over the world live there.



A view of Washington, D.C., from above shows (from front to rear) the Lincoln Memorial, the Washington Monument, and the Capitol.

Capital City of the U.S.A.

Washington, D.C., is the capital of the United States of America. The "D.C." stands for District of Columbia. President George Washington chose the site for the capital city, and the city was built especially as a home for the government.

Pierre-Charles L'Enfant, an **engineer** and artist, designed the city layout. The main roads of Washington, D.C., extend from the city center like the rays of the Sun. These avenues are named after some of the states of the United States.



Tourists in paddleboats enjoy views of the Jefferson Memorial.
© Richard T. Nowitz/Corbis

Today Washington, D.C., has many monuments, museums, and official buildings that are connected with the government and the history of the United States. Most of these are grouped together in and around a large parklike area called the Mall.

Both the Washington Monument and the Lincoln Memorial are part of the Mall. The Lincoln Memorial, built to honor President Abraham Lincoln, is at one end of the Mall on the bank of the Potomac River. The Washington Monument, built to honor President Washington, is a huge granite obelisk, or **tapered** stone pillar. This monument is among the world's tallest stone structures. A memorial to President Thomas Jefferson is located south of the Mall. Two other memorials on the Mall honor the Americans who died in the Korean and Vietnam wars.

The White House is the office and home of the president of the United States. The Capitol is the building where the U.S. **Congress** meets and laws are made. It is one of the best-known landmarks in the United States. The **Supreme Court** and the Library of Congress are both close to the Capitol. The Library of Congress has the largest collection of books, maps, newspapers, documents, and **manuscripts** in the world.

DID YOU KNOW?
The Library of Congress in Washington, D.C., has more than 500 miles of shelves to hold everything it owns. But don't ask how many books are on those shelves. No one is really sure.

LEARN MORE! READ THESE ARTICLES…
ARCHITECTURE (VOLUME 3) • LONDON, ENGLAND (VOLUME 6)
UNITED STATES: A YOUNG AND POWERFUL NATION (VOLUME 9)

© Charles O'Rear/Corbis

Answer: The White House is the home and office of the president of the United States.

Nature's Masterpiece

A canyon is a deep steep-walled valley cut through rock by a river. The word "canyon" comes from the Spanish word *cañón*, which means "tube." Such valleys are found where river currents are strong and swift. A smaller valley cut out in the same way is called a "gorge."



Rafting through the Grand Canyon on the Colorado River.
© Kevin Fleming/Corbis

The Grand Canyon, in northern Arizona in the United States, is the most beautiful and awesome canyon in the world. It is cut a mile deep into the earth and is known for its fantastic shapes and colors. Swiftly flowing water, sand, gravel, and mud gave the rocks their interesting shapes. Each of its rock layers has a different shade of color, including **buff**, gray, green, pink, brown, and violet.

The canyon is 277 miles long and has been carved through the Arizona landscape by the Colorado River. It stretches in a zigzag course from the northern end of Arizona to the Grand Wash Cliffs near Nevada.

Many ancient pueblos—Native American cliffside dwellings—and other ruins in the canyon show that prehistoric peoples lived there. The Grand Canyon was first discovered by Europeans in 1540. It was established as a national park in 1919.

Visitors to the park can take a mule-pack trip down to the bottom of the canyon. People can even go river rafting, taking a thrilling trip over the rapids.

If you visit the canyon, you'll probably see some of the many animals that live there. Squirrels, coyotes, foxes, deer, badgers, bobcats, rabbits, chipmunks, and kangaroo rats all make their homes near the canyon.

In 1979 the Grand Canyon was named a World Heritage site.

SEARCH LIGHT

Fill in the blank: The word "canyon" comes from the Spanish word for "_____."

LEARN MORE! READ THESE ARTICLES…
AMERICAN INDIANS (VOLUME 4) • PAUL BUNYAN (VOLUME 5)
RIVERS (VOLUME 1)



The Colorado River, seen here in the Marble Canyon portion of the Grand Canyon, cut the whole canyon—over millions of years.
Gary Ladd

DID YOU KNOW?

In geologic terms the Grand Canyon is fairly young, at about 6 million years old. But the rocks it cuts through date back as far as 2 billion to 2.5 billion years ago.

Answer: The word "canyon" comes from the Spanish word for "tube."



Waikiki Beach, with Diamond Head in the background, is the center for tourism in Honolulu. There are many big resorts along the beach, and people come from all over the world to enjoy swimming and surfing in the waters of the Pacific Ocean.

SEARCH LIGHT

Diamond Head is a:
a) sunken battleship.
b) rare gem.
c) crater of a volcano.

Crossroads of the Pacific

It is said that no place on Earth has better weather than Honolulu. In the course of an entire year, the temperature rarely gets below 57° or above 88° F. And the sun is usually shining. Honolulu is the capital of Hawaii, a state made up of islands in the middle of the Pacific Ocean. Hawaii became the 50th American state in 1959.



Iolani Palace, Honolulu, Hawaii.
© Michael T. Sedam/Corbis

Honolulu is on Oahu Island. Like Hawaii's other large islands, Oahu formed from material that spewed up from volcanoes on the ocean floor. Diamond Head, the crater, or center, of an old volcano, is one of the best-known landmarks in the Pacific. It got the name Diamond Head when some British sailors found crystals on its slopes and mistakenly thought they were diamonds!

Polynesian people from other Pacific islands were probably the first settlers in Honolulu, but Europeans did not arrive until 1794. That is when Captain William Brown of the British ship *Butterworth* entered the harbor.

Today the modern city of Honolulu is a major port. In the Hawaiian language, its name means "protected bay." It is also called "the crossroads of the Pacific" because of the many ships and airplanes that stop there.

Sun, sand, and sea attract many tourists to Waikiki Beach. Most visitors also go to see the USS *Arizona*, a sunken battleship. It was left in place as a memorial to all the people who died in Japan's attack on Pearl Harbor on December 7, 1941. This attack is what brought the United States into World War II.

DID YOU KNOW?
There are only 12 letters in the Hawaiian alphabet. A, E, I, O, and U are the vowels, and H, K, L, M, N, P, and W are the consonants.

LEARN MORE! READ THESE ARTICLES…
ISLANDS (VOLUME 1)
UNITED STATES: A WEALTH OF RESOURCES AND BEAUTY (VOLUME 9)
VOLCANOES (VOLUME 1)

© Craig Aurness/Corbis

Answer: c) crater of a volcano.



There are many things to do in New York City's Central Park. The park has a zoo, an ice-skating rink, an open-air theater, a band shell, athletic playing fields and children's playgrounds, and paths for biking and walking.

© David Ball/Corbis

SEARCH LIGHT

Which of these sights can be found in New York City?
a) the Statue of Liberty
b) the White House
c) Central Park
d) the Empire State Building
e) the Sears Tower

City of Liberty

DID YOU KNOW?
New York was the first capital of the United States. The country's first president, George Washington, took the oath of office in 1789 on the balcony of Federal Hall on Wall Street.

New York City has the largest population of any city in the United States. Located where the Hudson and East rivers join New York Bay, it is also an important port. The city is made up of five parts called boroughs: Manhattan, Brooklyn, the Bronx, Queens, and Staten Island. People from all over the world have moved to New York City to live and work there. It's known for its famous museums, towering skyscrapers, and jostling crowds.

New York has many landmarks. The famous Statue of Liberty rises up from the harbor. It has become a symbol of the city. Other well-known sights are the Brooklyn Bridge, Times Square, and the amusement park at Coney Island. The city also houses the headquarters of the international organization known as the United Nations.



Close-up view of the arm and torch of the Statue of Liberty.
© Ron Watts/Corbis

New York is one of the most popular tourist cities in the world, but it suffered a disaster in 2001 that caused some people to stay away for awhile. On September 11, **terrorists** flew two planes into the twin towers of the World Trade Center, which were the city's tallest buildings. Thousands of people died when both towers collapsed. But the city's spirit helped it make a strong recovery.

Today the Empire State Building is the tallest building in New York City. From the top you can look down and see the whole city spread out below. The large patch of green that you see from the Empire State Building is Central Park. Even though it is in the middle of a big city, it is one of the best bird-watching places along the whole East Coast of the United States.

LEARN MORE! READ THESE ARTICLES…
NEW YORK CITY, U.S.: THE GREAT CULTURE MART (VOLUME 9)
PARIS, FRANCE (VOLUME 6)
UNITED STATES OF AMERICA: A YOUNG AND POWERFUL NATION (VOLUME 9)

Answer: The Statue of Liberty, the Empire State Building, and Central Park are all famous tourist spots in New York City.

The Great Culture Mart

SEARCH LIGHT

Fill in the blanks: Carnegie Hall is a famous ____ ____ in New York City.

Many people describe New York City as the center of culture in the United States. That's because no matter what you're interested in, you'll find it in New York. Whether it's theater, music, ballet, or museums, the city has some of the very best to offer.

The street called Broadway in New York became the center of American theater in the mid-19th century. The number, size, and fame of the Broadway theaters grew as New York City grew. In the 1890s the brilliantly lighted street became known as "the Great White Way." Beyond these theaters the city offers free performances of the plays of William Shakespeare in Central Park. Operas and concerts are also held in the park.



Dinosaur skeletons on exhibit at the American Museum of Natural History.
© Michael S. Yamashita/Corbis

New York City has a number of world-class spaces for performances of all kinds. The city's concert halls include those at the Lincoln Center for the Performing Arts as well as Carnegie Hall and Radio City Music Hall. The groups that perform in these halls include the Metropolitan Opera, the New York City Opera, and the New York **Philharmonic**. The New York City Ballet also performs at the Lincoln Center, in the New York State Theater.

Museums are another important part of New York City's cultural life. The Metropolitan Museum of Art, the Museum of Modern Art, and the Guggenheim Museum are among the city's art museums. You can also spend many hours in the American Museum of Natural History and its Rose Center for Earth and Space Science. With all of these resources there is always plenty to do in New York City.

LEARN MORE! READ THESE ARTICLES…
LONDON, ENGLAND (VOLUME 6)
NEW YORK CITY, U.S.: CITY OF LIBERTY (VOLUME 9) • THEATER (VOLUME 3)

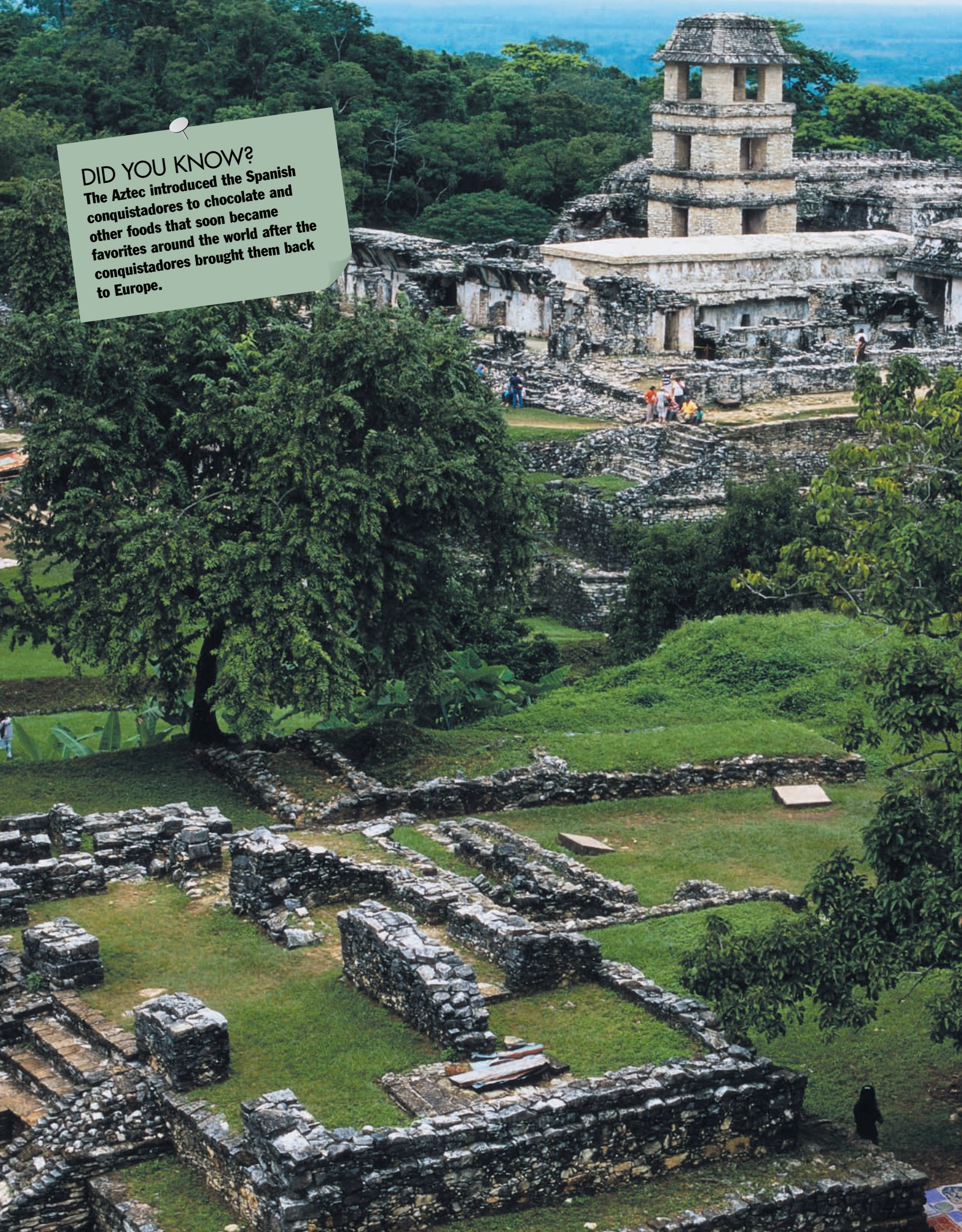
The Metropolitan Museum of Art is a favorite spot for visitors and New Yorkers alike. More than 5 million people visit the museum each year.
© Bob Krist/Corbis



DID YOU KNOW?

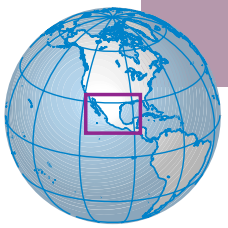
The Brooklyn Children's Museum was one of the world's first museums designed specifically for children. It was also one of the first to offer interactive activities for children.

Answer: Carnegie Hall is a famous concert hall in New York City.



DID YOU KNOW?

The Aztec introduced the Spanish conquistadores to chocolate and other foods that soon became favorites around the world after the conquistadores brought them back to Europe.



Ring of Fire



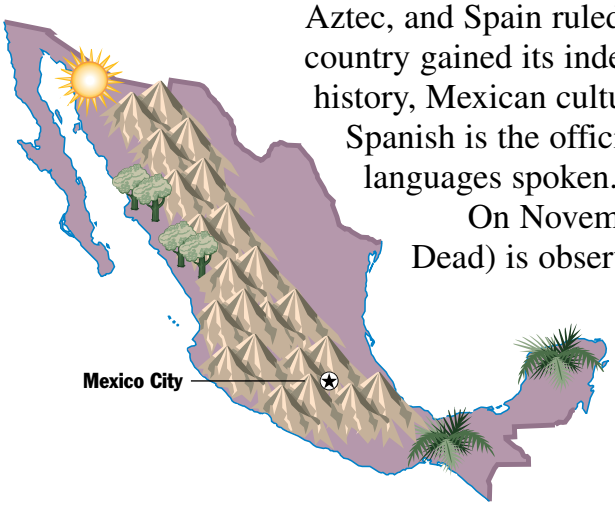
Mexico is a large North American country with ancient cities, beautiful beaches, and snow-capped mountains. Many of the mountains are volcanoes. They are part of the "Ring of Fire," a chain of volcanoes that form a circle around the Pacific Ocean.

The mountains are just one part of Mexico's diverse **geography**, which also includes deserts, grasslands, and tropical forests. The tropical forests, in southern Mexico, are home to such animals as monkeys, parrots, and jaguars. Deer, coyotes, snakes, and armadillos are found in the dry north.

Mexico's history goes back thousands of years. The native Indian Olmec were the first to establish a **civilization** in what is now Mexico. They lived in central Mexico from about 1200 to 400 BC. The Maya, Toltec, and Aztec later built their own cities. The Aztec city of Tenochtitlán was built on the site of what is now Mexico City, the country's capital.

In the 1500s Spanish conquistadores (soldiers) took over from the Aztec, and Spain ruled Mexico for several hundred years. The country gained its independence in the early 1900s. Because of this history, Mexican culture is part Indian and part Spanish. Although Spanish is the official language, there are about 50 other local languages spoken.

On November 2, the Dia de los Muertos (Day of the Dead) is observed. Also called All Souls' Day, it is a time when families visit the graves of their dead ancestors. Another popular holiday is Cinco de Mayo (May 5), which celebrates a Mexican victory against an invading French army.



SEARCH LIGHT

Find and correct the error in the following sentence: Mexico is part of the "Ring of Gold," the circle of volcanoes that rings the Pacific Ocean.

LEARN MORE! READ THESE ARTICLES…
MAYAN CIVILIZATION (VOLUME 4) • MEXICO CITY (VOLUME 9)
VOLCANOES (VOLUME 1)

The tower of the Great Palace and surrounding ruins are part of an ancient city in Mexico built by the Mayan people.
© ML Sinibaldi/Corbis

Answer: Mexico is part of the "Ring of Fire," the circle of volcanoes that rings the Pacific Ocean.

DID YOU KNOW?

Mexico City has more than 350 distinct *colonias*, or neighborhoods. The city is so large that when you take a taxi, you have to tell the driver the *colonia* of your destination as well as the street address!



The center of Mexico City is a plaza popularly known as the Zócalo. The plaza is surrounded by many splendid public buildings.
© Randy Faris/Corbis

Sinking City of Palaces

Mexico City is the capital of Mexico and one of the world's largest cities, with more than 8 million people. It was founded in 1325 as the capital of the Aztec people. The Aztec city was called Tenochtitlán, which means "Place of the High Priest Tenoch."



The floating gardens of Xochimilco.
© Peter M. Wilson/Corbis

Tenochtitlán was built on small islands in Lake Texcoco. After Spanish conquerors arrived in the 16th century they began draining the lake in order to use the land. Today most of the water is gone, but the soil is soft and some of the city's streets and buildings are sinking. Since 1900 the city has sunk about 30 feet!

Mexico City is high above sea level—about 7,350 feet. However, it is surrounded by mountain ranges that are much higher. Dust and smoke from cars, fires, and factories are trapped by the mountains and pollute the city's air. The city also lies within an earthquake zone. An earthquake in 1985 destroyed many buildings and killed thousands of people. But most of the city's ancient monuments and palaces remained unharmed.

Many of these monuments are located around a plaza called the Zócalo. They include the National Palace and the Metropolitan **Cathedral**. In another part of the city Chapultepec Park includes a castle, a zoo, and an amusement park. The Pink Zone ("Zona Rosa") is one of Mexico City's main tourist and entertainment areas. It is the home of orchestras, art galleries, museums, theater groups, and dance companies.

Another interesting area to visit is Xochimilco, with its floating gardens. These are rafts made out of reeds on which plants and flowers are grown. The famous Aztec pyramids of Teotihuacán are located northeast of the city.



LEARN MORE! READ THESE ARTICLES…
MEXICO (VOLUME 9) • MOUNTAINS (VOLUME 1) • PANAMA CITY, PANAMA (VOLUME 9)

Answer: a) the Aztec.

COUNTRIES OF CENTRAL AMERICA
1. Belize
2. Costa Rica
3. El Salvador
4. Guatemala
5. Honduras
6. Nicaragua
7. Panama



Blue poison dart frog.
© Kevin Schafer/Corbis

DID YOU KNOW?

No place in Central America is more than 125 miles from the ocean. At its narrowest point, in Panama, the isthmus is only 30 miles across.

The ruins of the stone-stepped Temple of the Jaguar stand at the archaeological site at Tikal, Guatemala.
© John Noble/Corbis

Mayan painted tripod plate.
© Bowers Museum of Cultural Art/Corbis



The Isthmus Nations

Central America is an **isthmus** that lies between the Pacific Ocean and the Caribbean Sea. Seven countries lie within its boundaries—Belize, Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica, and Panama. Together this cluster of nations stretches from North to South America. The countries share a long and proud history that reaches back thousands of years to the civilizations of the Maya and other native Indian peoples.

The Maya built great cities in northern Central America from about AD 200 to 900, but then they began to decline. When Spanish explorers arrived in the 16th century there were few Maya left. The Spanish soon established **colonies** in the area and ruled them for about 300 years before granting them independence. Because of this, most Central Americans speak Spanish, though many Indians speak their native languages. English is the official language of Belize, which was ruled by England for many years.

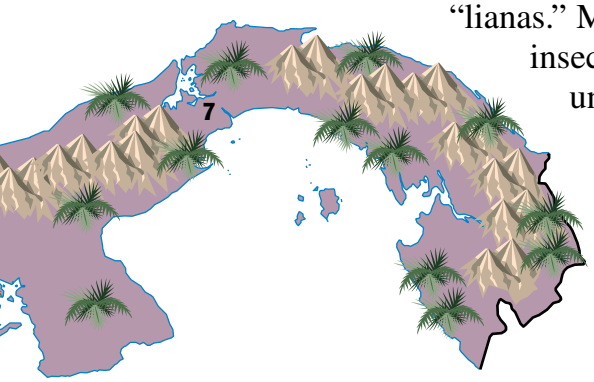
SEARCH LIGHT

Fill in the blank: Because of Central America's colonial past, most of its people speak _____.

Today the people of the region are very diverse. Some are descended from Europeans, while others are of Asian or black African **ancestry** or Maya. Most are mestizos—people of mixed Indian and European ancestry.

Central America is mainly hilly and has many mountains. Swamps, rainforests, and lowlands extend along both coasts. There are many volcanoes, and the region has frequent earthquakes. Most people live along the western side.

Central America has many fascinating plants and animals, particularly in its rainforests. Jaguars and ocelots prowl the forest floors. Spider and howler monkeys scramble through the trees and climb vines called "lianas." Manatees swim in the rivers. Parrots chatter and insects buzz. Beautiful orchids bloom in clearings, and unusual fruits and nuts are found everywhere.



LEARN MORE! READ THESE ARTICLES…
MAYAN CIVILIZATION (VOLUME 4)
NORTH AMERICA (VOLUME 9)
SOUTH AMERICA (VOLUME 9)

Answer: Because of Central America's colonial past, most of its people speak Spanish.

Land of the Quetzal



Guatemala is a country in Central America. It was once home to the great Mayan civilization, which ruled from about AD 250 to 900. Today Mayan Indians make up about half of Guatemala's population, and they still have a great influence on its culture. Their crafts, dances, music, and religious ceremonies are similar to those from hundreds of years ago.

Along with the Mayan Indians, the population of Guatemala includes the Ladinos, who have mixed Spanish and Mayan Indian heritage. While the Mayan Indians tend to live in the rural highlands, most Ladinos live in cities. The Ladinos tend to be wealthier than the Indians.

Spanish is the country's most widely spoken language, but one in three Guatemalans speaks an Indian language. Most of the people are Roman Catholic, but many Indians mix Catholic beliefs with traditional religious practices. The town of Esquipulas, in eastern Guatemala, is home to the Black Christ, the most important Catholic shrine in Central America. It was named for the dark wood from which it was carved. Guatemala's many religious festivals include the popular Easter celebrations in the town of Antigua Guatemala.

The land of Guatemala includes mountains, volcanoes, grasslands, and rainforests. The wildlife of the rainforests includes the quetzal, the colorful national bird. There are also many snakes, crocodiles, and iguanas.

Farming is important in Guatemala. Many farmers grow corn, beans, and squash to feed themselves and their families. Other farmers raise coffee, bananas, sugarcane, cotton, and cattle to sell to other countries.



SEARCH LIGHT

Fill in the blank: Most people in Guatemala have at least some _____ ancestry.
a) French
b) Quetzal
c) Mayan Indian

LEARN MORE! READ THESE ARTICLES…
MAYAN CIVILIZATION (VOLUME 4) • MEXICO (VOLUME 9)
VOLCANOES (VOLUME 1)

For gorgeous plumage, few birds surpass the quetzal. Found in rainforests from southern Mexico to Bolivia, the quetzal was the sacred bird of the ancient Maya and Aztec; today it is the national emblem of Guatemala (whose monetary unit is the quetzal).
© Michael & Patricia Fogden/Corbis

GUATEMALA

DID YOU KNOW?

Guatemala has three continuously active volcanoes: Santa María, Fuego, and Pacaya. In 1902 Santa María erupted for 19 days in a row.

Answer: c) Mayan Indian



SEARCH LIGHT

Why do you suppose Spanish is the official language of Nicaragua?

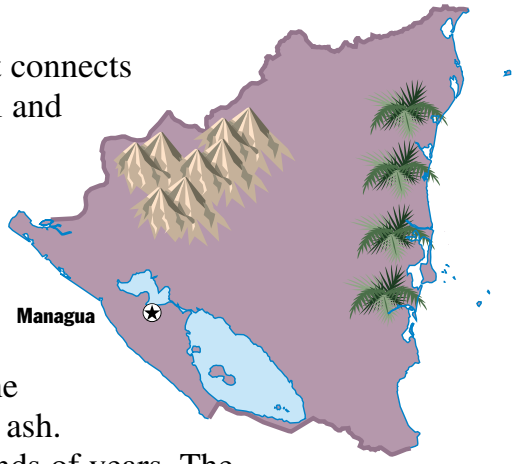
Ash clouds rise into the air during an eruption of Cerro Negro, Nicaragua's most active volcano.



Volcanoes and Earthquakes in Central America



Nicaragua is the largest country in Central America, the strip of land that connects North and South America. The capital and largest city of Nicaragua is Managua.



Nicaragua has two large lakes, Managua and Nicaragua. The area around the lakes is dotted with about 40 volcanoes. Some of the volcanoes are still active. Nicaragua also experiences many earthquakes, which can be very destructive.

The most **fertile** farmland in the country lies near the volcanoes. The soil is rich with **minerals** from volcanic ash. Because of that people have lived in the area for thousands of years. The early people who lived there found this soil perfect for growing beans and corn. They were also skilled craftsmen and left behind stone carvings, pottery, and gold jewelry. But they also discovered the power of the volcanoes. Scientists have found footprints that were left many years ago by people who were fleeing from the lava and ash of an erupting volcano.

Spanish explorers arrived in Nicaragua in the 1500s. The native Indians who lived there resisted, but eventually the Spanish conquered the land. Nicaragua was named for Nicarao, an Indian chief who led the fight against the Spanish. The country finally gained independence from the Spanish in the 1800s.

Many Nicaraguans are farmers, still growing the traditional corn and beans. They also produce coffee, cotton, beef, and bananas, which are sold to other countries. Only a small portion of the land is actually used for farming, however. More than one-fourth of the country is covered with rainforest.

DID YOU KNOW?
Association football, or soccer, is the most popular sport in all Central American countries except for Nicaragua, where baseball is the national pastime.

LEARN MORE! READ THESE ARTICLES…
CENTRAL AMERICA (VOLUME 9) • RAINFORESTS (VOLUME 1)
VOLCANOES (VOLUME 1)

© Corbis

Answer: The Spanish conquered much of South and Central America in the 1500s and ruled the region for many centuries. For that reason Spanish is still the official language of Nicaragua, even though Spain no longer controls the country.

Land of Many Fish

SEARCH LIGHT

What turned Panama City from a small fishing village into a center for world trade?



Panama City is the capital of the small Central American country of Panama. It lies on the Gulf of Panama near the Panama **Canal**. Panama City used to be a small Indian fishing village. The Spanish name for the city, *Panamá*, means "many fish."

A Spanish soldier named Pedro Arias Dávila founded Panama City in 1519. It was the first European settlement on the Pacific coast of the Americas. After the Panama Canal opened in 1914, the city became an important center for world trade.

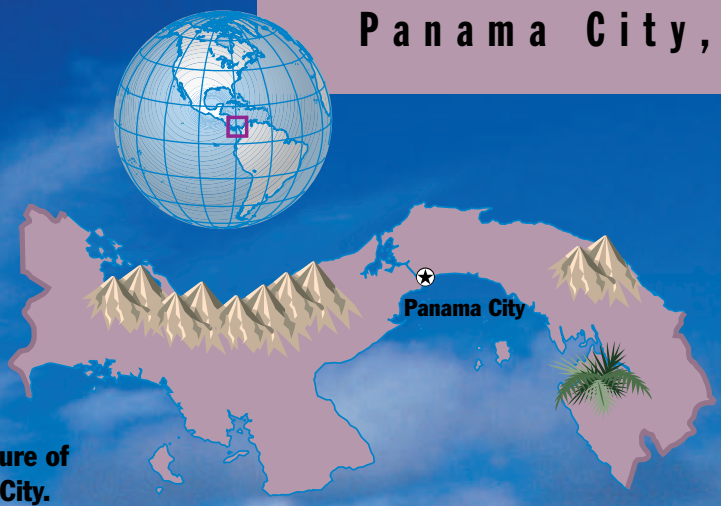
To understand what the city looked like centuries ago, you can visit the area known as San Felipe. Some people call it Casco Viejo, which means "old city." Here you'll see many buildings from the **colonial** days. In the building called the Salón Bolívar, the soldier Simón Bolívar worked on ways to unify the South American countries newly freed from Spanish rule. In 1997 the United Nations Educational, Scientific and Cultural Organization named the old section of Panama City a World Heritage site. This means that it is an important cultural site that should be protected and preserved.

But it's the canal that connects the Atlantic Ocean with the Pacific Ocean that most visitors want to see. Every day ships from all over the world take the trip through the narrow canal. The ships carry **cargo** and passengers between countries. The canal saves them a journey of thousands of miles around the southern tip of South America.

LEARN MORE! READ THESE ARTICLES…
SIMÓN BOLÍVAR (VOLUME 4) • PANAMA CANAL (VOLUME 9)
TRANSPORTATION (VOLUME 2)

DID YOU KNOW?

Because of the way Panama curves, a very strange thing happens when you pass through the Panama Canal. Traveling through the canal from the Atlantic to the Pacific actually takes you from west to east instead of the other way around.



Colonial architecture is a prominent feature of the San Felipe neighborhood of Panama City.
© Alfredo Maiquez/Lonely Planet Images

Answer: The building of the Panama Canal turned Panama City into a world trading center.

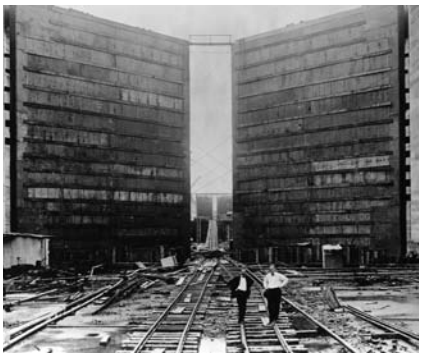
A Major World Waterway

The Panama Canal is one of the most important artificial waterways in the world. It's located in the Central American country of Panama. The canal cuts through a narrow strip of land to connect the Atlantic and Pacific oceans. It is about 50 miles long.

© Corbis



© Corbis



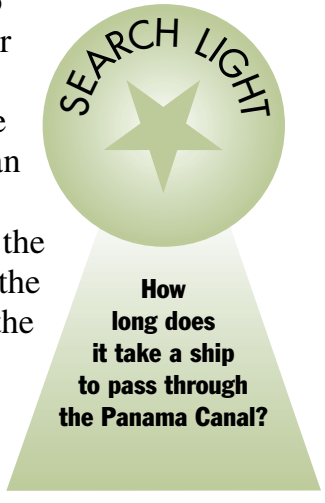
(Top) Construction of the Panama Canal; (bottom) two men stand in front of canal locks under construction in 1913 as part of the Panama Canal project.

The Panama Canal can cut thousands of miles from a ship's voyage. Ships traveling between the east and west coasts of the United States, for example, can shorten their trip by more than 9,000 miles. Without the canal, they would have to go around the southern tip of South America.

Many different kinds of goods are shipped through the canal. Thousands of ships carry more than 200 million tons of **cargo** through it each year. The most important goods include **petroleum** and grains.

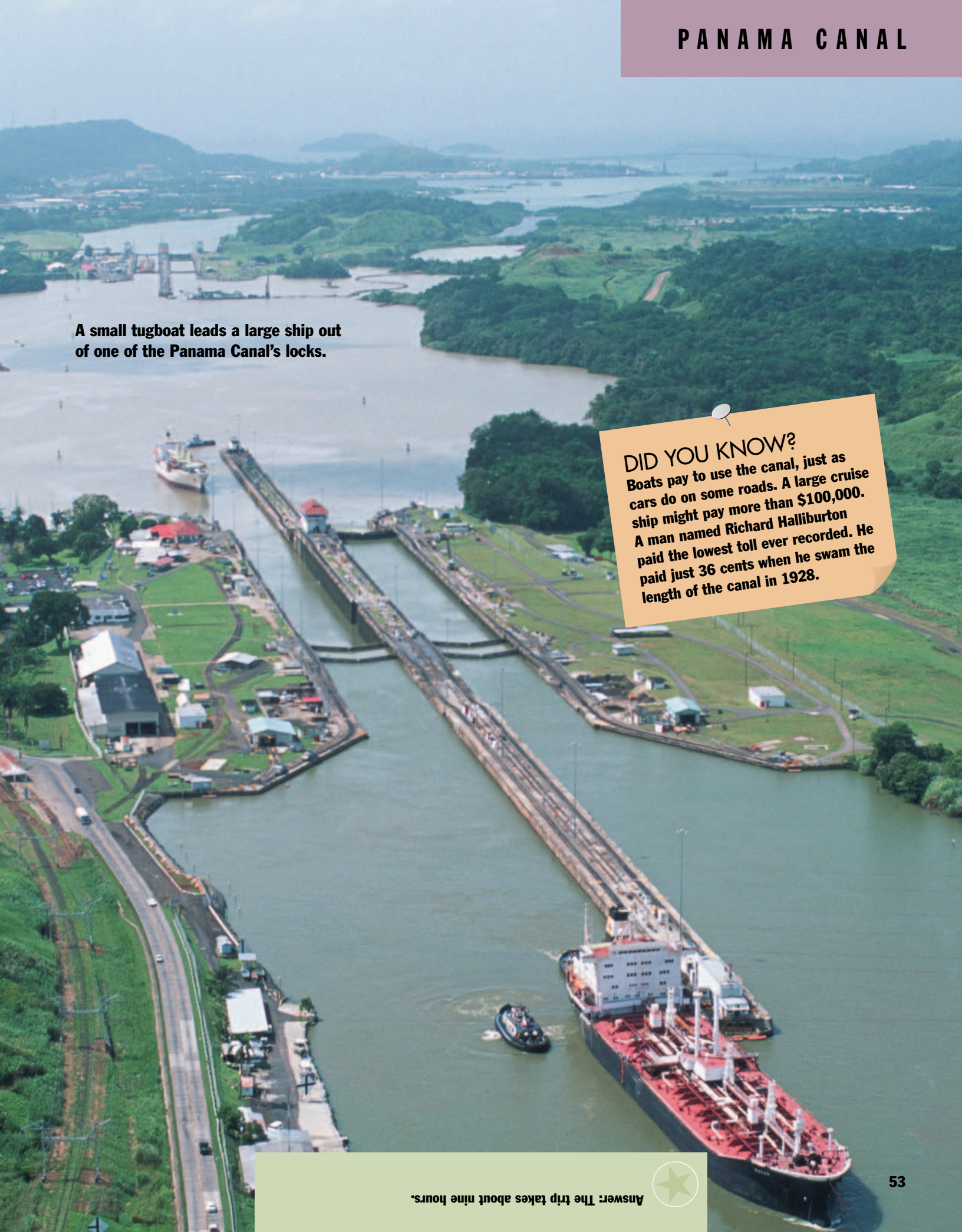
The Panama Canal uses what is called a lock system. Locks are huge tanks with gates at each end. They are used to raise or lower boats from one water level to another. This is necessary because the lake through which the canal passes is at a higher level than the oceans.

First a boat enters the lock, and the gate is closed behind it. If the boat needs to rise to a higher level, water is added to the lock. As the water rises, the boat floats higher. When the lock is full of water, the gate in front of the boat is opened. The boat can then travel out onto the higher part of the canal. The process is reversed for boats going in the other direction. It takes about nine hours for a ship to go through the canal.



LEARN MORE! READ THESE ARTICLES…
PANAMA CITY, PANAMA (VOLUME 9) • SUEZ CANAL (VOLUME 8)
TRANSPORTATION (VOLUME 2)

© Danny Lehman/Corbis



A small tugboat leads a large ship out of one of the Panama Canal's locks.

DID YOU KNOW?

Boats pay to use the canal, just as cars do on some roads. A large cruise ship might pay more than $100,000. A man named Richard Halliburton paid the lowest toll ever recorded. He paid just 36 cents when he swam the length of the canal in 1928.

Answer: The trip takes about nine hours.

Caribbean Paradise

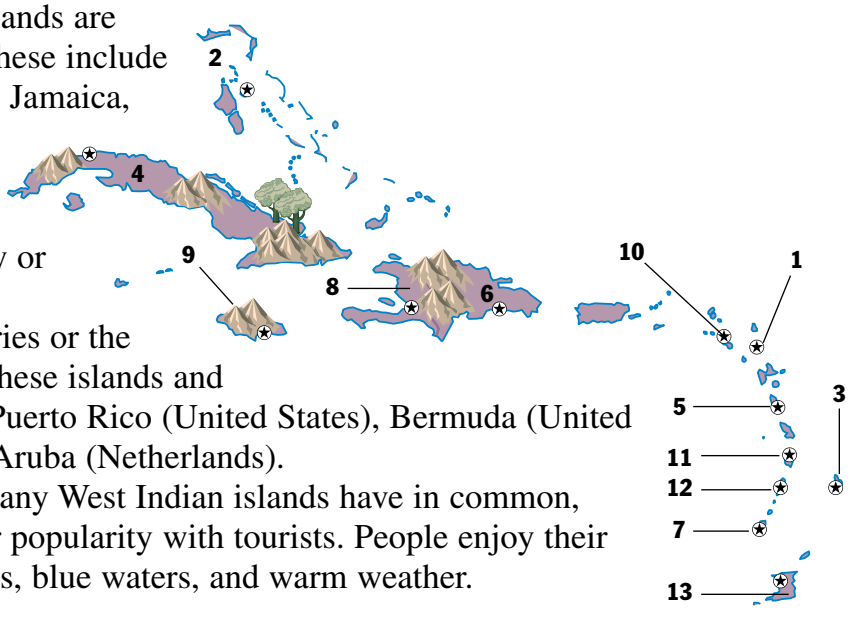
DID YOU KNOW?
During the 1600s the West Indies had many pirates—outlaws who attack and rob ships at sea. Although there were pirates in other parts of the world, the pirates of the Caribbean were given a special name—"buccaneers."

In 1492, Christopher Columbus believed he had reached the Spice Islands in Asia by sailing west from Spain across the Atlantic Ocean. What he didn't know about were the other major islands and continents in between! Later, however, people realized that he had reached a land unknown to Europeans. They named the islands where he first landed the West Indies, to set them apart from the Spice Islands (the East Indies) of Southeast Asia.

The West Indies are a long chain of islands that separate the Caribbean Sea from the Atlantic Ocean. They stretch for more than 2,000 miles between Florida in the United States and the northern coast of South America. Many islands have mountains, and some have active volcanoes. Sometimes, powerful and destructive **hurricanes** sweep across the West Indies.

After Columbus' visit, Spain and other European countries set up **colonies** in the West Indies. They also enslaved or killed the native Indians and brought slaves from Africa to work on rich sugarcane **plantations**. Slavery ended by the late 1800s. But the centuries of colonization, slavery, and other **immigration** led to the unique cultural blends of the various islands.

Many West Indian islands are independent countries. These include Cuba (the largest island), Jamaica, Grenada, Haiti, and Trinidad and Tobago. Other islands are controlled by or strongly tied to European countries or the United States. These islands and groups include Puerto Rico (United States), Bermuda (United Kingdom), and Aruba (Netherlands).



COUNTRIES AND TERRITORIES IN THE WEST INDIES
1. Antigua and Barbuda
2. Bahamas, The
3. Barbados
4. Cuba
5. Dominica
6. Dominican Republic
7. Grenada
8. Haiti
9. Jamaica
10. St. Kitts and Nevis
11. St. Lucia
12. St. Vincent and the Grenadines
13. Trinidad and Tobago

One thing many West Indian islands have in common, however, is their popularity with tourists. People enjoy their beautiful beaches, blue waters, and warm weather.

LEARN MORE! READ THESE ARTICLES…
CUBA (VOLUME 9) • SUGARCANE (VOLUME 10)
VOLCANOES (VOLUME 1)

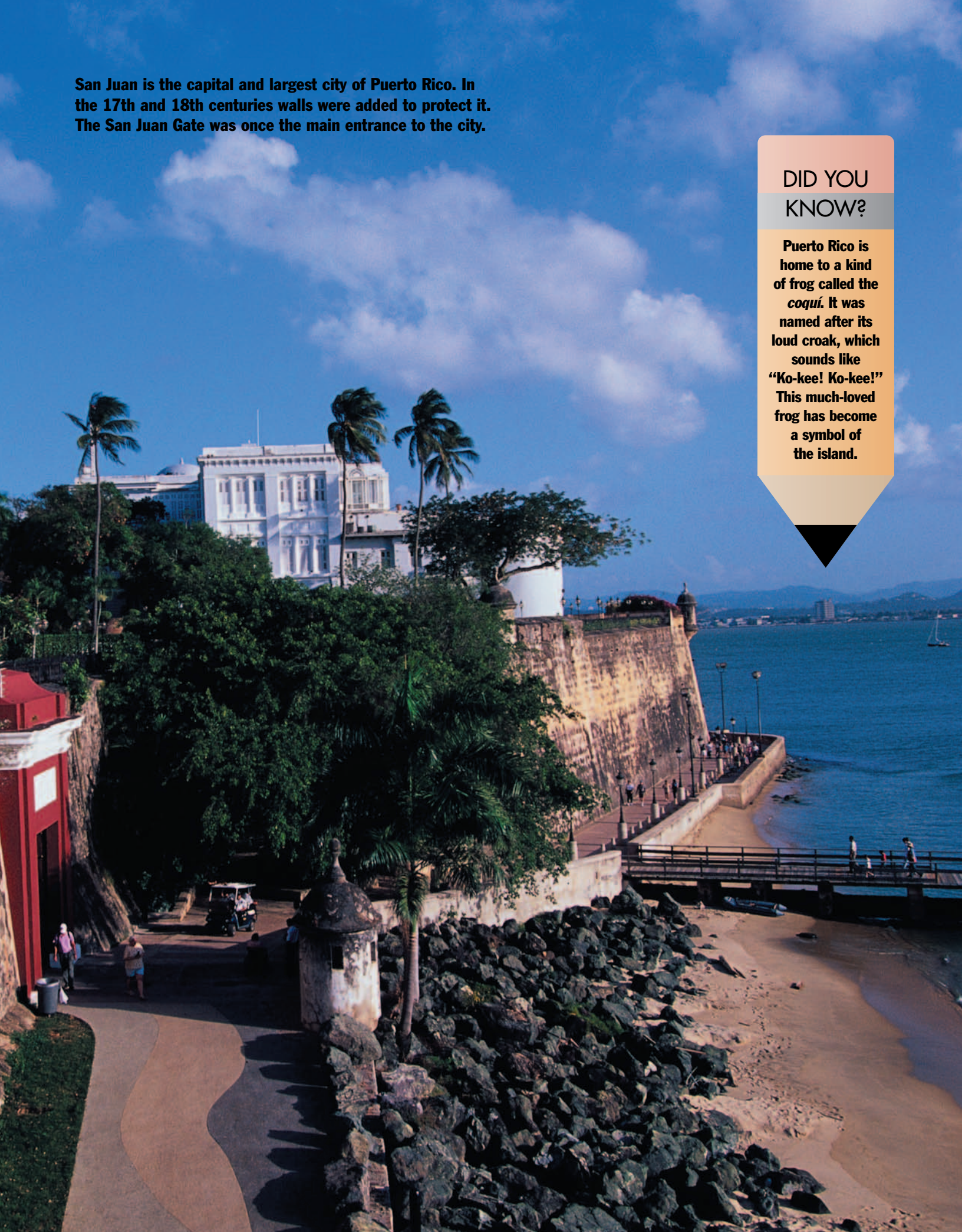
© Royalty-Free/Corbis

The beautiful beaches help make Tobago a popular tourist spot in the West Indies.

SEARCH LIGHT

How did the West Indies get their name?

In 1492, Christopher Columbus landed in islands he thought were the Spice Islands of Asia. The Spice Islands were also called the East Indies. When people later realized that Columbus had reached a different land altogether, they called the islands the West Indies to set them apart from the East Indies.



San Juan is the capital and largest city of Puerto Rico. In the 17th and 18th centuries walls were added to protect it. The San Juan Gate was once the main entrance to the city.

DID YOU KNOW?

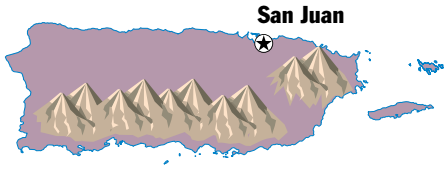
Puerto Rico is home to a kind of frog called the *coquí*. It was named after its loud croak, which sounds like "Ko-kee! Ko-kee!" This much-loved frog has become a symbol of the island.

Jewel of the Caribbean





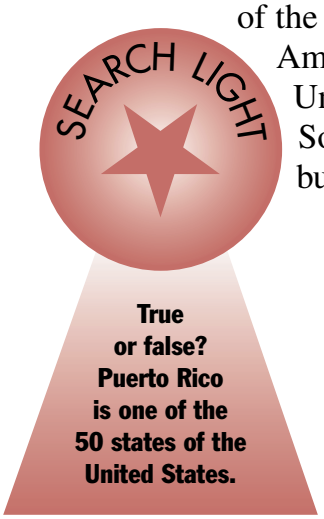
The island of Puerto Rico is a self-governing commonwealth of the United States. This means it has the right to make its own laws, but it has some ties with the United States. Puerto Ricans are American citizens, but they do not elect representatives to the U.S. Congress or pay U.S. taxes.



Located in the West Indies, Puerto Rico lies in the northern Caribbean Sea. The island is mostly hilly, though it is flatter along the coast. Most of the people live in the coastal area. Rainforests cover parts of the north. Many of the island's trees were cut down for lumber or farming. Special plans now encourage **conservation**. New forests have been planted with such fast-growing trees as eucalyptus, teak, and Honduran pine.

Puerto Rico was known as Borinquén to the native Arawak Indians who settled on the island hundreds of years ago. Their **descendants** were living there when in 1493 Christopher Columbus became the first European to reach the island. Columbus claimed the island for Spain, and soon Spaniards had established a settlement there.

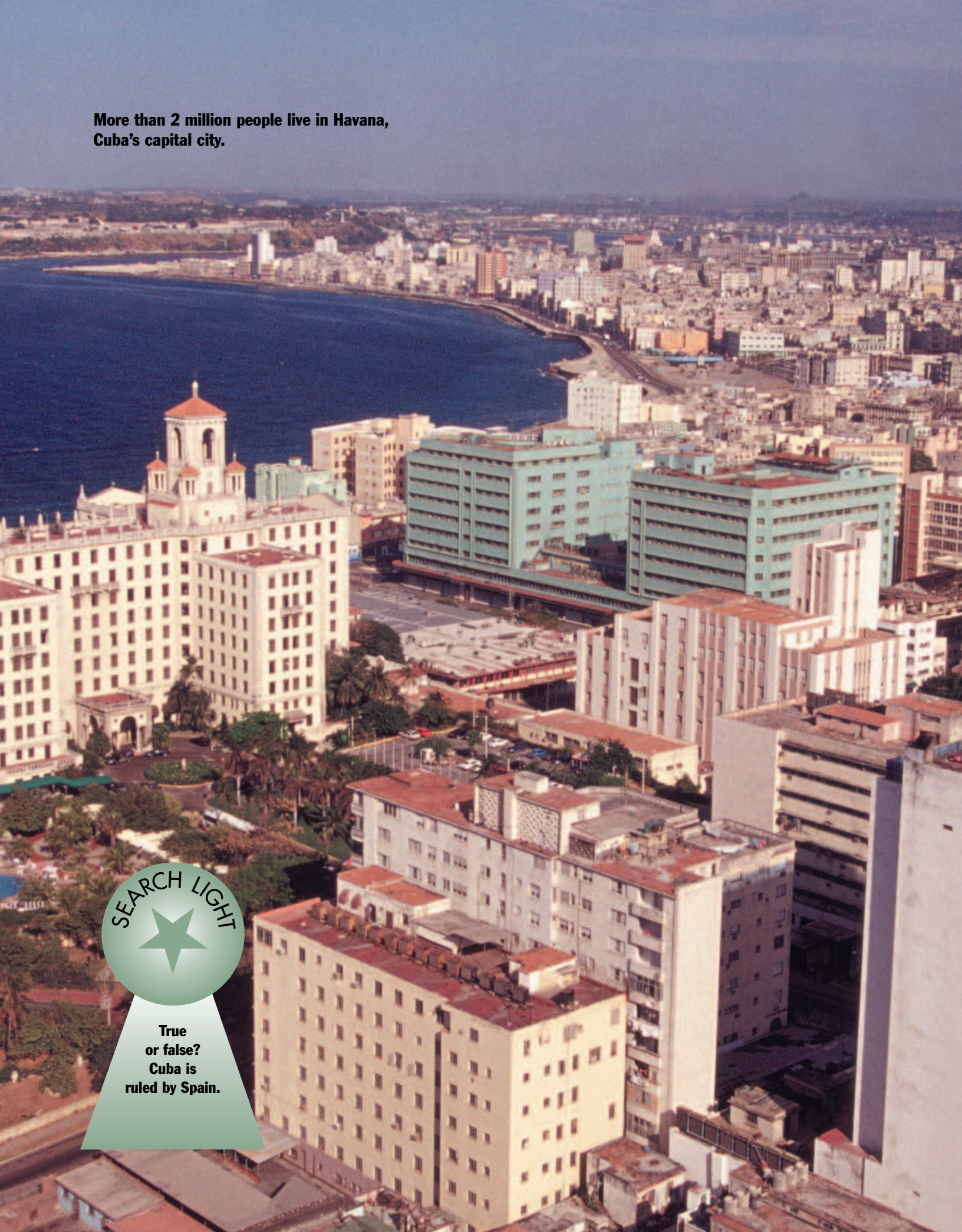
Puerto Rico was a Spanish colony for almost four centuries. At the end of the 1800s, the United States defeated Spain in the Spanish-American War. Afterward the island was turned over to the United States. In 1951 the island became a commonwealth. Some people on the island want it to become a U.S. state, but in elections most of the people have voted against this.



LEARN MORE! READ THESE ARTICLES…
ISLANDS (VOLUME 1) • SPAIN (VOLUME 6)
UNITED STATES: A WEALTH OF RESOURCES AND BEAUTY (VOLUME 9)

© Wolfgang Kaehler/Corbis

Answer: FALSE. Puerto Rico is an American commonwealth.



More than 2 million people live in Havana, Cuba's capital city.

SEARCH LIGHT

True or false? Cuba is ruled by Spain.



Sugarcane and Politics





The country of Cuba is part of the West Indies, a group of islands in the Caribbean Sea. The country is made up of one main island and about 1,600 smaller islands. The capital is Havana, on the northwestern coast of the main island.

Many Cubans are farmers. For a long time the most valuable crop has been sugarcane. Sugarcane grows as a tall, thick grass, and it is from this plant that we get sugar. Cuba also produces tobacco, and Cuban cigars are famous worldwide. Other major crops are coffee, rice, and tropical fruits. Although making sugar from cane is still important, many factories have been closed. Tourism is now the largest source of income for Cuba.

Cubans speak Spanish, and the country's culture reflects its Spanish background. The island was claimed for Spain by Christopher Columbus in 1492 and was ruled by Spain until the 1890s. African culture has also influenced Cuba. Many Africans were taken to the island long ago to work as slaves on the sugar plantations.

Cuba saw major changes when Fidel Castro took over the government in 1959. Castro was strongly **communist**, and he developed a close relationship with the government of the Soviet Union. This caused problems between Cuba and its neighbor the United States, since the United States strongly disagreed with the political ideas of the Soviet Union. In fact, Cuba was nearly the center of a nuclear war between the United States and the Soviet Union in 1962. The problems remained even after the Soviet Union collapsed in 1991.

DID YOU KNOW?

Large stalks of sugarcane are often sold in fruit markets in Cuba. For children it's a treat to have a small section of sugarcane to suck on, like a Popsicle.

LEARN MORE! READ THESE ARTICLES…
FIDEL CASTRO (VOLUME 4) • SUGARCANE (VOLUME 10)
WEST INDIES (VOLUME 9)

© Bob Krist/Corbis

Answer: FALSE. Cuba was ruled by Spain for many years but gained independence in the 1890s.



The bright green emerald tree boa is native to the Amazon Basin of South America.
© David A. Northcott/Corbis

13
5
8
11
7
6
10
2
3
9
1
12
4

SEARCH LIGHT

True or false?
a) Christopher Columbus landed in South America.
b) South America was once connected to Africa.
c) South America is attached to North America.



Rio de Janeiro, Brazil.
© Richard T. Nowitz/Corbis

The Unknown Continent



Scientists believe that millions of years ago South America and Africa were part of the same ancient **landmass** now known as Gondwanaland. In fact, if you view South America and Africa as puzzle pieces, you'd see that the two continents fit roughly together. Slowly, South America broke away and began to drift westward. Today the **Isthmus** of Panama links South America to North America. The South American mainland is divided into 12 independent countries and one dependent state.

The Andes Mountains, one of the longest and highest mountain ranges in the world, lie in South America. The continent also features the Guiana Highlands and the Brazilian Highlands, which contain some of the oldest rocks on Earth. The Amazon River in South America is one of the greatest rivers of the world. A huge quantity of the world's freshwater flows through the Amazon **basin**. The river makes the lush Amazon rainforest possible.

For thousands of years South America was **isolated** from the rest of the world. Outsiders didn't know about ancient peoples such as the Inca who lived on that continent. Then in 1498 Christopher Columbus landed in South America. Spanish and Portuguese **colonizers** and adventurers followed. They **converted** many of the native Indians to Christianity. Nowadays most South Americans speak Spanish or Portuguese.

South America's many unusual animals—such as llamas, alpacas, jaguars, sloths, and armadillos—were new to the first visiting Europeans. Today many people visit South America to see its rainforests and to enjoy its rich animal life.

COUNTRIES OF SOUTH AMERICA
1. Argentina
2. Bolivia
3. Brazil
4. Chile
5. Colombia
6. Ecuador
7. French Guiana
8. Guyana
9. Paraguay
10. Peru
11. Suriname
12. Uruguay
13. Venezuela

LEARN MORE! READ THESE ARTICLES…
AFRICA (VOLUME 8) • CONTINENTS (VOLUME 1)
NORTH AMERICA (VOLUME 9)

DID YOU KNOW?
Many interesting and important dinosaur fossils have been found in South America. The oldest dinosaur fossil ever found was of Eoraptor, a three-foot-long dinosaur that lived in Argentina more than 220 million years ago.

Answer: These are all true statements.

The Rainforest River

On a map of South America a thick line cuts across the country of Brazil all the way from the Andes Mountains in Peru to the Atlantic Ocean. That line traces the mighty Amazon River. The other lines that lead into it are major rivers too. Altogether they make up one of the world's greatest river systems, carrying more total water than any other.

Why is the river called "Amazon"? Many years ago, in 1541, a Spanish soldier named Orellana sailed down the river. He had to fight many women soldiers who lived by the river. It made him think of the Amazons, who were the mighty women soldiers of Greek mythology. So he called the river "Amazon."

Along the banks of the river are miles of trees, all tangled together with bushes and vines. This region is known as the "rainforest." You can hear the sound of water dripping from leaves because it rains here almost every day. This is the largest tropical rainforest in the world.

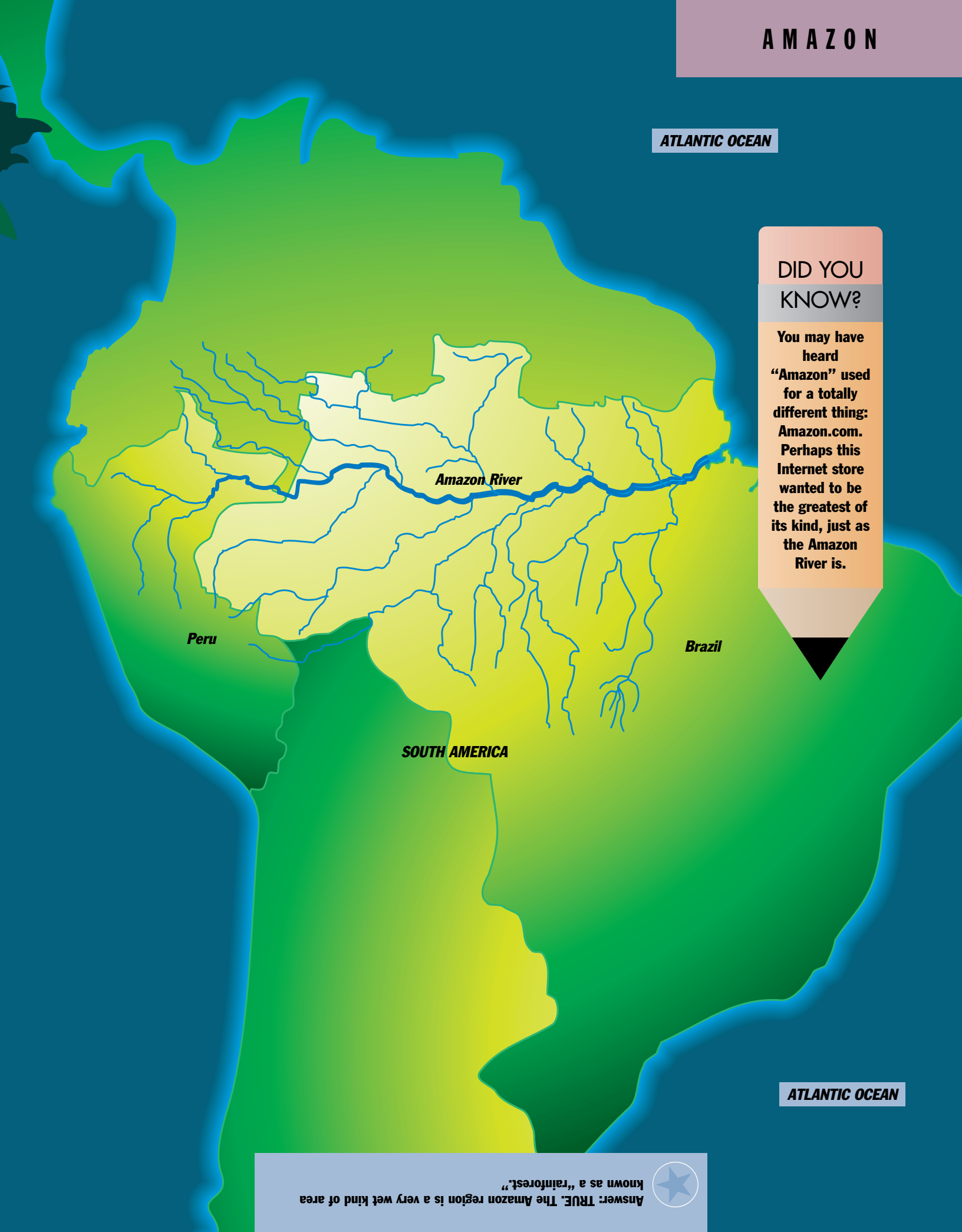
In the rainforest there are very tall trees, some as tall as 200 feet. They spread out like giant umbrellas and catch most of the sunlight. There are rubber trees, silk cotton trees, Brazil nut trees, and many others. Many animals, some quite rare, make their homes among the tree branches. These include **exotic** parrots and **mischievous** monkeys—as well as giant hairy spiders!

LEARN MORE! READ THESE ARTICLES…
AMAZON: A CLOSER LOOK (VOLUME 9)
RAINFORESTS (VOLUME 1)
RUBBER TREE (VOLUME 10)

SEARCH LIGHT

True or false? It rains almost every day in the Amazon.

AMAZON



DID YOU KNOW?

You may have heard "Amazon" used for a totally different thing: Amazon.com. Perhaps this Internet store wanted to be the greatest of its kind, just as the Amazon River is.

Answer: TRUE. The Amazon region is a very wet kind of area known as a "rainforest."

A Close Look at River Life



Find and correct the error in the following sentence: The Amazon rainforest has many trees, plants, animals, people, and insects.

At the heart of South America lies the Amazon River **basin**. It is nearly as large as the United States, but few people live there. Nonetheless, the area is full of living things. They are all part of a giant **tropical** forest called the rainforest. There are so many plants, animals, birds, and insects there that no one has been able to list them all! Some of them exist nowhere else in the world.

The rainforest is a very important place. It helps control the world's **climate** by absorbing gases in the air that can cause a problem called **global warming**. It also provides a home for the many animals in the area.



Emerald tree boa in the Amazon basin.

© David A. Northcott/Corbis

There are bright-colored birds, including green and yellow parrots with red heads, pink flamingos, and beautiful hummingbirds. There are also millions of butterflies, some as big as small birds.

The treetops are alive with playful monkeys. On the ground are funny-looking animals called tapirs that resemble hairy pigs. There are also animals that you wouldn't enjoy meeting. The spotted jaguar, a large member of the cat family, is one. The anaconda is another. It is one of the world's largest snakes and can swallow a whole deer in one gulp! There are also huge hairy spiders, many-legged centipedes, and army ants that eat almost everything that they find.

It's not a good idea to swim in the Amazon River. What looks like a floating log might actually be a dangerous crocodile. There are electric eels that can hurt a person with an electric shock. And there are harmless-looking fish called piranhas that are actually quite ferocious, though they don't usually bother people.

LEARN MORE! READ THESE ARTICLES…
NILE RIVER (VOLUME 8) • RAINFORESTS (VOLUME 1) • RIVERS (VOLUME 1)



DID YOU KNOW?

Many of the plants found in the Amazon rainforest contain substances that can be used as medicine to fight diseases such as cancer. These plants are not found anyplace else in the world.

The Amazon is home to many different types of wildlife, including the green-cheeked Amazon parrot.
© Eric and David Hosking/Corbis

Answer: The Amazon rainforest has many trees, plants, animals, birds, and insects.

World-Class Mountains

The Andes are the tallest mountains in the Western **Hemisphere**. The highest peak, Mount Aconcagua in Argentina, is 22,831 feet high. The mountains run north to south for the entire length of South America—5,500 miles in all. They separate a narrow strip of land along the west coast from the rest of the continent.

The Andes region is made up of many high **plateaus** surrounded by even higher peaks. In some sections, the chain separates into two ranges. The Cordillera Oriental is the eastern mountain range, and the Cordillera Occidental is the western range.



Andean condors.
© Galen Rowell/Corbis

Because of the extreme **altitudes**, the mountains can be a very difficult place to live. There are few plants above 16,000 feet, but between 8,000 and 11,500 feet there is plenty of good farming. This is the zone where most of the people of the Andes live and where most of the cities are. Just above this zone is where llamas and alpacas are raised. These relatives of the camel are valuable for their wool and for other purposes. At higher elevations there is less **oxygen** to breathe. Few people live at heights greater than 12,000 feet. Sheepherders, though, sometimes live as high as 17,000 feet.

The best-known people ever to live in the Andes were the Inca. When Europeans arrived in the mountains in the 1500s, the Inca ruled much of the area. Remains of the magnificent Inca city called Machu Picchu can still be seen in the mountains of Peru.

LEARN MORE! READ THESE ARTICLES…
LLAMAS (VOLUME 12) • MACHU PICCHU (VOLUME 9)
MOUNTAINS (VOLUME 1)

SEARCH LIGHT

Mount Everest, the world's highest mountain, is more than 29,000 feet tall. How much taller than Mount Aconcagua is it?
a) about 600 feet
b) about 16,000 feet
c) about 6,000 feet



Mount Fitzroy and Mount Torre belong to the part of the Andes Mountains in southwestern Argentina. Altogether, the Andes Mountains pass through seven different countries in South America.
© Francesc Muntada/Corbis

DID YOU KNOW?

Andean condors are among the largest flying birds on Earth. Their wings measure 10 feet across from tip to tip and are strong enough to allow these giants to fly as many as 200 miles a day looking for food.

Answer: c) about 6,000 feet

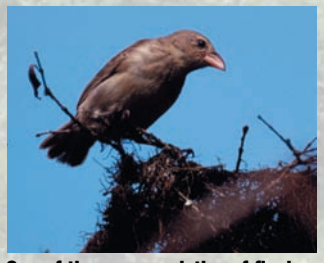
The Islands at the End of the World

A tortoise as big as a bathtub!

Giant lizards that look like dragons!

These are only a few of the special things that make the Galapagos Islands different from any other place on Earth. The islands lie in the Pacific Ocean, far away from any other land. People have called them "the world's end." Together with other natural wonders, the Galapagos are a World Heritage site.

The Galapagos Islands were formed from volcanoes that erupted in the sea. The bare and rocky islands look as if no creature could ever live there. But thousands of animals do, including many found nowhere else in the world. One animal that lives there is the giant tortoise, or land turtle. In fact, the islands got their name from these tortoises. The word *galápagos* means "tortoises" in Spanish.



One of the many varieties of finches on the Galapagos Islands.
© Galen Rowell/Corbis

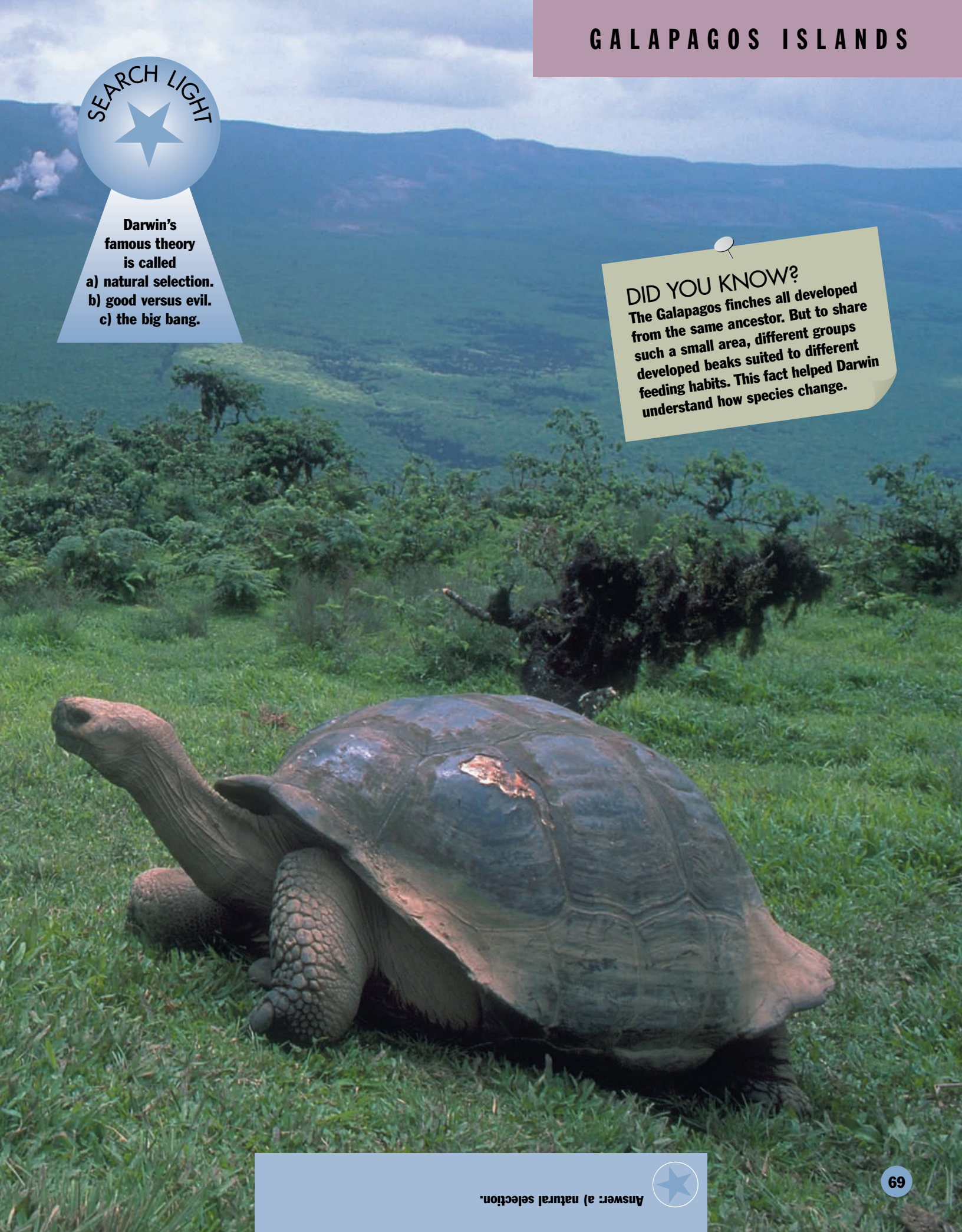
The Galapagos Islands were especially important to the famous English scientist Charles Darwin. When Darwin visited the islands, he discovered that there were creatures living there that did not live anywhere else in the world. He saw three-foot-long lizards—land iguanas that looked like small dragons. And he saw amazing **marine** iguanas, lizards that had actually learned to swim. He also found a great many birds called "finches" that were all much the same except for differences in their beaks. These differences meant that they all ate different things, which allowed them all to share the same habitat.

Darwin decided that all plants and animals evolve, or change little by little, as the world around them changes. One plant or animal group will usually be more successful than another. Darwin called this process "natural selection." And he called the overall change through time the "theory of evolution."

Do you think people are evolving? What do you think we might look like in a million years?

LEARN MORE! READ THESE ARTICLES…
CHARLES DARWIN (VOLUME 4) • ISLANDS (VOLUME 1) • TURTLES (VOLUME 11)

The giant Galapagos tortoise can live as long as 150 years—longer than almost any other animal. Sadly, few are left today.
© Craig Lovell/Corbis



SEARCH LIGHT

Darwin's famous theory is called
a) natural selection.
b) good versus evil.
c) the big bang.

DID YOU KNOW?

The Galapagos finches all developed from the same ancestor. But to share such a small area, different groups developed beaks suited to different feeding habits. This fact helped Darwin understand how species change.

Answer: a) natural selection.

DID YOU KNOW?

Colombia is among the world's leading producers of emeralds. The mysterious beauty of these fiery green gemstones has inspired many legends. They were long believed to cure certain illnesses.



Trays of coffee beans are dried in the sunshine on the roof of a farm building in northwestern Colombia. Colombia grows much of the world's supply of coffee beans.

© Jeremy Horner/Corbis

SEARCH LIGHT

True or false? There are more kinds of birds found in Colombia than in all of North America.



Columbus' South American Namesake



Colombia, in South America, is the only American nation named for Christopher Columbus. Its capital city, Bogotá, sits on a high **plateau** in the Andes Mountains.

Colombia is a land of beaches, deserts, jungles, grasslands, and mountains. The Andes range runs the length of the country. Southeast of the mountains, rivers crisscross the lush green Amazon rainforest. In the east are grasslands called the Llanos.



Since Colombia lies close to the **equator**, its climate is generally hot. But it's cooler in the highlands. The rainforest gets more than 100 inches of rain annually. The Llanos region has dry and wet seasons.

Colombia is home to many different kinds of plants and animals. There are more than 130,000 different plants in the country, including a kind of water lily called *Victoria amazonica*. Its leaves are large and strong enough to support a child. Just some of the animals found in Colombia include jaguars, ocelots, peccaries, tapirs, deer, anteaters, monkeys, and the rare spectacled bear. There are more than 1,550 kinds of birds in Colombia. That's more than Europe and North America have combined. These birds include the huge Andean condor and the tiny hummingbird.

Before the Spaniards landed in the area in the 1500s, there were many Indian tribes living there. They crafted gold and made stone sculptures. The Spaniards took the people's lands and made them slaves. Many other Indians died of disease. Finally, the people **revolted,** and Colombia became free in 1813. Spanish is still the official language of Colombia.

LEARN MORE! READ THESE ARTICLES…
BIRDS (VOLUME 11) • BOGOTÁ, COLOMBIA (VOLUME 9)
TAPIRS (VOLUME 12)

Answer: TRUE. Colombia has more kinds of birds than Europe and North America have combined.



SEARCH LIGHT

What happened in 1920 to connect Bogotá more closely with the rest of the world?

Capital City of Churches

The city of Bogotá is the capital of Colombia, in South America. Bogotá is located on a sloping plain at the base of two mountains, Monserrate and Guadalupe. Monserrate is a traditional symbol of the city. People believe that it is a place of miracles. At the **crest** of each mountain is a large church. Within the city are many more churches. Most of Bogotá's churches were built by the Spanish.



People feeding pigeons in front of a church in Bogotá's Plaza Bolívar.
© Carl & Ann Purcell/Corbis

Before the Spanish arrived in Colombia, Chibcha Indians lived in the area where Bogotá now stands. The Chibcha called it Bacatá. The Spanish conquered the Chibcha and founded the city of Bogotá in 1538. It was not until the early 1800s that Simón Bolívar freed Colombia and its neighbors from the Spanish.

In 1821 Bogotá became the capital of Gran Colombia. This was a union of the present countries of Venezuela, Ecuador, Panama, and Colombia. The countries later separated, and Bogotá became the capital of New Granada. Later New Granada became the Republic of Colombia.

Although Bogotá was the capital of the country, it remained cut off from the rest of the world for a long time. Its location among such high mountains made it very difficult for people to travel in and out of the city. But that changed after an air service was started in the city in 1920. Airplanes connected the city with the rest of Colombia and with other countries. Today many people visit Bogotá to see its churches and its beautiful old buildings.

LEARN MORE! READ THESE ARTICLES…
AIRPLANES (VOLUME 2) • SIMÓN BOLÍVAR (VOLUME 4)
COLOMBIA (VOLUME 9)

DID YOU KNOW?
People like to visit the church atop Monserrate. But it's a long way up—roughly 1,800 feet! Some visitors climb up, but many prefer to take the little cable car that runs to the top.

Aerial cable cars carry visitors up Monserrate mountain on the outskirts of Bogotá, Colombia.
© Carl & Ann Purcell/Corbis

Answer: The city's first air service began in 1920. This meant that people could travel to and from Bogotá much more easily than before.



A Peruvian girl displays a style of traditional dress that is still worn among some of the country's inhabitants.

SEARCH LIGHT

Unscramble these words having to do with Peru.

- deAns
- caIn
- mazonA



Land of the Inca



Peru is a large South American country that lies just south of the **equator**. In the west it has a long coastline on the Pacific Ocean. Many of Peru's major cities are located on a narrow strip of flat land along the coast. Among them is Lima, the capital. Eastern Peru is part of the huge **basin** of the Amazon River. It is nearly covered with rainforests. Between the coast and the Amazon region are the Andes. Some peaks in this mountain range reach higher than 20,000 feet. High in the Andes is Lake Titicaca, one of the largest lakes in South America.

DID YOU KNOW?
Peru is known for two domesticated animals that are native to the Andes, llamas and alpacas. These animals are surefooted climbers well suited for life in the mountains.

Around AD 1200 a group of Indians called the Inca formed the city of Cuzco in what is now Peru. From there they set out to conquer other Indian peoples along South America's west coast. Eventually the Inca ruled over as many as 12 million people. But their great **empire** was destroyed when Spanish soldiers seized the land in the 1530s. Spain ruled until Peru won its independence almost 300 years later.

Today Peru still has many reminders of the Inca. The country's name comes from a word meaning "land of abundance" in Quechua, the Inca language. The name refers to the riches that the Inca got from the land, including great amounts of gold. Indians who still speak the Quechua language make up about half of Peru's population. And in the Andes there is Machu Picchu. The remarkable stone remains of this Inca settlement attract visitors from all over the world.

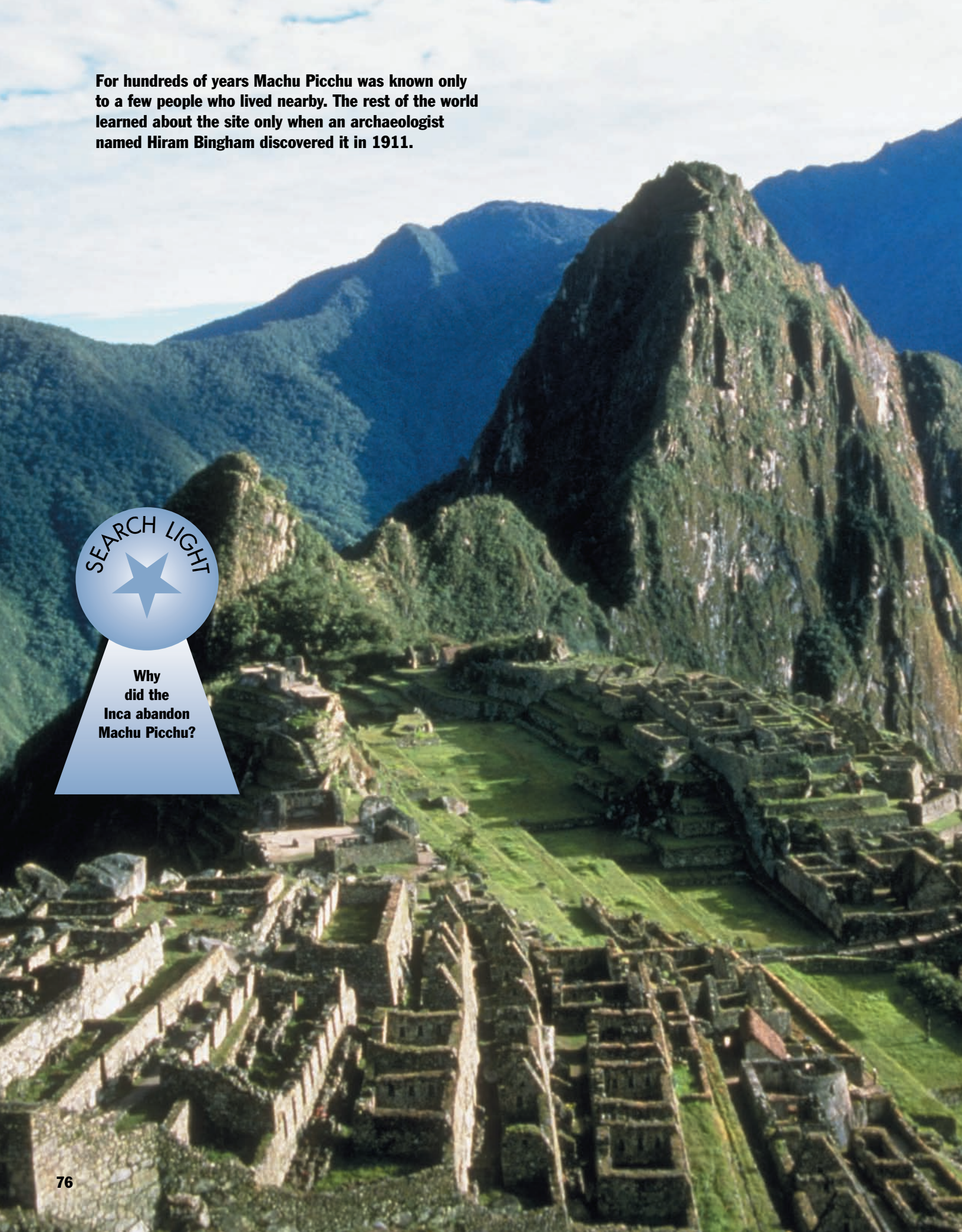


LEARN MORE! READ THESE ARTICLES…
ANDES (VOLUME 9) • MACHU PICCHU (VOLUME 9)
RAINFORESTS (VOLUME 1)

© James Sparshatt/Corbis

Answer: deAns = Andes
caIn = Inca
mazonA = Amazon

For hundreds of years Machu Picchu was known only to a few people who lived nearby. The rest of the world learned about the site only when an archaeologist named Hiram Bingham discovered it in 1911.



SEARCH LIGHT

Why did the Inca abandon Machu Picchu?

Secret of the Andes

A long time ago, a group of people who worshiped the Sun lived in South America. They constructed incredible stone buildings high in the Andes, a chain of mountains in the western part of the continent. These people were the Inca. Their most famous creation was Machu Picchu, in the mountains of Peru.



Religious center, Machu Picchu.
© Craig Lovell/Corbis

The Inca ruled a large **empire** and had a lot of gold. Their fame reached far and wide. Even the rulers of Spain heard about their "land of gold." In the 1500s the Spanish invaded the Inca empire. The invaders killed many people, took their gold, and destroyed their religious buildings. The Spanish invasion brought an end to the Inca empire.

Although the Inca had no written records, they left behind **archaeological** clues about their lifestyle. One big clue is Machu Picchu. At some point the Inca **abandoned** the site. No one is sure why. Some people think it's because the site didn't have enough water. After Machu Picchu was abandoned, trees and plants grew over it. This kept it hidden from the Spanish during their invasion. The site remained unknown to people outside of the Andes until an archaeologist found it in 1911.

If you visit Machu Picchu, you'll find great temples and palaces. You'll also see dozens of stepped **terraces** for farming all around the site. There are also a plaza, houses, and a cemetery. Walkways and thousands of stone steps connect the different parts of the site. These structures were probably built in the 1400s and 1500s. But amazingly, almost all of them are still in very good shape. The Inca must have been some builders!

DID YOU KNOW?

The name Machu Picchu means "old peak" in Quechua, the language of the Inca.

LEARN MORE! READ THESE ARTICLES…
ANGKOR WAT (VOLUME 7) • MAYAN CIVILIZATION (VOLUME 4) • PERU (VOLUME 9)

© Jim Zuckerman/Corbis

Answer: It's still not certain, but it could have been because of a lack of water.



Rio de Janeiro is the second largest city in Brazil. It is located on the Atlantic Ocean in the southeastern part of the country.
© Richard T. Nowitz/Corbis

SEARCH LIGHT

Which of the following can be said of Brazil?
It makes up half of South America.
It's named for a tree.
The national sport is basketball.
The Nile River is in Brazil.



Half of South America





Brazil, the largest country in South America, took its name from brazilwood. The first European settlers in Brazil shipped a lot of brazilwood back to Europe, where it was used to produce valuable red dyes.

Brazil covers nearly half of the continent. It has a long coastline along the Atlantic Ocean. It shares borders with every South American country except Chile and Ecuador. The capital of Brazil is Brasília. Two other Brazilian cities—São Paulo and Rio de Janeiro—rank among the world's largest. Both of these cities lie on the coast. The Amazon River is a key natural feature of Brazil. It is the largest river in the world in terms of the amount of water it carries. More than 1,000 tributaries, or smaller rivers, empty into the Amazon. During the river's annual flood, it pours more than 46 million gallons of water per second into the Atlantic Ocean.

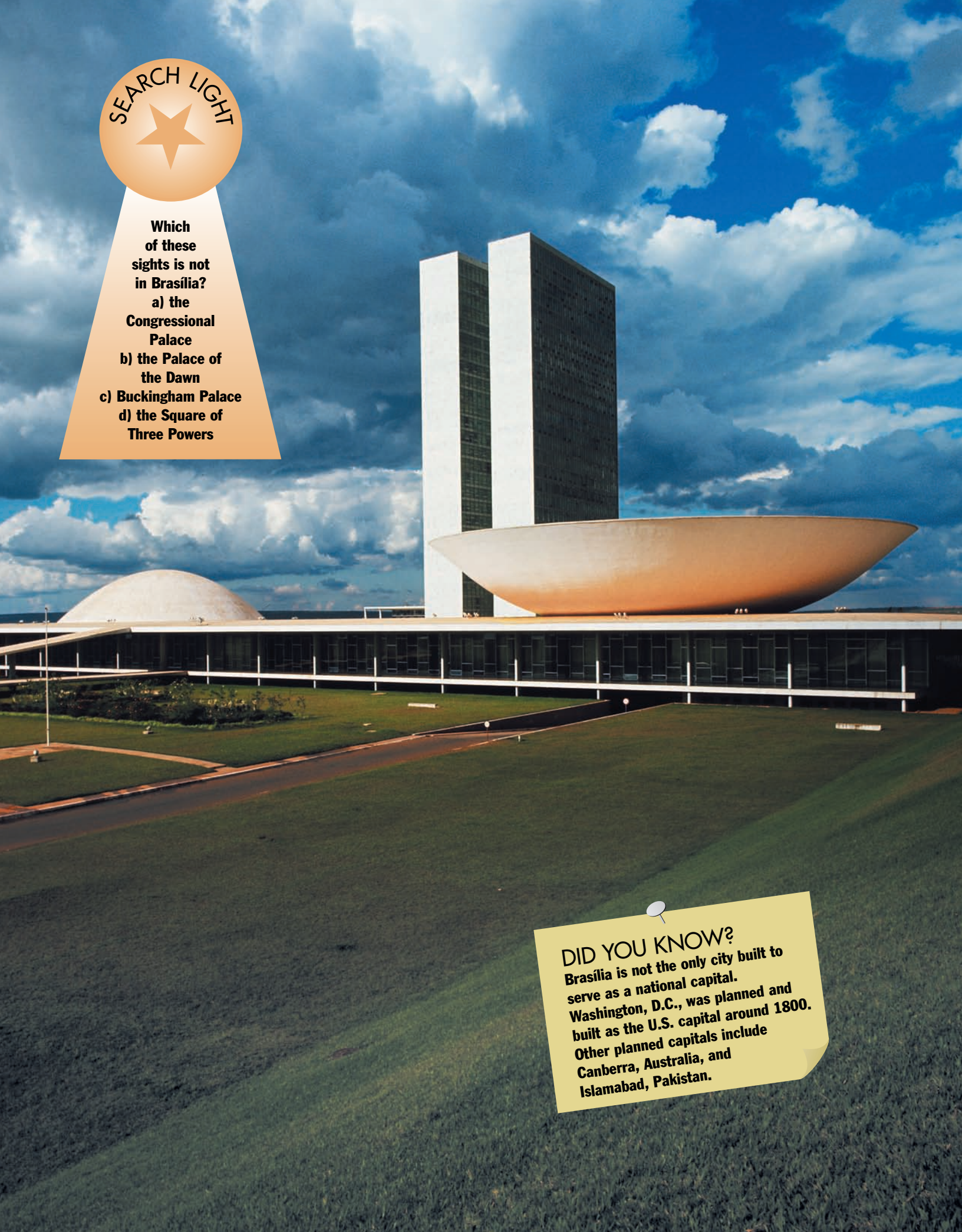
The lush Amazon rainforest covers much of the river's huge **basin**. This rainforest contains the most varied plant life on Earth. Nearly 50,000 kinds of animals are also found there. So many different kinds of plants and animals live in the forest that many of them haven't been named yet!

Brazil's national sport is association football, or soccer. The Brazilian team has won the World Cup soccer championship five times. Pelé, a Brazilian national hero, is considered to be one of the greatest soccer players ever.

LEARN MORE! READ THESE ARTICLES…
AMAZON: THE RAINFOREST RIVER (VOLUME 9)
BRASÍLIA, BRAZIL (VOLUME 9)
PELÉ (VOLUME 4)

DID YOU KNOW?
The large and gentle monkey called the "muriqui" is found only in the eastern forests of Brazil. It is one of the world's most endangered animals.

Answer: It makes up half of South America, and it's named for a tree.



SEARCH LIGHT

Which of these sights is not in Brasília?
a) the Congressional Palace
b) the Palace of the Dawn
c) Buckingham Palace
d) the Square of Three Powers

DID YOU KNOW?

Brasília is not the only city built to serve as a national capital. Washington, D.C., was planned and built as the U.S. capital around 1800. Other planned capitals include Canberra, Australia, and Islamabad, Pakistan.

A Bow, a Bird, an Airplane

Brasília is the capital of Brazil, the largest country in South America. The city lies on a **plateau** in central Brazil, near the starting point of three rivers, the Tocantins, the Paraná, and the São Francisco.

Brasília was planned and built in the 1950s to replace Rio de Janeiro as Brazil's capital. Brazilian **architect** Lucio Costa designed the city in a shape that reminded many people of a bird, a bow and arrow, or even an airplane! He arranged its neighborhoods around large groups of apartment buildings called "superblocks." Each superblock also contains schools, shops, and open parks.



Four large statues known as the Four Evangelists at the entrance to the Catedral Metropolitana in Brasília.
© Jeremy Horner/Corbis

The Square of Three Powers marks the center of Brasília. Around it you'll see the important government buildings. Oscar Niemeyer, another Brazilian architect, designed these buildings, which include the striking Congressional Palace. It has twin towers with a large white dome on one side. The dome is where the **Senate** meets. On the other side of the towers is a huge bowl-like structure that houses the Chamber of **Deputies**. Also in the square are the Palace of the **Supreme Court** and the Planalto Palace, where the president's office is located.

Near the Square of Three Powers is Lake Paranoá. At the northern and southern ends of the lake are fashionable neighborhoods that are quite separate from the central part of the city. Both are full of hotels, restaurants, cafés, and clubs. On a triangular piece of land jutting into the middle of the lake stands the Palace of the Dawn, the president's home.

LEARN MORE! READ THESE ARTICLES…
ARCHITECTURE (VOLUME 3) • BRAZIL (VOLUME 9)
BUENOS AIRES, ARGENTINA (VOLUME 9)

The Congressional Palace is among the many impressive modern public buildings in downtown Brasília.
© George Holton/Photo Researchers, Inc.

Answer: c). Buckingham Palace is in London, England.



DID YOU KNOW?

The first people to live in what is now Paraguay were the Guaraní Indians. Today many of Paraguay's people speak two languages—Guaraní and Spanish.



The Once-Forgotten Land



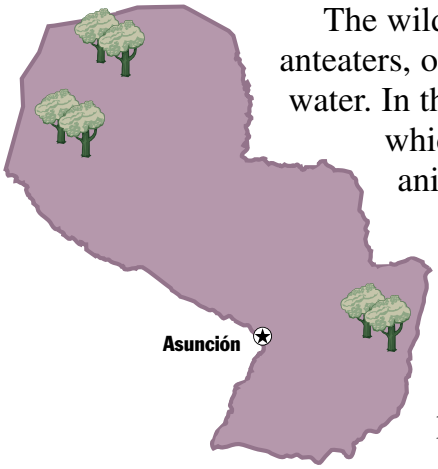
Not long ago nobody knew much about Paraguay, a country in South America. For much of the 1800s and 1900s Paraguay was ruled by **dictators** who kept the country isolated from the rest of the world. But in the 1990s the country began to open up and encourage visitors.

SEARCH LIGHT

For a long time most people knew little about Paraguay. Why?

Paraguay is located in the south-central part of South America. Its capital is Asunción. The country is surrounded by land, and rivers provide the only way to get to the Atlantic Ocean. This makes the rivers very important to Paraguay. In fact, the country's name may come from an Indian word meaning "river that gives birth to the sea."

The Paraguay River divides the country into two natural parts. To the east the land is mostly wooded hills and grassy plains. To the west is a dry, flat region called the Chaco Boreal. It is part of the larger Gran Chaco region, which extends into Bolivia and Argentina.



The wild animals of Paraguay include bats, monkeys, armadillos, anteaters, otters, jaguars, and nutrias, which are rats that can live in water. In the Chaco there is a small number of Chacoan peccaries, which look something like wild pigs. Scientists thought these animals were **extinct** until some living ones were found in the early 1970s.

The people of Paraguay live mostly in the east. More of them work in farming than in any other kind of job. They grow sugarcane, **cassava**, corn, rice, and tobacco. They also produce a tea called "yerba maté," which is popular in Paraguay and neighboring countries.

LEARN MORE! READ THESE ARTICLES…
ASUNCIÓN, PARAGUAY (VOLUME 9) • RIVERS (VOLUME 1) • TEA (VOLUME 10)

Traditional Latino dancing is showcased at an outdoor plaza in Asunción, Paraguay.
© Sarah JH Hubbard/Lonely Planet Images

Answer: Paraguay was run by dictators for much of the 1800s and 1900s. These leaders didn't let the country's people have much contact with people in other countries.

DID YOU KNOW?

The city's name means "assumption." It refers to the Roman Catholic belief that Mary, the mother of Jesus, was taken up, or "assumed," into heaven.



Capital of Spanish and Indian Heritage

For many years the Guaraní Indians lived a simple life in Paraguay. They fished, trapped small animals, and did a little farming to survive.



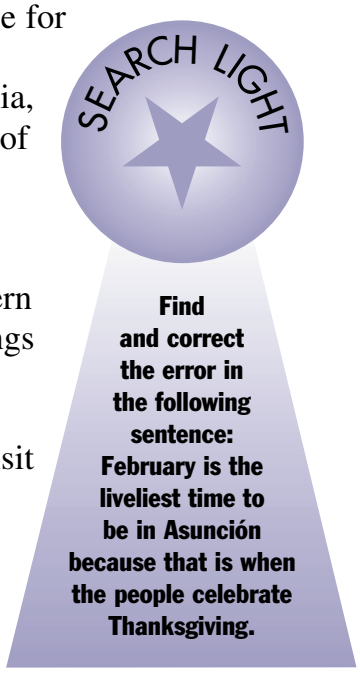
The Catedral Metropolitana in the heart of Asunción.
© Donald C. & Priscilla Alexander Eastman /Lonely Planet Images

They were friendly and peaceful. When the Spanish arrived in 1537, they set up a base at Asunción. They **converted** the Guaraní to Christianity. In time, many Spanish and Guaraní people married. Most of the Paraguayan people of today have mixed Spanish and Indian origins.

Under Spanish rule, Asunción grew into a city. The Spanish built a cathedral and a textile mill. They also used the city as a base for military expeditions to other South American countries, such as Colombia, Peru, and Brazil. But the people of Paraguay longed to be free of Spanish rule. In 1811 they declared their independence.

Today Asunción is Paraguay's capital and largest city. And because it is located on the Paraguay River, Asunción is an important center for trade. In the city center there are tall modern buildings. But in other parts of the city you can still see buildings from Asunción's **colonial** history.

If you visit Asunción, you should see the old cathedral. It's called the Casa Viola and is now a museum. You should also visit the presidential palace, the Palacio de Gobierno. The liveliest time to be in Asunción is February. That is when the people celebrate Carnival, a street festival of dance, music, food, and parades. Many people dress in fantastic costumes and masks for the celebration.



LEARN MORE! READ THESE ARTICLES…
BRASÍLIA, BRAZIL (VOLUME 9) • BUENOS AIRES, ARGENTINA (VOLUME 9)
MARY (VOLUME 5)

A statue guards the entrance to Asunción's Congressional Palace.
© Donald C. & Priscilla Alexander Eastman/Lonely Planet Images

Answer: February is the liveliest time to be in Asunción because that is when the people celebrate Carnival.

A Long and Narrow Land



No other country has a shape like Chile's. The country stretches along South America's Pacific coast for a long 2,700 miles but is only a skinny 110 miles wide. Chile controls Easter Island in the Pacific and claims part of Antarctica as well. Its capital is Santiago.

Most of Chile is dominated by the Andes Mountains. Many people there raise llamas and alpacas for wool. But the country is so long that it has many habitats other than the **alpine**. The north is mainly desert. Some **cacti** and shrubs grow there. Central Chile is **temperate** and has land that's good for farming. Most of Chile's people live there. The area is known for its unique *matorral* habitat, with mixed trees, shrubs, cacti, and grass. But people have cleared away much of this growth for firewood. Very few people live in the far south. There are grasslands suitable

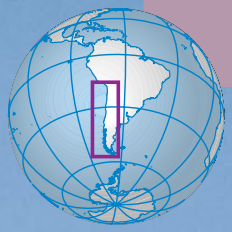
SEARCH LIGHT

Fill in the blank: Chile is about

_____

longer than it is wide.

a) two and a half times
b) 250 times
c) 25 times



Llamas graze near a snow-capped volcano in northern Chile. People use llamas to carry things. Llamas are also used as a source of food, wool, and hides.
© Graham Neden–Ecoscene/Corbis

for raising **livestock** in the area called Chilean Patagonia. But most of the region is rugged and quite cold.

Chile faces many kinds of natural disasters, including volcanic eruptions, earthquakes, and **tsunamis**. In the winter there are fierce storms and floods. Summer often brings **drought**.

Like much of South America, Chile was **colonized** by Spain in the 1500s. The country won independence in the early 1800s. But the long period of Spanish rule had a lasting effect. Most Chileans are mestizos, a mix of Spanish and American Indian ancestry. And most people speak Spanish.



LEARN MORE! READ THESE ARTICLES…
ISABEL ALLENDE (VOLUME 4) • EASTER ISLAND (VOLUME 9)
LLAMAS (VOLUME 12)

DID YOU KNOW?
The Atacama Desert in northern Chile is perhaps the driest place on Earth. Some parts of the desert have not had a drop of rain for hundreds of years.

Answer: c) 25 times



Stone statues called *moai* stand on a slope of Rano Raraku, a volcano on Easter Island.

SEARCH LIGHT

How did Easter Island get its name?

Land of Giants

Easter Island is located in the eastern part of the Pacific Ocean. The people who live on the island call it Rapa Nui. But the first European visitors to land there, the Dutch, named it Paaseiland, meaning "Easter Island," because they arrived on Easter Sunday. Today Easter Island is a part of the South American country of Chile.



A line of *moai* statues.
G. Renner/Robert Harding Picture Library

Easter Island is only 14 miles long and 7 miles wide. It lies 2,200 miles west of Chile. Although the island is small and isolated, it is famous throughout the world for its huge stone statues of people. They are called *moai*. There are more than 600 *moai* on the island. They stand on giant stone platforms called *ahu*s. Some of the *ahu*s have as many as a dozen statues.

All of the *moai* were carved after about AD 700. Some of them have rounded heads and stubby bodies. One famous *moai* is a lifelike figure of a kneeling man. The statues made at a later date are very tall and slim. These *moai* have a huge **topknot** called a *pukao* on the top of their heads. Most of them are between 10 and 20 feet tall. One statue from this period is 32 feet high. It is made from a single block of stone that weighs nearly 82 tons. The *pukao* on its head alone weighs about 11 tons. One unfinished statue is about 68 feet tall. Its back is still attached to the rock from which it was carved.

DID YOU KNOW?
No one is sure why the Easter Island statues were carved or what they mean. Many people believe that the statues honored important people who were revered as gods after their death.

LEARN MORE! READ THESE ARTICLES…
CHILE (VOLUME 9) • ISLANDS (VOLUME 1) • SCULPTURE (VOLUME 3)

© James L. Amos/Corbis

Answer: The Dutch named the place Paaseiland, meaning "Easter Island," because they arrived there on Easter Sunday.

Home of the Gaucho



At the southern end of South America lies Argentina, the second largest country on the continent—only Brazil is larger. The capital is Buenos Aires.

The landscape of Argentina is **diverse**, with four main regions. The mountains of the Andes rise in the northwest. The dry Gran Chaco lowlands lie in the north. In the south is the cold dry region of Patagonia. The Pampas grasslands cover the heart of the country.

SEARCH LIGHT

Find and correct the errors in the following sentence: The first people who lived in Argentina were Spanish immigrants from Europe.

The Pampas has rich soil and lots of rainfall. It is there that you'll find most of Argentina's farms and ranches. It's also where you'll find gauchos—the famous Argentine cowboys. In the 1700s and 1800s these wandering horsemen hunted large herds of escaped horses and cattle that roamed over the Pampas. Argentine writers celebrated the gauchos in poems and stories. Today the gauchos have a more settled lifestyle, working on the farms and ranches.

The Argentine people are as diverse as the land. The first people who arrived in what is now Argentina were American Indians (Native Americans). They traveled there from North America thousands of years ago. Today most of the population is European. The largest groups are from Spain, Italy, France, Britain, Germany, Poland, and Russia.



Spanish is the national language of Argentina. But because Argentina has so many **immigrants** from different parts of Europe, many other European languages are also spoken. Some Indian languages can be heard as well.

LEARN MORE! READ THESE ARTICLES…
JORGE LUIS BORGES (VOLUME 3)
BUENOS AIRES, ARGENTINA (VOLUME 9) • CATTLE (VOLUME 12)

Ranchers on horseback drive cattle in Patagonia, the largest region of Argentina.
© Corbis

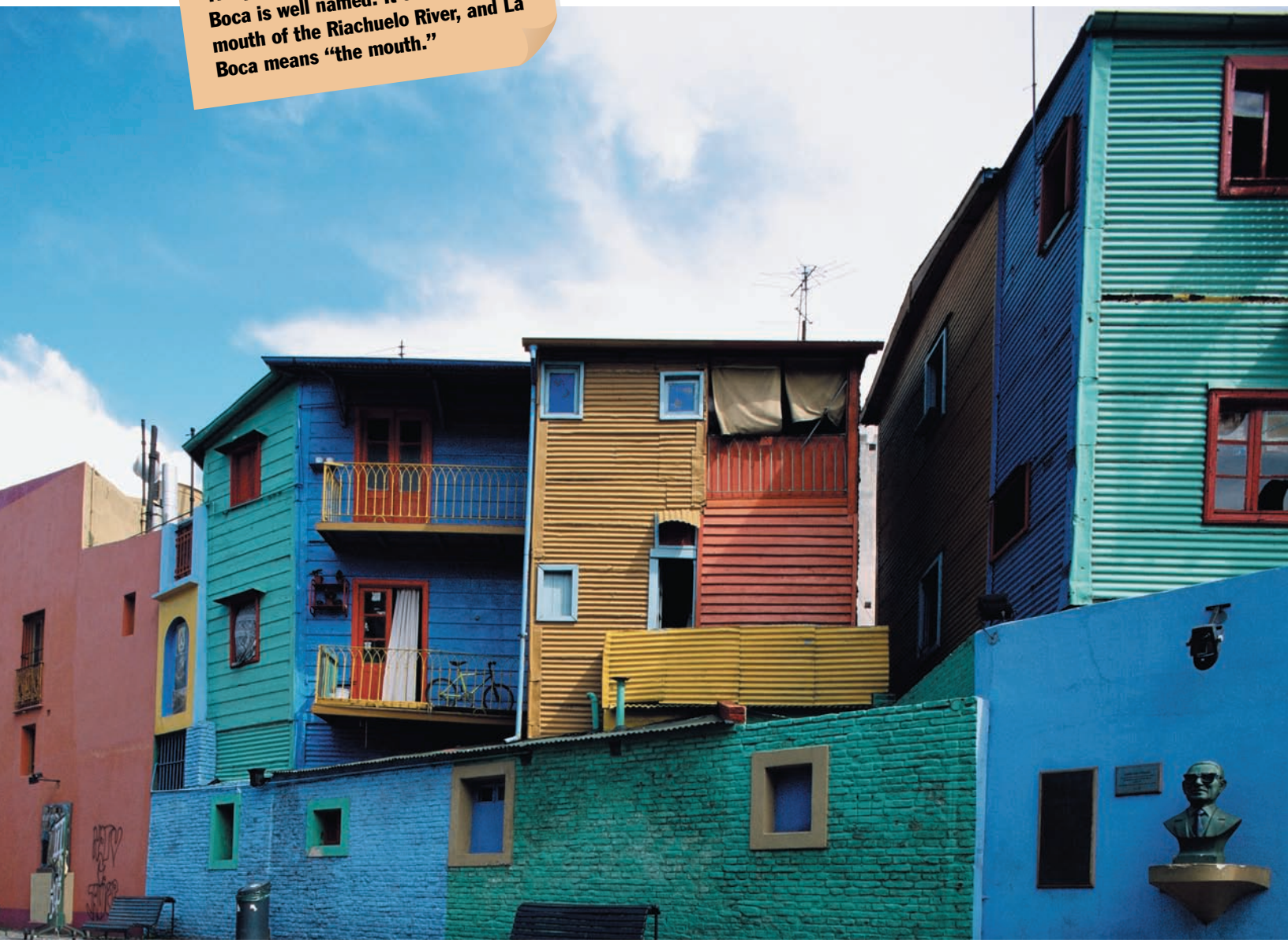
DID YOU KNOW?

Dance and music are important parts of Argentine culture. The tango, a very dramatic dance, was created in Argentina in the 1800s. Today it is performed all over the world.

Answer: The first people who lived in Argentina were American Indians from North America.

DID YOU KNOW?

The part of Buenos Aires called La Boca is well named. It sits at the mouth of the Riachuelo River, and La Boca means "the mouth."



A series of brightly colored buildings line a street in Buenos Aires, the capital of Argentina.

© Dennis Degnan/Corbis

Argentina's Twice-Founded Capital

SEARCH LIGHT

Fill in the blanks: Buenos Aires was founded first in _____ and again in _____.

Buenos Aires, the capital of Argentina, is one of the world's most important ports and most **populous** cities. Long ago, it is said, Spanish sailors named the port Santa María del Buen Aire for their **patron saint**. The name meant "Saint Mary of the Good Air."

Buenos Aires was founded twice. The first time was in 1536 by Spanish settlers. They soon left their new home when they were attacked by local Indians. Almost 50 years later Juan de Garay led a larger expedition back to the site. He refounded the city in 1580.



Skyline of Buenos Aires.
© Pablo Corral V/Corbis

The central section of Buenos Aires still has roads and buildings that were built long ago. The many broad tree-lined avenues in this part of the city date from the 1920s. These roads continue to carry heavy traffic.

A tour of the city usually includes a visit to the tomb of José de San Martín, the hero of Argentina's struggle for independence from Spain. Also popular with tourists is La Boca, a pretty section of the city where the first settlers landed. This was later the site of the city's first meat-salting plants, which made Buenos Aires wealthy in the 1800s. Today La Boca is an artists' colony known for its brightly painted wooden houses.

Visitors to Buenos Aires also enjoy the city's museums and theaters. The Argentine Museum of Natural Sciences has a rich collection of **fossils**. The National Museum of Fine Arts displays the work of great painters from Argentina and all over the world. Buenos Aires is also home to the beautiful Colón Theatre. There you can see world-class performances of opera, ballet, and classical music.

LEARN MORE! READ THESE ARTICLES…
ARGENTINA (VOLUME 9) • JORGE LUIS BORGES (VOLUME 3)
BRASÍLIA, BRAZIL (VOLUME 9)

Answer: Buenos Aires was founded first in 1536 and again in 1580.

GLOSSARY

abandon to leave without planning to return

abundance great quantity; plenty

alpine mountainous

altitude the distance of an object above a specific level (such as sea level) on a planet or other heavenly body

ancestry all the family members who lived before a particular individual

archaeology (adjective: archaeological) the science that deals with past human life as shown by fossils, tools, and other material left by ancient peoples

architect person who designs and plans buildings and oversees their construction

basin the area of land drained by a river and its branches

buff an off-white color

cactus flowering plant of dry regions that has water-storing fleshy stems and, usually, sharp spines

canal artificial waterway for boats or for draining or supplying water to land

cargo goods transported in a ship, airplane, or other vehicle

cassava tropical plant that has a thick underground rootlike part and can be made into a number of foods

cathedral large Christian church where a bishop is in charge

château castle or a large country house, especially in France

civilization the way of life of a people at a particular time or place; also, a fairly advanced culture and technology

climate average weather in a particular area

colony (verb: colonize; adjective: colonial) settlement established in a distant territory and controlled by a more powerful and expanding nation

communist follower of a system of government in which all property is owned by the state or community and all citizens are supposed to have a share in the total wealth

congress the main lawmaking group of some nations

conservation the care and protection of something fragile, unique, and valuable, such as rare wildlife or ancient structures

constitution document containing the basic beliefs and laws of a nation, state, or social group

convert (verb) to win over to a new or different belief

crest in geography, the upper edge or limit of something, such as the top of a mountain

deputy member of a lawmaking group in some nations

descendant member of a recent age group of a family or similar division that began years earlier

dictator person who rules with total power, often in a cruel or brutal way

diverse varied; different

domesticated tamed

drought long period of dry weather

elevation the height of an object above sea level (that is, the surface of the ocean)

empire a major widespread area under a single government, or a number of territories or peoples under one supreme ruler

engineer person who is trained to design and produce complex structures such as roads, bridges, and dams

equator imaginary circle running east-to-west around the Earth that lies halfway between the North Pole and the South Pole

erosion the process of wearing down; *especially*, the wearing away of soil or rock by wind, water, or ice

exotic unusual and unfamiliar

expedition a planned journey or trip made for a specific purpose

export to carry or send abroad, especially for sale in another country

extend to stretch out or reach across a distance, space, or time

extinct no longer existing

fertile rich and productive; able to yield quality crops in large quantities

fossil an imprint or other trace in rock of an animal, plant, or other living thing

geography the natural physical features of an area; also, the study of the countries of the world and of the Earth's surface features

glacier large riverlike body of ice moving slowly down a slope or spreading over a land surface

global warming an increase in the average temperature on the planet Earth

hemisphere half of the planet Earth or any other globe-shaped object

heritage background or descent

hurricane major tropical storm that occurs in the Atlantic Ocean and features high winds moving in circular patterns; in the Pacific Ocean such storms are called "typhoons"

immigrant person who goes to a country to live there

immigration the process of moving to a new country

isolate to keep separate or alone

isthmus narrow strip of land connecting two larger land areas

landmass large area of land

livestock animals kept or raised, especially farm animals such as cattle, pigs, sheep, goats, and horses

mammal class of warm-blooded animals that feed their young with milk from special mammary glands, have an internal backbone, and are more or less covered with hair

manuscript handwritten or typewritten document

marine having to do with the ocean

mineral substance that is not animal or plant and is an important nutrient for living things

mischievous playfully naughty

natural resources the materials or qualities supplied by nature (such as minerals or water power) that make a place valuable to people, usually for industrial and manufacturing purposes

ocelot medium-sized wildcat of the Americas

organization group of people working together for some purpose

oxygen very common gas that is one of the basic elements necessary for human and animal life

patron saint holy person who is chosen to specially protect a group or place

peccary American animal related to the pig

permanent unchanging, long-lasting, or meant to last forever

petroleum liquid taken from the ground and not yet cleaned or separated into such products as gasoline and kerosene; also called "crude oil"

philharmonic large orchestra that plays classical music

plantation large farming property, usually worked by resident laborers

plateau wide land area with a fairly level surface raised sharply above the land on at least one side

polar region area at or near the North Pole or South Pole

pollute (noun: pollution) to poison or make dirty, often with man-made waste

population all the people living in a country or other specific area

populous having a large population

revere to honor

revolt (verb) to rise up (often violently) against the power of a ruler or government

scenic having to do with a pleasing view or natural landscape

senate official lawmaking group of some nations

supreme court the highest court in a country or other specific official area

tapered little by little becoming smaller toward one end

tapir hoofed, long-snouted mammal of Malaysia and the Americas that is related to horses and rhinoceroses

temperate having mild weather

terrace area of hillside that has been leveled off to allow farming on the land

terrorist person who uses violence to try to reach political goals

timber wood used for building or carpentry

topknot short mound of hair worn on the top of the head

tropical having to do with the Earth's warmest and most humid (moist) climates

tsunami huge ocean wave produced by an undersea earthquake or volcanic eruption

tundra treeless plain with spotty grasses mostly in extremely cold regions

vast huge or spacious

I N D E X

Aklavik (town in Canada) *page* **13**

Alaska (state in the U.S.)
United States of America *page* **27**

alpacas (mammals)
Did you know? *page* **75**

Amazon (river and region in South America) *page* **62**
Peru *page* **75**
rivers *page* **64**
South America *page* **61**

American Indians, *also called* First Nations, *or* Native Americans
Aklavik *page* **13**
Canada *page* **10**
Ontario *page* **19**
United States of America *page* **28**
LEARN MORE *look under* Aztec civilization; Guaraní; Inca civilization; Mayan civilization

Andes (mountains in South America) *page* **66**
Peru *page* **75**
South America *page* **61**
LEARN MORE *look under* Machu Picchu

Argentina (country) *page* **90**
LEARN MORE *look under* Buenos Aires

Arizona (state in the U.S.)
Grand Canyon *page* **32,** photograph *page* **33**

Asunción (city in Paraguay) *page* **85**
Paraguay *page* **83**

Atacama Desert (region in Chile)
Did you know? *page* **87**

aurora borealis: *look under* northern lights

Aztec civilization
Did you know? *page* **40**
Mexico *page* **41**
Mexico City *page* **43**

Belize (country)
Central America *page* **45**

birds (animals): *look under* Andean condors; finches; parrots and cockatoos; quetzals

Bogotá (city in Colombia) *page* **73**
Colombia *page* **71**

Brasília (city in Brazil) *page* **81**
Brazil *page* **79**

Brazil (country) *page* **79**
Amazon *page* **62,** map *page* **63**
LEARN MORE *look under* Brasília

Buenos Aires (city in Argentina) *page* **93**

Canada (country) *page* **10**
LEARN MORE *look under* Aklavik; Great Lakes; Niagara Falls; Ontario; Ottawa; Quebec

Central America *page* **45**

Chile (country) *page* **87**
Easter Island *page* **89**

civilizations: *look under* American Indians; Aztec civilization; Inca civilization; Inuit; Mayan civilization

cockatoos (birds): *look under* parrots and cockatoos

Colombia (country) *page* **71**
LEARN MORE *look under* Bogotá

colonialism
Central America *page* **45**
United States of America *page* **27**
West Indies *page* **54**

Colorado River (U.S. and Mexico)
Grand Canyon *page* **32,** photograph *page* **32,** photograph *page* **33**

Columbus, Christopher (Italian explorer)
Cuba *page* **59**
Puerto Rico *page* **57**
United States of America *page* **27**
West Indies *page* **54**

condors (birds)
Did you know? *page* **67,** photograph *page* **66**

Costa Rica (country)
Central America *page* **45**

Cuba (country) *page* **59**

Easter Island (island in the Pacific Ocean) *page* **89**

El Salvador (country)
Central America *page* **45**

Erie, Lake (lake in North America)
Great Lakes *page* **23**

Eskimo (people): *look under* Inuit

finches (birds)
Galapagos Islands *page* **68,** photograph *page* **68**

frogs (animals)
Central America photograph *page* **44**
Did you know? *page* **56**

Galapagos Islands (islands in the Pacific Ocean) *page* **68**

gauchos (Argentinian cowboys)
Argentina *page* **90**

Grand Canyon (canyon in Arizona, U.S.) *page* **32**

Great Lakes (lake system in North America) *page* **23**
United States of America *page* **25**

Greenland (island and dependency of Denmark) *page* **8**
North America *page* **7**

Guaraní (people)
Asunción *page* **85**
Did you know? *page* **82**

Guatemala (country) *page* **46**

Havana (city in Cuba)
Cuba *page* **59,** photograph *page* **58**

Hawaii (islands and state in the U.S.)
United States of America *page* **27**
LEARN MORE *look under* Honolulu

Honduras (country)
Central America *page* **45**

Honolulu (city in the U.S.) *page* **35**

Huron, Lake (lake in North America)
Great Lakes *page* **23**

iguanas (reptiles)
Galapagos Islands *page* **68**

Inca civilization
Andes *page* **66**
Machu Picchu *page* **77**
Peru *page* **75**

Indians (Native Americans): *look under* American Indians

Inuit, *also called* Eskimo (people)
Aklavik *page* **13**

Greenland *page* **8**

Ladinos (people)
Guatemala *page* **46**

land turtles (animals): *look under* tortoises

llamas (animals)
Chile photograph *page* **87**
Did you know? *page* **75**

Llanos (region in South America)
Colombia *page* **71**

Machu Picchu (ancient Inca city in Peru) *page* **77**

Mayan civilization
Central America *page* **45**
Guatemala *page* **46**
Mexico photograph *page* **40**

Mexico (country) *page* **41**
LEARN MORE *look under* Mexico City

Mexico City, *also called* Tenochtitlán (city in Mexico) *page* **43**

Michigan, Lake (lake in the U.S.)
Great Lakes *page* **23,** photograph *page* **22,** photograph *page* **23**

Mississippi River (river in the United States)
United States of America *page* **25**

Montreal (city in Canada)
Canada *page* **10**

Native Americans: *look under* American Indians

New York City (city in the U.S.) *page* **37**
great culture mart *page* **38**

Niagara Falls (waterfall in North America) *page* **21**
Canada *page* **10**
Ontario *page* **18**

Nicaragua (country) *page* **49**

North America (continent) *page* **7**

northern lights, *also called* aurora borealis
Did you know? *page* **12**

Ontario (province in Canada) *page* **18**

Ontario, Lake (lake in North America)
Great Lakes *page* **23**
Ontario *page* **19**

Ottawa (city in Canada) *page* **14**

Pampas, the (grasslands in Argentina)
Argentina *page* **90**

Panama (country)
Panama Canal *page* **52**
LEARN MORE *look under* Panama City

Panama Canal (canal in Central America) *page* **52**
Panama City *page* **50**

Panama City (city in Panama) *page* **50**

Paraguay (country) *page* **83**
Asunción *page* **85**

parrots and cockatoos (birds)
Amazon photograph *page* **65**

Patagonia (region in Argentina)
Argentina *page* **90,** photograph *page* **91**

Pearl Harbor (naval base in Hawaii, U.S.)
Honolulu *page* **35**

Peru (country) *page* **75**
Amazon *page* **62,** map *page* **63**

piranhas (fish)
Amazon *page* **64**

pirates
Did you know? *page* **54**

polar bears
Did you know? *page* **11**

Puerto Rico (island commonwealth) *page* **57**

Quebec (province in Canada) *page* **17**

quetzals (birds)
Guatemala photograph *page* **47**

rainforests
Amazon *page* **64**
Brazil *page* **79**
Nicaragua *page* **49**

Rio de Janeiro (city in Brazil)
Brazil *page* **79,** photograph *page* **78**

San Juan (city in Puerto Rico)
Puerto Rico photograph *page* **56**

Santiago (city in Chile)
Chile *page* **87**

slavery
Cuba *page* **59**
West Indies *page* **54**

snakes (animals)
Amazon *page* **64**
South America photograph *page* **60**

South America (continent) *page* **61**
Andes *page* **66**

sugarcane (plants)
Cuba *page* **59**
West Indies *page* **54**

Superior, Lake (lake in North America)
Great Lakes *page* **23,** photograph *page* **23**

tapirs (animals)
Amazon *page* **64**

Tenochtitlán (ancient city in Mexico): *look under* Mexico City

Tobago (island in the Atlantic Ocean)
West Indies photograph *page* **54,** photograph *page* **55**

Toronto (city in Canada)
Canada *page* **10**
Ontario *page* **18**

tortoises, *also called* land turtles (reptiles)
Galapagos Islands *page* **68,** photograph *page* **69**

totem pole
North America photograph *page* **6**

United States of America (country) *page* **25**
Cuba *page* **59**
cultural melting pot *page* **28**
Grand Canyon photograph *page* **33**
history *page* **27**
Panama Canal *page* **52**
Puerto Rico *page* **57**
LEARN MORE *look under* Grand Canyon; Great Lakes; Honolulu; New York City; Niagara Falls; Puerto Rico; Washington, D.C.

volcanoes
Did you know? *page* **47**
Mexico *page* **41**

Washington, D.C. (city in the U.S.) *page* **31**
United States of America *page* **25**

West Indies (island group in the Atlantic Ocean) *page* **54**
LEARN MORE *look under* Cuba; Puerto Rico

World Heritage sites
Galapagos Islands *page* **68**
Grand Canyon *page* **32**
Panama City *page* **50**

World Trade Center (building complex formerly in New York City, U.S.)
New York City *page* **37**

Visit countries, cities, and famous sites in THE AMERICAS


Volume 1: The Earth and Earth Sciences


Volume 2: Physical Sciences and Technology


Volume 3: The Arts


Volume 4: People in History


Volume 5: Folklore and Religions


Volume 6: Europe


Volume 7: Asia, Australia, and New Zealand


Volume 8: Africa


Volume 9: The Americas


Volume 10: Plants


Volume 11: Birds, Insects, Reptiles, and Aquatic Life


Volume 12: Mammals


Volume 13: Reference Guide and Index

ENCYCLOPÆDIA
Britannica®

My First Britannica



Plants

10

My First Britannica

Plants

10



Chicago London New Delhi Paris Seoul Sydney Taipei Tokyo

© 2008 by Encyclopædia Britannica, Inc.

International Standard Book Number: 978-1-59339-476-9 (set)

No part of this work may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, recording, or by any information storage and retrieval system, without permission in writing from the publisher.

My First Britannica:
Volume 10: Plants 2008

Britannica.com may be accessed on the Internet at http://www.britannica.com.

Encyclopædia Britannica, Britannica, and the Thistle logo are registered trademarks of Encyclopædia Britannica, Inc.

Plants

TABLE OF CONTENTS

INTRODUCTION 5

Flowering Plants

Sunflowers: The Golden Giants 6
Tulips: From Bulbs to Beauties 8
Roses: Queen of Flowers 10
Honeysuckle: The Sweet Bloomer 12
Water Lilies: Floating Stars 14
Orchids: Exotic Flowers 16
Carnivorous Plants: Bugs Beware! 18

Fruits, Vegetables, and a Couple of Drinkables

Bananas: Fruit of Gold 20
Tomatoes: Vegetables or Fruit? 22
Grapes: Fruit of the Vine 24
Strawberries: Luscious Dessert Fruit 26
Cabbage: The "Head" of a Vegetable Family 28
Peanuts: When Is a Nut Not a Nut? 30
Yams: Tasty Tubers 32
Peppers: Hot and Spicy 34
Coffee: The World's Favorite Cup 36
Tea: The Cup That Cheers 38

Food Trees

Apples: Fruit Tree Royalty 40
Mangoes: The Regal Tropical Fruit 42
Palm: The Prince of Plants 44
Lemons: Sweet, but Oh So Sour! 46
Oranges: The Drinkable Fruit 48
Figs: Poor Man's Food 50
Cacao: The Chocolate Tree 52
Jackfruit: The Largest Tree-Borne Fruit 54
Maple: Spectacular Leaves, Sensational Syrup 56
Nuts: The Original Fast Food 58
Olive: Plant of Peace and Plenty 60

Grasses

Grasses: Nature's Carpets 62
Rushes and Reeds: Marsh Plants 64
Bamboo: The Tallest Grass 66
Barley: A Versatile Cereal 68
Corn: Grain of the Americas 70
Rice: Food from Water-Grown Grasses 72
Wheat: The Bread of Life 74
Sugarcane: A Sweet and Syrupy Plant 76

Practical Plants

Cactus: Don't Touch! 78
Cedar: A Sweet-Smelling Wood 80
Cotton: Summer Snowballs 82
Eucalyptus: Australia's Gum Trees 84
Moss: The Thirsty Plant 86
Pine: A Useful, Long-Lived Tree 88
Rubber Tree: A Tree with Bounce 90
Seaweed: Wild Plants of the Ocean 92

GLOSSARY 94
INDEX 95



Sunflower
© Ron Watts/Corbis

Cover photos (top): sunflower, © Ron Watts/Corbis; (center): illustration by Joseph Taylor, (bottom): mangoes, © Nik Wheeler/Corbis

Plants

INTRODUCTION

Can trees ever bounce? Is the tomato a fruit or a vegetable?
What crop was buried with the Egyptian pharaohs?
Could you walk on a water lily without sinking?

In Volume 10, ***Plants***, you'll discover answers to these questions and many more. Through pictures, articles, and fun facts, you'll learn about the great diversity of plant life found around the world.

To help you on your journey, we've provided the following guideposts in *Plants*:

- **Subject Tabs**—The colored box in the upper corner of each right-hand page will quickly tell you the article subject.
- **Search Lights**—Try these mini-quizzes before and after you read the article and see how much—*and how quickly*—you can learn. You can even make this a game with a reading partner. (Answers are upside down at the bottom of one of the pages.)
- **Did You Know?**—Check out these fun facts about the article subject. With these surprising "factoids," you can entertain your friends, impress your teachers, and amaze your parents.
- **Picture Captions**—Read the captions that go with the photos. They provide useful information about the article subject.
- **Vocabulary**—New or difficult words are in **bold type**. You'll find them explained in the Glossary at the back of this volume. And there's a complete listing of all Glossary terms in the set in the ***Reference Guide and Index***, Volume 13.
- **Learn More!**—Follow these pointers to related articles throughout the set.

And don't forget: If you're not sure where to start, where you saw something before, or where to go next, the Index at the back of this volume and the ***Reference Guide and Index*** (Volume 13) will point the way.

Have a great trip!



DID YOU KNOW?

Many types of birds love sunflower seeds. Birdwatchers often use the seeds to attract cardinals, goldfinches, and other birds to their yards.

The Golden Giants

The sunflower gets its name from the way it turns its head, or bloom, from east to west to follow the Sun. The name is fitting for another reason too—the bloom itself looks something like the Sun.

The sunflower is an American plant. About 400 years ago, the French explorer Samuel de Champlain saw American Indians growing sunflowers on the eastern shore of Lake Huron. The Indians had a variety of uses for the sunflower plant.

The sunflower is as useful today as it was back then. Sunflower leaves can be used as **fodder** to feed animals. The flowers produce a yellow dye. As food, sunflower seeds are a good source of protein and vitamin E. They can be eaten dried or roasted. Milled seeds can be used to make bread or a coffeelike drink. Pressed seeds yield oil that is comparable to olive or almond oil. The oil is used for cooking and for making soaps and paints.

The sunflower is a giant among flowers. Its rough and hairy stem grows from 3 to 15 feet tall. Its broad leaves range from 3 to 12 inches long. The bloom of a sunflower has two parts. The central **disk** flowers are dark. The ray flowers surrounding the central disk are golden yellow. As the plant ripens, the seeds develop in the disks. Sunflowers grown on farms can have disks that are 12 inches wide.

SEARCH LIGHT

As food, sunflower seeds are a good source of which vitamin?

Answer: They're a good source of vitamin E.

LEARN MORE! READ THESE ARTICLES…
AMERICAN INDIANS (VOLUME 4) • TULIPS (VOLUME 10)
VINCENT VAN GOGH (VOLUME 3)

Although it is related to the little daisy, the sunflower is one of the largest and most splendid of flowers. The sunflower plant is valuable for its economic uses as well as for its beauty.

© Ron Watts/Corbis


SEARCH LIGHT
Which European country is known for its tulips?
a) France
b) the Netherlands
c) Spain
d) Germany

From Bulbs to Beauties

Did you know that there are nearly 4,000 kinds of tulips? These flowers come in almost every color. There are white tulips and yellow tulips, red tulips and pink tulips, orange tulips and purple tulips. You can even find black tulips and brown tulips!

Tulips are cousins of the lilies. They grow from bulbs that are planted in the ground. The bulbs are thick buds. They are like tightly packed bags that hold all the things a plant needs to keep it alive during the cold winter months.



Two girls among tulips in a field.
© Mike Zens/Corbis

The inside of a bulb has layer upon layer of thick moist padding surrounding a small tough stem. When the sun is just warm enough and the ground is just wet enough, this stem starts to press its way up through the top of the bulb and out of the ground. While the flowering tulip waves in the breeze, the bulb below is soaking up more food and water, and new bulbs are forming. These can be collected to plant later.

The people of Turkey were probably the first to grow tulips in their gardens. The name "tulip" came from the Turkish word *tulbend*, which means **"turban."** The flower's shape was said to look like this cloth headdress.

An **ambassador** from Austria took tulips from Turkey to Europe for the first time, in 1551. The tulips grew very well in his city, Vienna. But the flowers grew even better in Holland. Soon the Dutch people were famous for their tulips. Today millions of people all over the world buy tulip bulbs from the Netherlands, as Holland is called today.

LEARN MORE! READ THESE ARTICLES…
AUSTRIA (VOLUME 6) • THE NETHERLANDS (VOLUME 6)
SUNFLOWERS (VOLUME 10)

DID YOU KNOW?

When tulips were introduced to Europe, they instantly became popular there. Because they were rare at that time, the bulbs were very expensive. People bought, sold, and traded them the same way we do today with valuable things such as gold.

Growing tulips is popular among home gardeners and is a major industry in the Netherlands. The flower is valued for its early spring bloom, its brilliant colors, and its graceful shape. Here, beautiful red and yellow tulips surround the trunks of birch trees.
© Darrell Gulin/Corbis

Answer: b) the Netherlands


SEARCH LIGHT
Find and correct the error in the following sentence: The tea rose tastes like tea.

Queen of Flowers

The rose is probably the most popular flower in the world. For its sweet scent and its delicate petals of various colors, the rose is known as "the queen of flowers."

Wild roses are found in the Northern **Hemisphere**, mainly in regions that are not too hot or too cold. Most of the roses people grow in gardens originally came from Asia. Other wild varieties are found in North America, while a few grow in Europe and northwestern Africa.



A flowering hybrid tea rose.
© Patrick Johns/Corbis

The plant grows as an upright shrub or as a vine that grows along the ground or climbs. Shrub roses can be grown either as large bushes or as miniature plants with tiny blossoms. Climbing roses can be **trained** to grow on walls and fences.

The stems of most plants have thorns as well as flowers. The flowers range in color from white through various shades of yellow and pink to dark crimson and maroon.

Some gardeners try hard to come up with new colors or color combinations. They take roses from different places and breed them together. This produces new types called hybrids. While wild roses generally have five petals per flower, many hybrids are double roses with many petals. One of the most popular hybrids is the tea rose. The tea rose exists in a range of colors and has large well-shaped tea-scented blossoms.

Most roses are enjoyed simply for their beauty, but some are used to make products. A sweet-smelling oil called "attar" is made from rose blossoms and is used in perfumes. Rose flowers also have a part near their base called a rose hip, which is a source of vitamin C.

DID YOU KNOW?
Breeders have tried for many years to come up with a blue rose, but they have not succeeded.

LEARN MORE! READ THESE ARTICLES…
ASIA (VOLUME 7) • TEA (VOLUME 10) • TULIPS (VOLUME 10)

Climbing roses grow up the side of a castle wall in Kent, England.
© Patrick Ward/Corbis

Answer: The tea rose smells like tea.

The Sweet Bloomer

Honeysuckle is a plant that's popular with both birds and people. Birds love the colorful juicy berries, which grow red, orange, or black. People love the sweet-smelling flowers.

There are more than 200 kinds of honeysuckles. Some of them are tall bushes. Some are climbing vines, and others trail along the ground. Most honeysuckles grow berries. Some have **evergreen** leaves, while others have leaves that change color with the seasons.

SEARCH LIGHT

True or false? Many birds and animals feed on honeysuckle plants.

The pretty trumpet honeysuckle is a popular climber in North America. It has orange-red flowers with yellow centers. The berries are bright red. The Tatarian honeysuckle is a common kind that grows as a bush. It has rose-pink or white flowers that bloom in late spring. Its bright red berries appear during the fall. This honeysuckle grows mostly in Europe and Siberia (a region in Russia).



Yellow-orange honeysuckle.
© Michael Boys/Corbis

The sweet honeysuckle can be seen in Europe, Asia, and the United States. This plant bears red-orange berries. Its flowers are purple-white. They're the favorite flowers of hawk moths. The Japanese honeysuckle comes from eastern Asia, but it has been taken to many other areas. It has sweet-smelling whitish flowers and black berries. It is very sturdy and **flourishes** in all kinds of weather, dry or damp, hot or cold.

Honeysuckles are a real benefit to **wildlife managers** because deer, rabbits, wild turkeys, quail, woodchucks, and songbirds love to eat their leaves, stems, and berries. And many people plant honeysuckle in their gardens to attract colorful butterflies and hummingbirds.

LEARN MORE! READ THESE ARTICLES…
BIRDS (VOLUME 11) • RABBITS AND HARES (VOLUME 12) • ROSES (VOLUME 10)

An orange honeysuckle grows in western Washington state. The honeysuckle's sweetly fragrant flowers have made it a long-standing favorite in the garden.
© Mike Zens/Corbis



DID YOU KNOW?

In some places it's illegal to sell or distribute Japanese honeysuckle. This kind of honeysuckle grows so well it can grow right over other plants and shut out the light they need. It's often considered a weed.

Answer: TRUE.



Floating Stars

A Native American folktale says that the water lily was once a star. It fell from the sky, and when it struck the water, it changed into the beautiful flower we see floating in shallow ponds and slow-moving streams.

The water lily is a very interesting plant. Its leaves float on top of the water, and its thick stems reach beneath the water's surface to the mud at the bottom. Each plant has a single flower attached to a **stalk**. The flowers bloom above the water. They float so gracefully that it's easy to see how they could be described as floating stars.

The lily plant also produces a fruit. It looks like a nut or a berry. Inside are seeds that will sink or float away to produce new plants.

Some water lilies open only in the morning. Others open only in the evening. The mysterious Egyptian lotus, for example, has white flowers that bloom in the night and stay open only until midday.

The most familiar water lily is the **fragrant** water lily. It has sweetly scented white flowers tinged with pink. These lilies are **native** to eastern North America, but today they are **cultivated** all over the world.

People often grow water lilies to decorate garden ponds. One person who did this was the French painter Claude Monet. His beautiful paintings of water lilies are widely admired. But lilies also provide food for fish and other water animals. And the floating leaves are a favorite resting place for frogs!

SEARCH LIGHT

Which French artist is famous for his paintings of water lilies?

LEARN MORE! READ THESE ARTICLES…
AMERICAN INDIANS (VOLUME 4)
FROGS (VOLUME 11) • RUSHES AND REEDS (VOLUME 10)

DID YOU KNOW?

The largest water lily in the world is a kind that grows in the Amazon River valley. The leaves of this plant can measure up to six feet across—and they're strong enough to support the weight of a small child!

Blooming white and pink lotuses float on the surface of a pond.
© Bohemian Nomad Picturemakers/Corbis

Answer: Claude Monet is known for painting water lilies.


SEARCH LIGHT
How are orchids different from other flowers?

Exotic Flowers

DID YOU KNOW?
The flavoring known as "vanilla," which is used in cooking many cakes, ice creams, and puddings, is made from the seedpods of certain orchids.

Orchids are known for their **exotic** and beautiful flowers. The flowers often smell very sweet. They grow in a wide range of colors, including red, purple, yellow, white, and green. Some orchids also have bright markings or patterns on them.

There are tens of thousands of different kinds of orchids. They grow best in warm, wet, tropical areas. But orchids can be found all over the world, except near the North and South poles. Many of them are grown in South America, Southeast Asia, the Philippines, and Australia and then sold to other countries.



Flowering orchids.
© Hal Horwitz/Corbis

Some orchids live in soil, but most tropical orchids grow on other plants such as vines or creepers. The roots of these orchids have a spongy cover. This lets the orchids soak up all the water they need from the air around them. Different orchids develop in different ways. Most get a new stem each year that sprouts sideways from the main stem. Others have a single stem that gets taller every year. Some orchids have single flowers, while others have clusters of flowers. Some orchid flowers are tiny. Others are very large.

All orchid flowers have one petal that is separate from the rest. It is called the "lip," and it's different in shape and color from the other petals. The lip is what makes orchids different from all other flowers.

Their rare beauty makes orchids very popular with flower collectors. Orchid lovers sometimes pay a lot of money for a single orchid stem. Collectors have even been known to steal orchids from one another!

LEARN MORE! READ THESE ARTICLES…
PHILIPPINES (VOLUME 7) • RAINFORESTS (VOLUME 1) • TULIPS (VOLUME 10)

Orchids are found nearly worldwide and are particularly abundant in the tropics. They are among the favorites of flower lovers around the world.
© Hal Horwitz/Corbis

Answer: One petal is separate from the rest. It is called the "lip."


SEARCH LIGHT
How does the pitcher plant kill insects?

Bugs Beware!

The plant called the Venus's-flytrap may look harmless enough. But it isn't, at least not for flies! If a fly or other insect touches part of the plant's leaves, it will be captured. On the end of each leaf is a trap. These traps are hinged like jaws and can open and close. Sharp spines that look like teeth line the edges. And very sensitive hairs are inside. If a fly brushes against one of these tiny hairs, the trap will snap shut, with the fly caught inside.

The Venus's-flytrap is not the only kind of plant that catches insects. It is one of several types of carnivorous—or "meat-eating"—plants. Most plants get all the things they need to grow from the soil, air, water, and sunshine. But carnivorous plants have adapted to living in soil that doesn't give them everything they need. They get the rest from the insects they catch.

Of course, these plants don't chew and eat food the same way you do. Parts of the plants ooze liquid chemicals that dissolve, or break apart, the insects. The plants then absorb, or soak up, the substances they need.

Carnivorous plants have all sorts of clever traps and tricks for catching bugs. The pitcher plant has leaves shaped like small pitchers, or jugs. The insides of these leaves are very slippery. And the plant produces a sweet juice called "nectar" to attract insects. When an insect climbs in to taste the nectar, it slips and slides to the bottom of the leaf. It drowns in the liquid at the bottom and is slowly digested.

LEARN MORE! READ THESE ARTICLES…
ANTS (VOLUME 11) • CACTUS (VOLUME 10)
INSECTS (VOLUME 11)

DID YOU KNOW?

Some people think that there are plants big enough to eat people. But there aren't any plants that big. No plants eat people—except in the movies.

Answer: It drowns them.



SEARCH LIGHT

Plantains are
a) bananas that aren't sweet.
b) yellow bananas.
c) mushy brown bananas.

Fruit of Gold

A banana plant may grow to a height of 20 feet or more, but it is considered to be an **herb** rather than a tree. Instead of a trunk, it has a **stalk** made up of leaves rolled tightly around each other. From the stalk grows a big bunch of 50 to 200 individual bananas. Only one bunch grows on each plant. The bunch is made up of several clusters. Each cluster has 10 to 20 bananas. After harvesting, the plant is cut down. A new one then grows from an underground stem.



Farmworker on a banana plantation in Oman, in the Middle East.
© Christine Osborne/Corbis

Bananas grow only where it is warm and wet all the time, which is why people in cold countries may never see a banana plant. They love to eat the bananas, though. That's why banana farms called **plantations** are a big business in South Asia, Africa, Central and South America, and the islands of the Caribbean Sea. But Asia is where bananas originally came from.

Most everyone knows what happens to a banana that has sat around too long. It gets brown and mushy. So bananas have to be picked while they're still hard and bright green. They may have a long trip ahead of them—usually thousands of miles from the plantation to the grocery store. Refrigerated ships keep the bananas from ripening too soon, and then special heat and moisture treatments help them to ripen on schedule.

Bananas are used in making delicious cream pies, cakes, breads, and fruit salads. Many people's favorite banana dessert is the banana split ice-cream treat. But not all bananas are eaten as fruit. Some varieties never get sweet. These bananas, called "plantains," are cooked and served as a vegetable.

DID YOU KNOW?

The largest banana split ever made was reported to be a little over four and a half miles long.

LEARN MORE! READ THESE ARTICLES…
CENTRAL AMERICA (VOLUME 9) • MANGOES (VOLUME 10) • MONKEYS (VOLUME 12)

Bunches of bananas hang on a plant before being harvested and exported from the Caribbean island of Grenada in the West Indies.
© Dave G. Houser/Corbis

Answer: a) bananas that aren't sweet.

Vegetables or Fruit?

SEARCH LIGHT

The first Europeans to use the tomato as a food were the
a) Spanish and French.
b) Italians and Aztec.
c) Spanish and Italians.
d) Swiss and Indians.

Cooks call the tomato a vegetable, but gardeners say it's a fruit. It's actually both! In the garden the tomato is considered a fruit because it grows from a flower and has seeds in it. But in the kitchen it's considered a vegetable because it isn't sweet like apples or grapes.

Tomatoes were first grown thousands of years ago by South American Indians who lived in the Andes Mountains. In Mexico, Indians **cultivated** tomatoes long before Spanish explorers arrived in the 1500s. The name "tomato" comes from *tomatl*, a word in the language of the Aztec people of Mexico.



A few tomato varieties.
© Michelle Garrett/Corbis

The Spanish who returned to Europe after their explorations brought the tomato back with them. The tomato was first used as a food in Spain and Italy. From Europe, tomatoes were taken to North America. Today they grow all around the world, wherever winters are not too cold and summers not too hot.

Tomatoes not only taste good—they're also good for you! They're packed with vitamins A and C. Tomatoes can be served cooked by themselves or used as a part of many different meals. They're used to make soups and salads. Tomato juice is popular because of its tangy flavor. Tomatoes also form the base for ketchup, chili sauce, and spaghetti sauce. And, of course, they're a must for your pizza!

LEARN MORE! READ THESE ARTICLES…
ANDES (VOLUME 9) • LUTHER BURBANK (VOLUME 4) • GRAPES (VOLUME 10)

A father and his son taste a tomato they have just picked. Tomatoes come in many different shapes and sizes.
© Ariel Skelley/Corbis



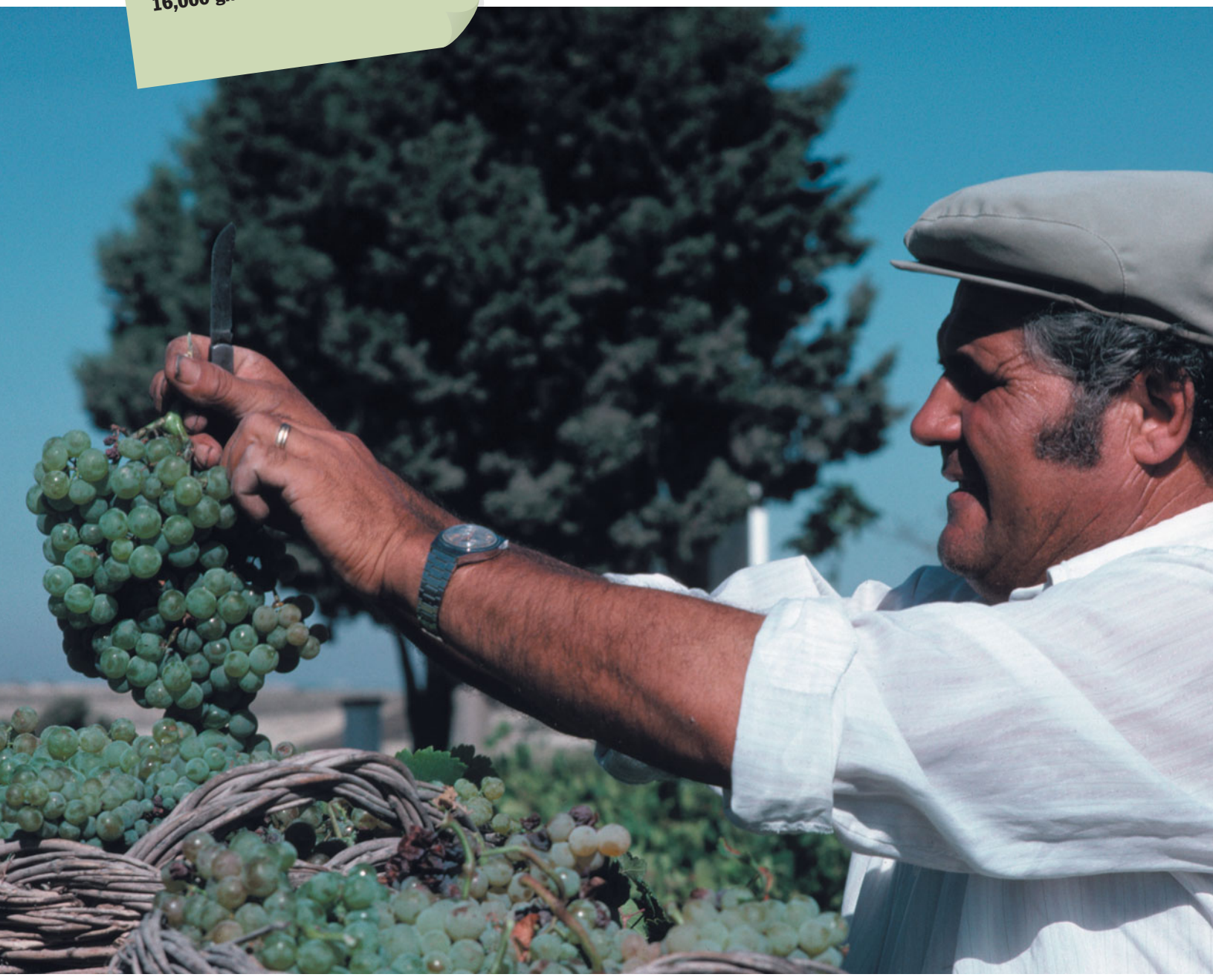
DID YOU KNOW?

For a long time the tomato was believed to be a relative of the poisonous belladonna plant. In fact, the roots and leaves of the tomato plant are poisonous. But the fruit is safe to eat and, in fact, is very good for you!

Answer: c) Spanish and Italians.

DID YOU KNOW?

One acre of grapes produces almost 16,000 glasses of wine.



This worker is collecting bunches of grapes at harvesttime. Green and red table grapes are an excellent source of vitamin A.

© Ted Streshinsky/Corbis

Fruit of the Vine

Grapes grow wild in wooded and warmer regions of the Northern **Hemisphere**. And people have raised grapes in these regions for thousands of years. Grapes have been taken to South Africa, South America, and Australia and grown with great success. There are about 60 different grape plants, as well as thousands of varieties.

The grape plant is a woody vine. A vine is a kind of plant that can't stand up by itself. It has stems called tendrils that cling to things and support the plant. An untrimmed vine may reach a length of 50 feet. Grapes are berries that grow in bunches on the vine. Grapes come in many colors—pale green, yellow, red, purple, or black. Some grapes have a white powdery coating.

SEARCH LIGHT

The growing of grapes is called
a) "vineculture."
b) "viticulture."
c) "grapiculture."

The growing of grapes is called "viticulture." People don't usually grow grapes by planting seeds. Instead, they take cuttings off a vine that is already growing. These cuttings spend a year or so in **nurseries**, waiting to grow roots. When they have roots, they're ready to grow outside.



Table grapes.
© Craig Lovell/Corbis

Another method of grape growing is called layering. In layering, the branch of a full-grown vine is bent into a curve and made to grow along the ground. New shoots and roots soon grow from this part of the branch. These are cut off from the parent vine and replanted as new vines.

Grapes are high in sugar. Different types are used for different purposes. Some are eaten fresh. Others are dried out to make raisins. But most are squeezed for their juice. Some grape juice is put through a process called "fermentation" that changes some sugar into alcohol. The product that results is called "wine."

LEARN MORE! READ THESE ARTICLES…
AESOP'S FABLES: ANIMAL STORIES THAT TEACH (VOLUME 5)
FRANCE (VOLUME 6) • STRAWBERRIES (VOLUME 10)

Answer: b) "viticulture."


SEARCH LIGHT
Find and correct the error in the following sentence: Runner plants make the strawberry plant hard to catch.

Luscious Dessert Fruit

DID YOU KNOW?
Strawberries are sweet, but they're good for you too. They're rich in vitamin C, iron, and other minerals.

Strawberries are eaten fresh, often with cream. They are also used as a filling for pastries, pies, and cakes. The treat called "strawberry shortcake" is made of fresh strawberries, sponge cake, and whipped cream. Needless to say, strawberries are a very popular dessert fruit.

Strawberry plants can be found throughout most of the United States and Canada, a number of European countries, and parts of Africa. They are also grown in New Zealand, Australia, and Japan.

The strawberry is a low **herb** plant that branches off in all directions. At the top of the plant is the "crown" from which the leaves sprout. The leaves have three sections, each of them hairy with **saw-toothed** edges. The flowers are mostly white and sometimes reddish. They appear in small groups on slender **stalks** arising from the leaves. As the plant gets older, the roots become woody. Then the crown sends out "runner plants," trailing vines that spread over the ground, making the plant bigger.

Runner plants are planted in autumn for a crop expected the following year. Strawberry plants are usually used to produce fruit for one to four years. In regions with very cold winters, the plants are put out in spring and protected during winter by covering the rows with straw.

Strawberries need to be stored in a cool and dry place after they've been picked. But they still don't remain fresh for very long. Some are frozen or canned to make them last longer.

LEARN MORE! READ THESE ARTICLES…
LUTHER BURBANK (VOLUME 4) • GRAPES (VOLUME 10)
HONEYSUCKLE (VOLUME 10)

The heart-shaped red fruits of the strawberry plant are popular all over the world.
© Ed Young/Corbis

Answer: Runner plants make the strawberry plant bigger.



SEARCH LIGHT

Which of the following is not mentioned as a member of the cabbage family?

a) broccoli
b) cauliflower
c) carrot
d) Brussels sprouts

The "Head" of a Vegetable Family

Cabbage has been grown for food since ancient times. Nearly 3,000 years ago, the Greek poet Homer mentioned it in his story-poem the *Iliad*.

Wild cabbage is native to the shores of the Mediterranean Sea. It also grows wild on the sea cliffs of Great Britain. The ancient Romans probably planted it there. Cabbages have thick moist leaves with a waxy coating. The leaves are often gray-green or blue-green in color. Cabbage plants like cool weather and deep rich soil.



Two heads of cauliflower.
© Ed Young/Corbis

Over hundreds of years, many vegetables have been developed from the wild cabbage. Some are used for garden decoration or for feeding animals. But people eat many kinds. The cabbage group includes the common cabbage, cauliflower, broccoli, Brussels sprouts, and several other vegetables. They are rich in vitamins and minerals and low in **calories**.

The common, or head, cabbage has a tight bunch of leaves (the head) around a center stem. People eat the leaves raw or cook them. Cabbage soup is a popular dish in much of eastern Europe. Finely chopped raw cabbage is the main ingredient in a salad called "cole slaw." If sliced-up cabbage is salted and put away for a long time, it goes through a chemical change. The result is sauerkraut, a popular dish in Germany. In Korea cabbage is a major ingredient in the traditional dish called *kimchi.*

Cauliflower has a head of tight thick white flowers. People eat the flowers either raw or cooked. Broccoli has bright green loosely clustered flowers. People eat these flowers along with the tender stalks. Brussels sprout plants have many little cabbage-like heads instead of one large head at the top.

DID YOU KNOW?
In France a popular term for a loved one is *petit choux*, which means "little cabbage."

LEARN MORE! READ THESE ARTICLES
BRUSSELS, BELGIUM (VOLUME 6)
KOREAN PENINSULA (VOLUME 7) • MEDITERRANEAN SEA (VOLUME 1)

There are more than a hundred varieties of cabbage. Common (or head) cabbage is pictured here.
© Eric Crichton/Corbis

Answer: c) The carrot is not part of the cabbage family.

When Is a Nut Not a Nut?

SEARCH LIGHT

Find and correct the errors in the following sentence: Peanuts are legumes that grow on trees in cold sandy places.

They look and taste like nuts. They have shells like nuts, and they have skins like nuts. But they're not nuts. They're *peanuts*.

Actual nuts grow mostly on trees or bushes. But peanuts grow underground. That's why in some places peanuts are called "groundnuts." Although they look and taste like nuts, peanuts are really part of a plant group called "legumes." Legumes also include peas and beans. The peanut pod is a spongy shell covered with tiny dimples. Inside the shell you will usually find two peanuts. These are the seeds for new peanut plants.



A woman harvests peanuts on the island of Mauritius.
© Wolfgang Kaehler/Corbis

Peanuts grow easily in warm sandy places. They require at least five months of warm weather, with rainfall during the growing season. The peanut plant is a low bush. Some kinds grow long low branches called "runners." When the peanuts are ripe, peanut farmers usually dig up the plants and stack them against sticks to dry out. Farmers feed the tops of the dry plants to their animals.

Peanuts may be roasted in their shells before they're eaten. Or they may be shelled and prepared as salted peanuts. Roasted peanuts are used in candy and baked goods, for peanut butter, and in many other foods. Peanuts are often grown just for their oil.

An important person in the history of the peanut is Dr. George Washington Carver. This American researcher suggested that farmers plant peanuts to help make their worn-out soil healthy again. And then he came up with new uses for peanuts so that the farmers could sell them. By the time he'd finished, Dr. Carver had found more than 300 things that could be made out of peanuts.

LEARN MORE! READ THESE ARTICLES…
NUTS (VOLUME 10) • SENEGAL (VOLUME 8)
UNITED STATES: A WEALTH OF RESOURCES AND BEAUTY (VOLUME 9)

Peanuts are grown in warm temperate or subtropical areas throughout the world. Here workers pick weeds in a peanut field in Samoa.
© Catherine Karnow/Corbis



DID YOU KNOW?

Dr. George Washington Carver's products from peanuts included peanut milk, cheese, and coffee, as well as plastics, shampoo, and shoe polish. He also introduced peanut butter to the American public.

Answer: Peanuts are legumes that grow underground in warm sandy places.


DID YOU KNOW?
Some types of yams can weigh more than 100 pounds!

Tasty Tubers

Yam plants are climbing vines. Long slender stems bear clusters of small green flowers that look quite pretty. The plants need hot wet weather and take rather long to grow. Different varieties of them are grown as food in the tropics. In some parts of West Africa and New Guinea, yams are also used in ceremonies related to farming.



Baskets of yams at a market in the Cook Islands.
© Robert Holmes/Corbis

Yams, like potatoes, have thick tubers. A tuber is the thick part of the plant's stem that grows underground and stores food for the plant. And just as with the potato, the tuber is the part of a yam that people eat.

There are hundreds of varieties of yams. They differ greatly in look and taste. The color of the tuber's flesh may be white, yellow, pink, or purple. Some taste sweet, some bitter, and some quite bland.

True yams are different from the sweet potato. However, some varieties of sweet potato are often called yams in the United States. Both sweet potatoes and yams are **starchy** foods with a fair amount of sugar in them. Some yams also contain poisons that may make a person sick if the tuber is not properly cooked. The poisons are destroyed by cooking.

Most people eat yams as they would potatoes. Yams are served fried, roasted, baked, and boiled. Cooked yams are often mashed into a sticky paste or dough that can then be further baked or boiled.

SEARCH LIGHT

Fill in the blank: The part of a yam that is eaten grows _____.

LEARN MORE! READ THESE ARTICLES…
AFRICA (VOLUME 8) • PEANUTS (VOLUME 10) • PEPPERS (VOLUME 10)

Women collect yams in Papua New Guinea.
© Caroline Penn/Corbis

Answer: The part of a yam that is eaten grows underground.

Hot and Spicy

DID YOU KNOW?
The spice called "pepper" doesn't come from pepper plants. It comes from the berries of an unrelated vine. Pepper plants belong to the nightshade family, along with potatoes, tomatoes, and eggplants.

Garden peppers have been used in cooking since ancient times. Hot peppers contain a substance called "capsaicin" that gives them a sharp burning taste. Many people enjoy this strong taste and use it to flavor foods. People like to eat peppers fresh, dried, smoked, canned, powdered, and pickled.

Pepper plants are herbs. The fruit of the plants differs in size, shape, and taste. The color ranges from green through yellow to deep red and purple. You'll find peppers in the tropics of Asia. They also grow all over Central and South America. In 1493 pepper seeds were carried from South America to Spain. After that, the plants quickly spread all over Europe.



There are two general types of peppers: the mild and the hot varieties.
© Paul Almasy/Corbis

There are two kinds of peppers: mild and hot. Mild peppers are usually large and can be red, green, or yellow in color. Bell peppers are bell-shaped, wrinkled, and puffy. Pimiento is a mild pepper with a special flavor and is usually used for stuffing other foods, such as olives. Paprika is another mild pepper. It's usually powdered and used as a spice. It is especially popular in Spain and Hungary.

The hot peppers include cherry, red cluster, tabasco, long chili, and cayenne peppers. These are often served as relishes and pickles or ground into a fine powdered spice. Tabasco peppers are ground and mixed with vinegar to make a spicy hot sauce. Both fresh and dried Mexican chili peppers are used to flavor stewed meat dishes.

LEARN MORE! READ THESE ARTICLES…
MEXICO (VOLUME 9) • THAILAND (VOLUME 7) • TOMATOES (VOLUME 10)

SEARCH LIGHT

Fill in the blank: _____ is what makes hot peppers hot.

Bell peppers like the ones shown are often used in salads, as cases for fillings, and in other cooked dishes.
© Michelle Garrett/Corbis



Answer: Capsaicin is what makes hot peppers hot.

PEPPERS

SEARCH LIGHT

Which part of the coffee plant is used to make the coffee drink?



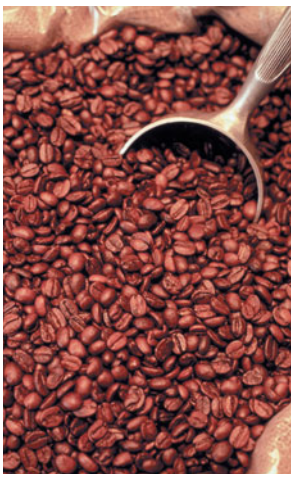
More than 10 billion coffee trees are grown on plantations all over the world. Each tree yields about 1 pound of coffee every year. Trees begin to bear fruit when 3 to 5 years old and continue to do so for another 10 to 15 years. Here, a woman in Thailand handpicks coffee cherries, which contain coffee beans.

© Michael S. Yamashita/Corbis

The World's Favorite Cup

Coffee is one of the most popular drinks in the world. Many people think it has a great taste and a wonderful smell. Coffee also contains caffeine, which is a stimulant—that is, a substance that increases the body's activity.

Coffee grows as a bush with sweet-smelling flowers and fleshy fruit called "coffee cherries." Within the fruit are two seeds, or "beans." The beans are dried, roasted, and ground. The ground coffee is then **brewed** in water to make a drink. Coffee plants need warm weather and plenty of rain, so they grow only in **tropical** regions. There are at least 60 types of coffee plants. But only two kinds, called Arabica and Robusta, are in great demand.



Coffee beans ready for purchase.
© Mark Ferri/Corbis

Arabica coffee has more flavor and **fragrance**. It is grown in Central and South America, the Caribbean, and Indonesia. Coffee from Colombia is especially well known. Robusta coffee is grown mainly in Africa. The Robusta plant does not pick up disease easily. It is also useful in making instant coffee. Instant coffee is coffee powder that dissolves completely in water.

Coffee probably first came from Ethiopia, in northeastern Africa. From there it was taken to the Middle East. At first it was used as a food, as a medicine, and in wines. People did not begin to drink coffee as we know it for hundreds of years. Coffee was taken to Europe and then the Americas starting in about the 1500s.

Today coffee is one of the world's most popular drinks. Rest periods taken during working hours are often called "coffee breaks." Many, many people begin each day by drinking a cup of coffee.

DID YOU KNOW?
Many countries have special coffee drinks. Turkish coffee is a strong, thick sweetened drink. Italy's espresso is made by forcing steam through ground coffee beans. France's *café au lait* and Latin America's *café con leche* both mean "coffee with milk."

LEARN MORE! READ THESE ARTICLES…
COLOMBIA (VOLUME 9) • INDONESIA (VOLUME 7)
VIENNA, AUSTRIA (VOLUME 6)

Answer: The coffee seeds, or beans, are used to make coffee.


SEARCH LIGHT
What's the difference between green tea and black tea?

The Cup That Cheers

It soothes you when you are upset. And if you're tired, it can lift your spirits. It's tea—the drink that cheers!

Tea was first drunk in China thousands of years ago. At first it was used as a **medicinal** drink, but eventually it became popular to drink anytime. It was later introduced to Japan. European trading ships took it from Asia to England and Holland.



Worker separating tea leaves by hand in Indonesia.
© Owen Franken/Corbis

There are two main varieties of tea—the small-leaved China plant and the large-leaved Assam plant. Mixing the leaves of these produces many other types of tea.

Tea can be named according to where it's grown. For example, there's China tea, Ceylon tea, Japanese tea, Indonesian tea, and African tea. But most tea is known as green, black, or oolong tea. Green tea, made from the China plant, is produced in Japan, China, Malaysia, and Indonesia. Black tea, made from the Assam plant, comes mostly from India. Oolong teas are produced mostly in southern China and Taiwan.

The different kinds of tea are made in different ways. To make black tea, the freshly picked leaves are dried, rolled, and strained. They are then fermented. Fermenting is a way of making the flavor more intense. Finally, the leaves are dried with hot air. This is how the tea becomes black. Unlike black tea, green tea is not fermented. The leaves are just rolled and dried, so they remain green. Oolong is made like black tea. It is sometimes scented with flowers such as jasmine.

Tea is made ready for drinking by soaking its leaves in boiled water. This is called "steeping."

LEARN MORE! READ THESE ARTICLES…
CHINA (VOLUME 7) • COFFEE (VOLUME 10)
LEAVES (VOLUME 1)

DID YOU KNOW?
Iced tea was made popular by an Englishman at the St. Louis World's Fair of 1904 in the United States. His job was to get people to drink tea. The weather was hot, so he filled tall glasses with ice and poured hot tea over it. Everyone loved it!

Tea is made from the young leaves and leaf buds of tea plants. The farmworkers shown here are harvesting tea leaves in Malaysia.
© Neil Rabinowitz/Corbis

Answer: Aside from their different colors, black tea is fermented and green tea is not.



DID YOU KNOW?

The French term for "potato" is *pomme de terre*, which means "apple of the earth." This may be because apples and potatoes have a similar texture (feel), size, and shape.

Fruit Tree Royalty

The apple tree is a hardy plant that is grown in more parts of the world than any other fruit tree. That's why the apple has often been called the "king of fruits."

Even though it is five-sixths water, the apple has vitamins, minerals, and **carbohydrates**. Before the science of nutrition told us how to eat healthily, people already knew that "an apple a day keeps the doctor away."

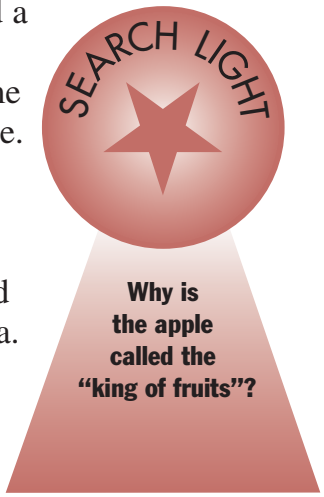


Colorful apple varieties.
© Royalty-Free/Corbis

Apples are grown for eating, cooking, and juicing. "Eating" apples are crisp and juicy, with a tangy smell. They may be red, green, greenish yellow, pink, or orange. "Cooking" apples are firm. "Juicing" apples are used to make apple juice and cider. Apples are also preserved as jams, jellies, apple butter, and chutneys. And applesauce—made by stewing and, often, sweetening apples—is popular in many places.

If you plant the seeds of a good-tasting apple, you will probably be disappointed by the fruit that the new tree produces. Branches, as well as seeds, have to be used to produce the best apples. The process is called "grafting." Apple trees need well-drained soil to grow. They also need a period of cool winter weather to rest before the fruit-growing season.

There are many signs that humans discovered the apple a long time ago. There are pictures of apples carved on stone by **Stone Age** people. Apples are mentioned in the Bible. Although some kinds of apples grow wild in North America, the apples Americans eat come from varieties that were brought from Europe. John Chapman, an early American planter better known as Johnny Appleseed, helped to spread these varieties far and wide. Apple pie, in fact, is a symbol of America.



LEARN MORE! READ THESE ARTICLES…
ATLAS: BEARER OF THE WORLD (VOLUME 5) • LUTHER BURBANK (VOLUME 4)
ORANGES (VOLUME 10)

Apples must be handled carefully to avoid bruising. Here a worker gently picks apples ready for harvesting.
© Royalty-Free/Corbis

Answer: The apple is called the "king of fruits" because apple trees are grown in more places than any other fruit tree.


DID YOU KNOW?
Fruit bats help spread mangoes by carrying the fruit to another perch, where they eat the flesh and drop the seed. The seed plants itself in the ground, and soon a small mango tree pops up there.

The Regal Tropical Fruit

Sweet, tasty, and wonderfully sticky—that's a mango! So many people like this fruit that it is sometimes called "the queen (or king) of **tropical** fruits." And not only does it taste good—it's good for you because it's full of vitamins.

But mangoes didn't always taste so good. Thousands of years ago they were small fruits that tasted like pine needles! At that time they grew only in some parts of Asia, such as India and Myanmar. Today they're grown in most tropical countries. There are even mango farms in the southern United States.



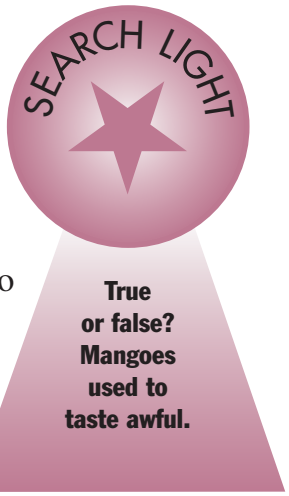
Fresh mangoes.
© W. Wayne Lockwood, M.D./Corbis

Mangoes come in many shapes, sizes, and colors. They can be oval or round or long and slender. They can be red, yellow, or green. The smallest mangoes are no bigger than plums. The biggest are up to ten inches long and can weigh as much as five pounds.

No matter what size they are, though, all mangoes have a lot of very juicy yellow or orange fruit underneath a thin skin. In the middle of the fruit is a single flat seed.

Mangoes grow on tall trees. Take five elephants and put them on top of each other, and that's how high mango trees can grow. The trees are evergreen, which means they keep their leaves all year.

You can eat mangoes raw. Just wash them, peel them, cut them, and eat them. Or you can eat mangoes mixed in milk, like a mango shake. Mangoes are also used to make sauces and preserves. In India, during festivals, you'll find mango leaves strung together hanging outside the front doors of many houses. This is because mangoes are believed to bring luck.



LEARN MORE! READ THESE ARTICLES…
BANANAS (VOLUME 10) • INDIA (VOLUME 7) • JACKFRUIT (VOLUME 10)

The mango is one of the most important and widely grown fruits of the tropical world. Mangoes are a rich source of vitamins A, C, and D.
© Douglas Peebles/Corbis

Answer: TRUE. Long ago they had a chemical flavor. Unripe mangoes still have that taste.



SEARCH LIGHT

Fill in the blank: The _____ is one of the most valuable palms in the world.

The leaves of palms are usually clustered at the top of the tree's trunk in a large fan- or feather-shaped crown. The palm trees shown here are growing on a beach in St. Croix.

© Bill Ross/Corbis

The Prince of Plants

The palm is one of the most useful plants around, which is why people sometimes call it the "prince of the plant kingdom." There are many types of palms. They grow as trees, shrubs, and vines in the tropics and other warm regions.

The trunk of the palm is branchless, with a **tuft** of large leaves on the top. The trunks can be very tall, or they can be so short that the plant is almost trunkless. Often the palm trunk is smooth. But the trunks of some are spiny like a cactus while others are covered with stiff **fibers** that can be made into strong cords. Palm leaves are **pleated** and may be shaped like fans or feathers. Some varieties of palm leaves are very long with prickly tips.



Palm trees grow from sand on a beach in Jamaica.
© Eye Ubiquitous/Corbis

Palms produce dry or fleshy fruits that vary in size, shape, and structure. For example, the date and the betel nut are soft fleshy fruits. The fruit of the coconut is hard on the outside and has moist "meat" and liquid inside. The coco-de-mer is the largest fruit in the world. This palm fruit can be larger than a human head, with a pair of seeds that look like two coconuts joined together.

The coconut is one of the most valuable palms in the world. It provides vegetable oil for cooking. The fiber of the coconut husk is called "coir" and can be woven into ropes and mats. The coconut shell is hard and is used to make cups and bottles. The liquid in the center is called "coconut milk." You can drink it and cook with it, much as you would with animal milk.

LEARN MORE! READ THESE ARTICLES…
NUTS (VOLUME 10) • OASIS (VOLUME 1)
SRI LANKA (VOLUME 7)

DID YOU KNOW?
Some island people say there are as many uses for coconuts as there are days in a year.

Answer: The coconut is one of the most valuable palms in the world.


SEARCH LIGHT
What color are lemons when they are picked from the tree?

Sweet, but *Oh So Sour!*

The lemon is a **citrus** fruit, a family of fruits that includes limes, grapefruit, and oranges. Lemons grow on small trees and spreading bushes. The trees can grow quite tall if they are not trimmed. Their leaves are reddish when young, but they gradually turn green. Some lemon trees have sharp thorns next to the leaves.

Lemon flowers are large and may grow singly or in small clusters. The new buds of the lemon flower have a reddish tint. As they blossom, the inside of the flower turns white. Lemon flowers have a lovely sweet scent. This is one of the reasons that people like to have lemon trees in their gardens.

Lemon trees bloom throughout the year. The fruit is usually picked while it is still green. It can be damaged easily, so pickers wear gloves and have to be careful when handling the fruit. The fruit is stored for three or more months until its color has changed to an even yellow.

The lemon fruit is oval and covered with a **rind** that is yellow when ripe. Inside, the flesh (or pulp) is divided into eight to ten segments that contain small pointed seeds. The pulp and its juice are rich in vitamin C. Lemon flavor is used in many foods, and many people put it in their tea. But the juice is very sour. To make lemonade don't forget to add some sugar to the lemon juice!

Some other important products provided by the lemon are lemon oil and pectin. In some places, the oil is used in perfumes and soaps. Pectin is what makes jelly so thick and sticky. It is also used in some medicines.

DID YOU KNOW?

The substance that makes lemons so sour is called citric acid. In addition to being so sour, it is a very harsh substance—in fact, it's said that there's enough citric acid in a lemon to dissolve a pearl!

LEARN MORE! READ THESE ARTICLES…
MEDICINE (VOLUME 2) • ORANGES (VOLUME 10) • TEA (VOLUME 10)

Beautiful and fragrant, lemon trees usually bloom throughout the year.
© Ray Juno/Corbis

Answer: Lemons are usually picked while they are still green. They turn yellow after they have aged for a while.


SEARCH LIGHT
Can you name three citrus fruits?

The Drinkable Fruit

The orange is one of several kinds of small trees and shrubs that belong to the "**citrus**" group. Other common citrus fruits are lemons, limes, grapefruit, and tangerines. The first oranges and other citrus fruits probably grew in the tropical regions of Asia, especially in the islands of Southeast Asia. The practice of growing oranges spread to India, to the east coast of Africa, and then to the Mediterranean regions. Today oranges are also grown in the warm regions of the Americas and Australia.

DID YOU KNOW?
There's no English word that rhymes with "orange." Try it for yourself!

The orange is a nearly round fruit with a leathery, oily peel and juicy flesh (or pulp) inside. It grows on attractive trees 15 to 30 feet tall. Orange trees have sweet-smelling waxy blossoms and leaves that stay green throughout the year. Their branches often have small thorns as well. A single orange tree will bear fruit for 50 to 80 years or longer. Sometimes the age of an orange tree is counted in centuries!

The most popular variety of orange is the China orange. It's also called the sweet orange or common orange. This orange tastes best when it is fully ripe, and it should not be picked before that. Another popular variety, the Seville orange, is not as commonly grown. The Seville is used in making **marmalade**. Other varieties of oranges include the Jaffa from Israel, the blood orange with its red pulp, and the navel, which is usually seedless.

Oranges are also grown to produce juice, either fresh or frozen. Nearly half the oranges produced in the United States are made into frozen **concentrated** juice. Orange juice is rich in vitamin C and also provides some vitamin A.

LEARN MORE! READ THESE ARTICLES…
ISRAEL (VOLUME 7) • LEMONS (VOLUME 10)
UNITED STATES: A WEALTH OF RESOURCES AND BEAUTY (VOLUME 9)

The seedless navel orange, shown here, became a major fruit in California after it was introduced from Brazil in 1873.
© Ed Young/Corbis

Answer: Oranges, tangerines, lemons, limes, kumquats, and grapefruit are all citrus fruits.



Fig trees grow only in hot dry climates. Shown here is the fruit of the fig tree as it ripens.
© Richard T. Nowitz/Corbis

Poor Man's Food

In Mediterranean countries the fig is used so widely, both fresh and dried, that it is called the "poor man's food." The soft juicy fruit of the fig tree cannot remain fresh for long in the hot **climate** where it grows. So it has to be dried in the sun before it is sent to the market. Fresh or dried, the fig is packed with food value.

Figs were first found growing around the Mediterranean Sea. It's no surprise then that figs still grow in the countries bordering the Mediterranean—including Turkey, Greece, Italy, and Spain. Spanish missionaries introduced the fig tree to Mexico and California. The entire fig crop in the United States comes from California.

There are four main types of figs: caprifig, Smyrna, White San Pedro, and Common. When a fig is introduced into another country, a new name is often given to it. The Smyrna fig became known as the Calimyrna fig in California.

Fig plants are either bushes or small trees. Fig trees are easily grown from **cuttings** off an adult tree. The fruit occurs either singly or in pairs. The trees produce two or three crops a year.

The best-tasting dried figs are those that have been allowed to dry partly on the tree. The figs are then laid out on trays to finish drying in the sun. Turning and moving them about while they dry improves their quality. Most dried figs are eaten in their natural form, though many are ground into a paste to be used in bakery products.

SEARCH LIGHT

Why would the fact that so many people eat figs earn it the nickname "poor man's food"? (Hint: Food costs money.)

DID YOU KNOW?

There are more than 900 members of the fig group. One of them, the Bo tree, or pipal, is sacred in India. It is believed to be the tree under which the Buddha sat when he attained enlightenment.

LEARN MORE! READ THESE ARTICLES…
LIBYA (VOLUME 6)
MEDITERRANEAN SEA (VOLUME 1)
OLIVE (VOLUME 10)

Answer: Poor people can't afford many kinds of food but can always eat the figs found growing wild.


DID YOU KNOW?
For hundreds of years, chocolate was enjoyed mainly as a beverage. By the 1500s the Aztec of Mexico were making a bitter cocoa-bean drink. They also used cocoa beans as a form of money.

The Chocolate Tree

A chocolate tree may sound like something made up in a book or movie, but chocolate really does come from trees. A tree called the "cacao" is the source of all cocoa powder and chocolate.

Cacao trees grow only in warm areas that get a lot of rain. The trees grow long fruit called "pods" that range in color from bright yellow to deep purple. Inside the pods are rows of seeds called "cocoa beans." Each is about the size and shape of a big fingernail. It is from these cocoa beans that we get one of the world's favorite foods, chocolate.

SEARCH LIGHT

True or false? Chocolate is naturally very sweet.

But a lot of things have to be done to the beans before they turn into chocolate. After the cocoa beans are taken out of the pods, they are left in a damp place for a few days. The beans turn a rich brown color and begin to smell like chocolate. Then they are dried and cleaned.

Next the beans are shipped to chocolate factories all over the world. There they are roasted and ground into a paste. This paste contains a fatty yellow liquid called "cocoa butter." To make chocolate, you have to add extra cocoa butter to the paste. To make dry cocoa powder, you have to remove all the cocoa butter.

The chocolate is still not ready to eat, though. Cocoa beans are not naturally sweet. In fact, the paste is very bitter. So a lot of sugar must be mixed in. Milk may be added too. The chocolate is then poured into molds to harden into chocolate bars. Now it is finally ready to eat!

LEARN MORE! READ THESE ARTICLES…
COFFEE (VOLUME 10) • MEXICO (VOLUME 9)
SWITZERLAND (VOLUME 6)



Answer: FALSE. Chocolate is naturally quite bitter. It is the sugar added to it that makes it sweet.


SEARCH LIGHT
Most fruit grows on branches. Where does jackfruit grow?

The Largest Tree-Borne Fruit

The largest fruit that grows on trees is the jackfruit. And when we say it grows on trees, we mean it—the fruit grows on the main trunk of the tree and not on the branches. That's because it is so heavy that the branches can't support it—they would break right off! So how big is this fruit? Well, a single jackfruit can weigh over 80 pounds! It sometimes reaches 3 feet long and almost 2 feet around. The jackfruit tree is also very large. It looks something like a large oak tree and grows to a height of 50 to 70 feet.



A young Indonesian boy carrying jackfruits.
© Bennett Dean—Eye Ubiquitous/Corbis

Jackfruit grows in the warm regions of Asia. It's grown widely in tropical countries where it is warm and rains a lot, such as the Philippines. There are many varieties of jackfruit. Some of the popular ones include Black Gold, Galaxy, and Honey Gold.

Like its cousin the mulberry, jackfruit is a compound fruit. This means that it has many, many seeds and that each seed surrounded by its **pulp** is a separate fruit. The big jackfruit you see is like a huge container holding all the little fruits together.

Young jackfruits are green. They turn brownish yellow when ripe. Raw jackfruit is cooked like a vegetable, though the sweet pulp surrounding the seeds can be eaten fresh. The seeds can be boiled or roasted and eaten like chestnuts.

Jackfruit has other uses too. The wood is a valuable hardwood like teak. It is used for making many things, especially furniture. Dried jackfruit leaves are used as fuel for cooking fires, while the green leaves provide **fodder** for goats.

DID YOU KNOW?
Ripe jackfruits have a strong odor before they're cut open. Some people compare the smell to that of rotting onions! But once you cut into the ripe fruit, it smells more like pineapples or bananas.

LEARN MORE! READ THESE ARTICLES…
ASIA (VOLUME 7) • BANANAS (VOLUME 10) • PHILIPPINES (VOLUME 7)

Jackfruit is a distant cousin of the fig. It can grow to tremendous size.
© Liu Liqun/Corbis

Answer: Jackfruit grows on tree trunks. It's too heavy for branches.

Spectacular Leaves, Sensational Syrup

In parts of the United States and Canada autumn is spectacular as the leaves on the trees turn bright yellow, red, and orange. One tree in particular displays fantastic autumn colors—the maple. Some maple trees even display unusual colors such as maroon, bronze, and purple.

DID YOU KNOW?
Even though maple sap flows through the trees all spring, summer, and fall, it is collected for syrup and sugar only in the early spring. That's when the trees produce the sweetest sap.

There are about 200 kinds of maple trees. They can be found throughout most of North America, Europe, and northeastern Asia. The leaves of most maples grow thickly in a **dome** shape. In summer the thick **foliage** of the maple provides lots of shade. This makes it a popular tree for parks and streets. Many people also plant maple trees in their yards.

The fruit of maple trees is a hard pebble-sized structure with a pair of thin wings. Each wing has a seed at its tip. The wings help the seeds "fly" away on the wind, far enough from the tree to grow in the sunlight.

Many maples produce sweet **sap**. In North America the sap of the sugar maple is made into maple syrup and maple sugar. Sugar maples grow slowly. They do not produce sap until they are about 40 years old!

North American Indians long ago learned the secret of tapping maple trees for their sugar. The process is fairly simple. Several holes are drilled into the bark of the tree. **Spouts** are driven into these holes, and the sap flows through the spouts into pails hanging on the spouts. The sap is boiled until it has thickened. Then the maple syrup is ready to pour onto your pancakes! Or you can boil the syrup a little longer to make maple sugar.

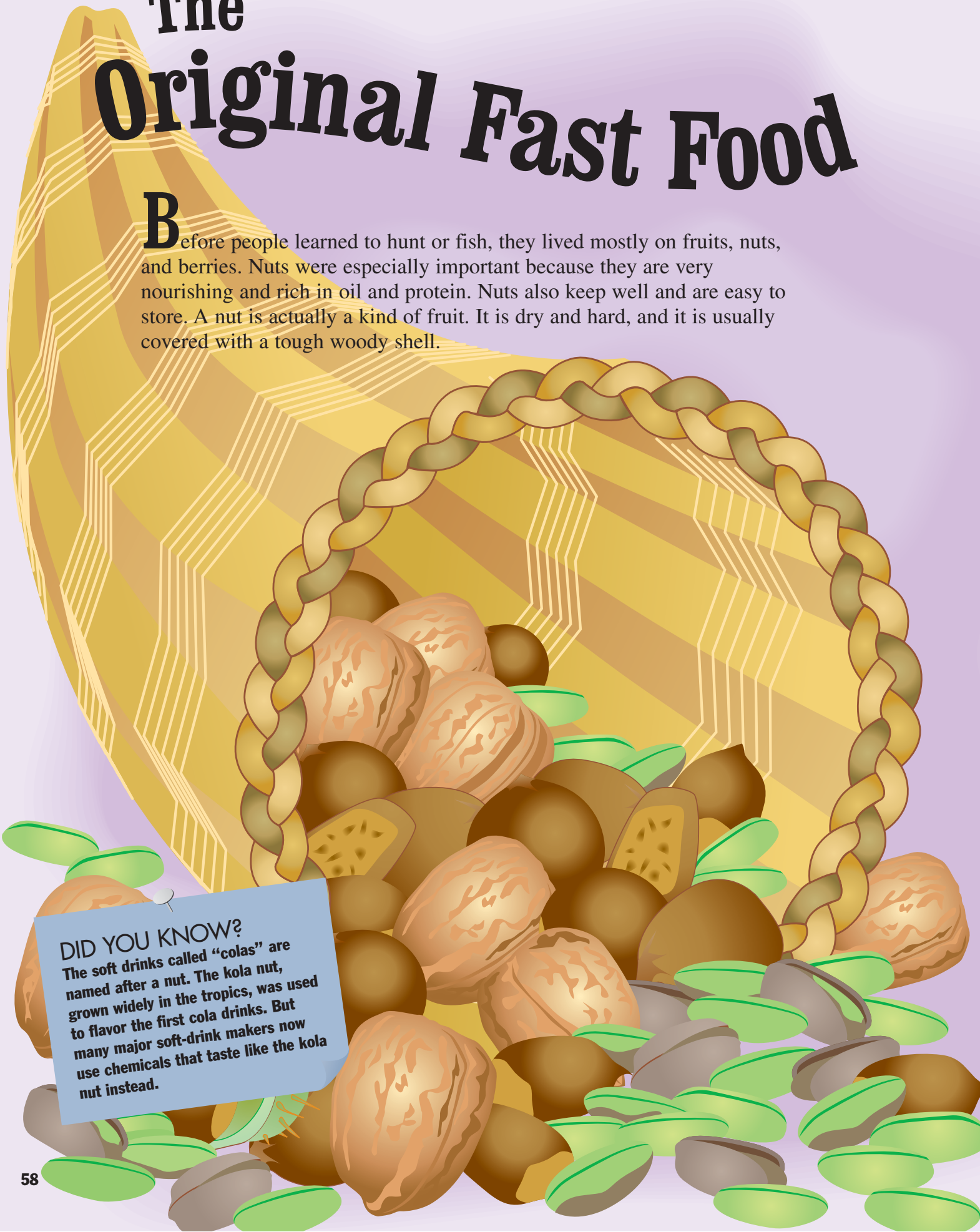
LEARN MORE! READ THESE ARTICLES…
AMERICAN INDIANS (VOLUME 4)
NORTH AMERICA (VOLUME 9)
RUBBER TREE (VOLUME 10)



Answer: The wings help the seeds "fly" on the wind so they can travel to a sunnier place, where they can grow.

The Original Fast Food

Before people learned to hunt or fish, they lived mostly on fruits, nuts, and berries. Nuts were especially important because they are very nourishing and rich in oil and protein. Nuts also keep well and are easy to store. A nut is actually a kind of fruit. It is dry and hard, and it is usually covered with a tough woody shell.



DID YOU KNOW?

The soft drinks called "colas" are named after a nut. The kola nut, grown widely in the tropics, was used to flavor the first cola drinks. But many major soft-drink makers now use chemicals that taste like the kola nut instead.

A couple of nuts that you may know about are chestnuts and pistachios. There are several kinds of chestnut trees, including the American, European, Chinese, and Japanese varieties. Chestnuts are an important food for people and animals. The American and European chestnuts provide valuable timber. And some chestnut trees are grown simply for their beauty.

Pistachio trees are from Central Asia, where they have been grown for about 3,000 years. Today they are also grown in North America. Their nuts are greenish and very tasty.

Other kinds of nuts include hazelnuts, beechnuts, and acorns. But some foods that are popularly called "nuts" aren't true nuts. Peanuts, for example, are actually a type of bean! And coconuts are really a kind of stone fruit called a "drupe." The Brazil nut is also called the candlenut because it can be lit and used as a candle. But it's technically a seed.

Walnuts are another "nut" that's not really a nut. But they too are good food. They have been grown since ancient times. They were highly valued in Persia and Mesopotamia. Today they are grown in many countries. Black walnut trees are also planted as decorations, and their fruit **husks** are used for making dyes. The trees grow slowly and may live for more than 250 years!

SEARCH LIGHT

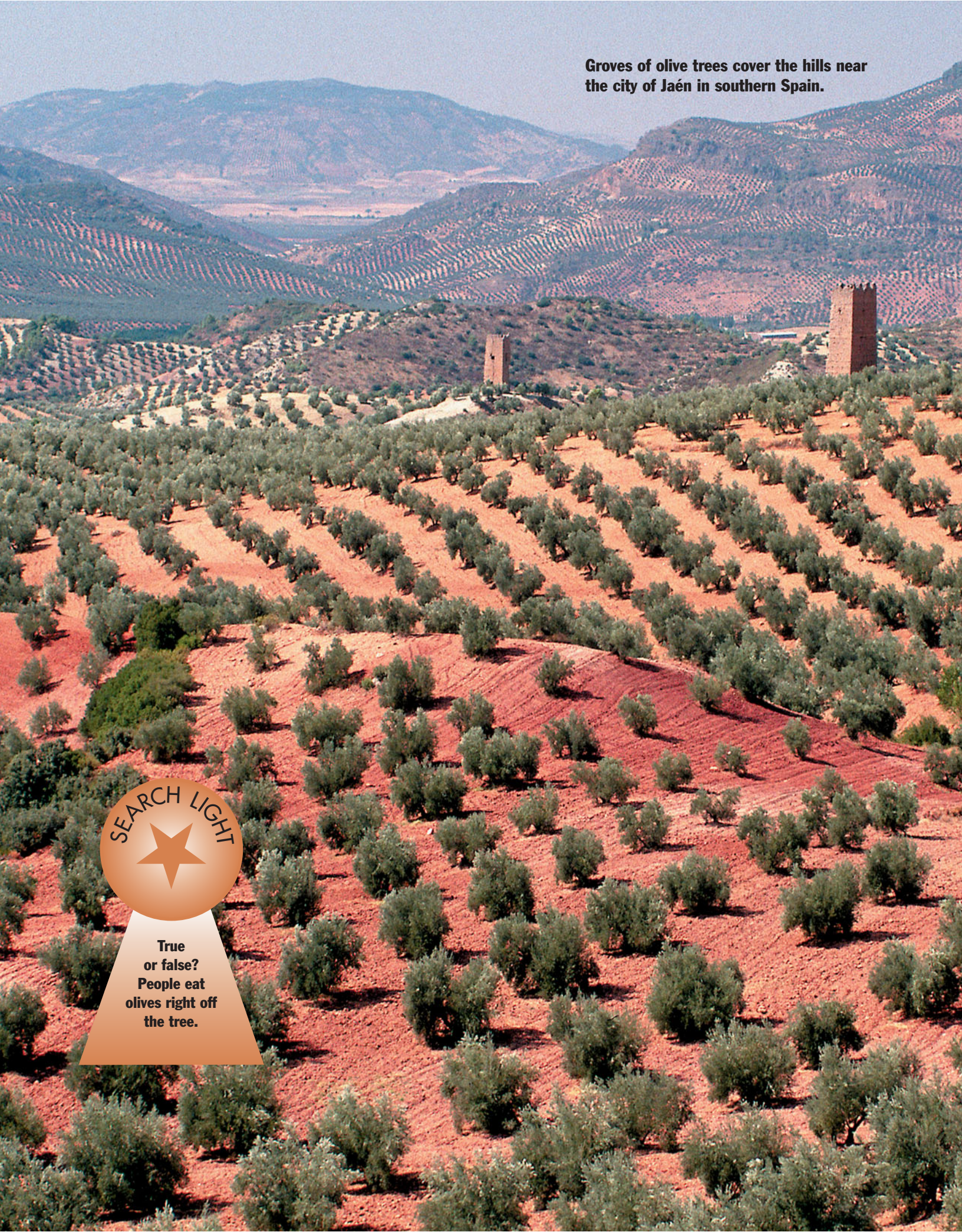
True or false? Peanuts are tasty and nutritious nuts.

LEARN MORE! READ THESE ARTICLES…
IRAN (VOLUME 7) • PALM (VOLUME 10) • PEANUTS (VOLUME 10)



Some foods that are called "nuts" are actually other kinds of foods. These include walnuts and coconuts.
EB Inc.

Answer: FALSE. The peanut is not really a nut—it's a kind of bean.



Groves of olive trees cover the hills near the city of Jaén in southern Spain.

Plant of Peace and Plenty

Since ancient times people have grown olive trees for their fruit and oil. Today olive trees are found in all the countries bordering the Mediterranean Sea. The trees are also grown in parts of the United States, Australia, and South Africa. But the leading producers of olives and olive oil are Spain, Italy, and Greece. They sell a lot of the fruit and oil to other countries.



Olive branches ripe with fruit.
© Vittoriano Rastelli/Corbis

The common olive tree has broad leaves and many branches. Its leaves are dark green above and silvery underneath. Olive branches have been a **universal** symbol of peace since the days of ancient Greece.

Olive trees bloom in late spring. The tiny white flowers hang in clusters and develop into fruit that is either picked by hand or shaken from the tree. An olive tree does not always bear fruit every year. The trees may produce a heavy crop one year and no crop the next year.

Often the olives are picked when they are still unripe and green colored. Some crops are allowed to ripen and darken on the trees before they're picked. But fresh olives are very bitter. Before they can be eaten, they must be treated with chemicals and stored, sometimes for several months. By the time they're ready to eat, their color may be green, black, dark red, or even purplish.

Olives are grown for the production of olive oil as well. The oil is taken from the fruit. It is one of the most widely used oils for cooking and eating, especially by people in the Mediterranean region. In using this oil, they are carrying on a tradition that is as old as civilization.

LEARN MORE! READ THESE ARTICLES…
GREECE (VOLUME 6) • MEDITERRANEAN SEA (VOLUME 1) • PALM (VOLUME 10)

DID YOU KNOW?

The olive tree is an evergreen and keeps its leaves all year-round. It can grow to be 50 feet tall and may live more than 500 years!

© Michael Busselle/Corbis

Answer: FALSE. Olives are bitter right off the tree and have to be processed before they can be eaten.



A family enjoys a walk hand in hand through a grassy park. Many people like the look, feel, and smell of a clean, fresh lawn of grass.

© Steve Thornton/Corbis

Nature's Carpets

Most flowering plants grow from the tip of the stem. Grass is different. The part that grows is at ground level. That's why grass isn't usually hurt by munching cows or lawnmowers. The grasses make up a successful plant family with almost 10,000 different kinds now living.



Tall grass in a Nebraskan prairie.
© Macduff Everton/Corbis

Grasses come in all sizes. A blade of bluegrass may be only about an inch high. A giant timber bamboo, by contrast, can grow to a height of 100 feet. The grass family includes wheat, rice, and corn—the **cereal** grains that are the world's most important food sources.

Grasses have adapted to a wide range of **climates**, from the tropics to the high Arctic. Grasses grow on the rainforest floor and on mountain slopes. They can also be found in saltwater and freshwater marshes. However, there are certain areas called "prairies" and "steppes" where grasses rule! A prairie is like an ocean of tall grass, rippling in the wind. A steppe is a drier kind of grassland with shorter grass.

Most grass leaves have ribbon-shaped blades. Some tropical grasses, though, have broad oval blades. The leaves of desert grasses are stiff and harsh and are often rolled inward. Some are even bristly and thorny. Grasses that grow in the water have waxy leaves that **repel** water.

Many grasses provide food for animals, both tame and wild. But some grasses become weeds that are not at all welcome. Among the worst for farmers are Bermuda grass, quack grass, and wild oats.

LEARN MORE! READ THESE ARTICLES…
BAMBOO (VOLUME 10) • MARSHES (VOLUME 1)
RICE (VOLUME 10)

DID YOU KNOW?
Grasses have flowers, but they are usually small and don't appear at all unless the grass is allowed to "grow out."

Answer: The tallest of the Earth's 10,000 kinds of grasses can grow 100 feet high.


DID YOU KNOW?
Bulrush leaves can be used to stop and fill cracks in barrels and boats because the leaves swell up when they get wet.

Marsh Plants

Rushes and reeds are grassy plants that grow in wet places such as marshes. For thousands of years, people all over the world have found many everyday uses for these plants.

Rushes are flowering plants with a round tubelike **stalk** and hollow leaves. They can be found in or near water in parts of the world that have cold winters. There are many kinds of rushes. The common rush is often used for weaving chair bottoms, mats, and baskets. The inside of the stalk is used for making wicks for oil lamps and **tallow** candles. These are often called "rushlights."

The bulrush, or cattail, grows in water and reaches a height of 8 feet above the surface. It provides food and cover for wildlife. People use bulrush leaves for making mats, baskets, chair seats, and ropes. The yellow pollen of the flowers is sometimes used for flavoring cookies and pancakes. And the flowering spikes can be boiled and eaten like corn on the cob.

Reeds are grasses that grow along the edges of lakes, pools, marshes, and streams, from the cold Arctic to the warm tropics. They can be 16 feet tall. They have feathery clusters of flowers and smooth stiff stems.

Since ancient times, people of various cultures have used dried reed stems for building huts and **thatching** roofs. Reeds have also been used for making baskets, arrows, pens, and musical instruments. One kind of reed, papyrus, was used by the ancient Egyptians to make one of the earliest forms of paper.

LEARN MORE! READ THESE ARTICLES…
GRASSES (VOLUME 10) • MARSHES (VOLUME 1) • PAPER (VOLUME 2)

SEARCH LIGHT

Reeds and rushes grow pretty much wherever there is
a) dirt.
b) water.
c) sun.

Answer: b) water.



DID YOU KNOW?

Although bamboo stems are hard like wood, they are very different from tree trunks. They even have a different name. Bamboo stems are called "culms."

The Tallest Grass

Bamboo may grow as tall as a tree, but it is actually a kind of grass. Bamboo looks like a tree too, growing straight and thin, with branches at the top. Some kinds of bamboo grow to a height of 130 feet. Others grow so fast that they add more than a foot to their height in one day!

Not everything about bamboo happens fast, however. Some plants will not produce flowers and seeds until they have grown for as long as 120 years! After blooming only once, such a plant dies. Other kinds of bamboo bloom and produce seeds every year.



© Dave Bartruff/Corbis

There are more than 1,000 kinds of bamboo. Most are found in East Asia and Southeast Asia. Some kinds grow in the southern United States along riverbanks and in marshes. The plants grow best where it's warm and rainy.



© Nevada Wier/Corbis

(Top) Bamboo's hollow stems; (bottom) Vietnamese boys crossing a river on a footbridge made from bamboo.

Bamboo is one of the world's most useful plants. Many people in warm countries build rafts, bridges, and houses from bamboo. Their floor mats and furniture are bamboo as well. The hollow stems of bamboo can be joined together and made into pipes to carry water. The stems can also be split to make all kinds of tools and utensils. Bamboo flutes make music. Bamboo sprouts and shoots are used in Asian cooking. And bamboo can be mashed into a pulp to make paper.

People aren't the only ones who put bamboo to good use. The giant panda of China will eat almost nothing else.

SEARCH LIGHT

Which of the following are uses for bamboo?
making paper
building houses
piping water
building furniture
feeding pandas

LEARN MORE! READ THESE ARTICLES…
BANGLADESH (VOLUME 7) • PANDAS (VOLUME 12) • RUSHES AND REEDS (VOLUME 10)

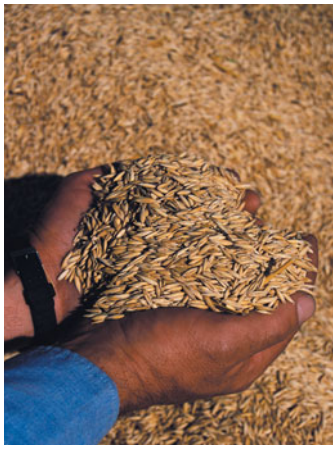
Most species of bamboo grow in Asia and on islands of the Indian and Pacific oceans.
© Royalty-Free/Corbis

Answer: All of these are uses for bamboo.


SEARCH LIGHT
Fill in the blank: Barley was one of the _____ plants grown as a crop.

A Versatile Cereal

Barley was one of the first plants ever grown as a crop. Like other food plants in the group called "cereals," barley is a grass that is grown for its **starchy** seeds. Barley has a nutty taste and a lot of food value. People have known for a long time that barley is good to eat. It was probably first grown in **prehistoric** Ethiopia and in Southeast Asia. Egyptian farmers grew barley as far back as 5000 BC. Ancient people of Europe, Asia, and North Africa raised it too.



Barley, one of the world's major cereal plants.
© Doug Wilson/Corbis

Barley is an especially widespread crop because it can be grown in so many different climates. It grows and ripens quickly, which makes it just right for areas that have short growing seasons—regions far to the north (such as Canada) or high up in the mountains (such as Tibet). But barley can survive just as well in the dry heat of North Africa.

Ancient people used barley to make bread. Although barley doesn't bake as well as wheat does, the flour is good for making flatbreads such as pita. And barley is ideal for making some hot cereals. Polished **kernels** called "pearl barley" serve to thicken and flavor soups. Barley can also be put through a process that turns it into a flavoring called "malt." Barley malt is used in making some vinegars and beverages, especially beer.

Despite all these uses, only about half the barley grown in the world is eaten by people. The rest goes to feed animals.

DID YOU KNOW?
Ancient Roman gladiators trained on a diet of barley. These professional fighters gained energy and strength from barley's high food value.

LEARN MORE! READ THESE ARTICLES…
CZECH REPUBLIC (VOLUME 6) • ENERGY (VOLUME 2) • ETHIOPIA (VOLUME 8)

About half of the world's barley crop is used as animal feed.
© Frank Lane Picture Agency/Corbis

Answer: Barley was one of the first plants grown as a crop.

Grain of the Americas

The grain known as "corn" in the United States, Canada, and Australia is known as "maize," or "Indian corn" in the rest of the world. Corn is a grain, just as wheat and rice are. Corn was first found in the Americas.



A boy holding ears of corn in a farm field in South Africa.
© Barbara Bannister–Gallo Images/Corbis

Mayan farmers of Mexico and Central America **cultivated** corn. Early European explorers of the Americas took corn back with them to Europe. Since that time, corn has been grown all over the world.

Corn grows in areas that have rich soil and cold nights but no frost during the growing season. It also needs plenty of sunshine to ripen. These conditions are found in a large area of the midwestern United States known as the Corn Belt. Similar conditions are also found in parts of Asia, much of Central and South America, the Mediterranean, and southern Africa. The largest producers of corn, after the United States, are China and Brazil.

Corn is used to feed cattle and **poultry**. And, of course, it serves as food for humans. The grains of corn that people eat are the seeds of the plant. The seeds are called "kernels" and are found along the length of the spike. The spike with the kernels is commonly known as the "ear" of corn. Leaves called "husks" wrap around and cover the spike. The seeds, if they are planted, will grow into new corn plants.

Large quantities of corn are used in Latin American cooking. *Masa harina* is a kind of flour made from corn. It makes a dough that's used to make tortillas—a kind of round thin flatbread. They are the wraps for tacos, burritos, and enchiladas.

LEARN MORE! READ THESE ARTICLES…
ASIA (VOLUME 7) • BARLEY (VOLUME 10)
MAYAN CIVILIZATION (VOLUME 4)

SEARCH LIGHT

Find and correct the error in the following sentence: Corn was first found in Europe.

DID YOU KNOW?

None of the corn plant has to be wasted. For example, the stalks are made into paper and materials for building. And corn cobs—the corn spikes stripped of kernels—are used for fuel and to make charcoal.



Vast cornfields like this one in the state of Nebraska are a common sight in the U.S. Corn Belt.
© Philip Gould/Corbis

Answer: Corn was first found in the Americas.



SEARCH LIGHT

When you eat rice, you're eating the seeds of a kind of
a) grass.
b) tea.
c) fruit.

Food from Water-Grown Grasses

Do you chew grass? Actually, you probably do! The grains that most people eat daily are actually grasses—or at least grass seeds. These include wheat, corn, rye, and rice. More than half the people in the world eat rice almost every day. The grain is so important that millions of people in Asia would starve if they didn't have it. China and India are among the largest producers of rice. Rice is also the basic feature of most meals in the islands of the western Pacific and much of Latin America.



Rice plants are carried for planting.
© Michael S. Yamashita/Corbis

Most rice is grown in water. The land under the water has to be smooth and level, like a tabletop. The water on top must be the correct depth. If it's too deep, the rice will drown. If it's not deep enough, the rice won't grow.

In the countries of Asia, the muddy ground is plowed by water buffalo pulling wooden plows. Then the tiny rice plants are planted in rows. If it doesn't rain enough, water is brought in from lakes and rivers to flood the fields. The rice plant grows under the water, with its green shoots sticking out. A water-filled field planted with rice is called a "rice paddy."

When the rice is ripe, the water is drained off the fields. After the ground has dried, the rice **stalks** are cut and tied into bundles. When the stalks have dried, the rice seeds are removed from the stalks and the brown **hulls** are then removed from the seeds. Many farmers grow rice for their families to eat. Rice to be sold in grocery stores goes to a factory. There it is packed into boxes and then shipped to the stores.

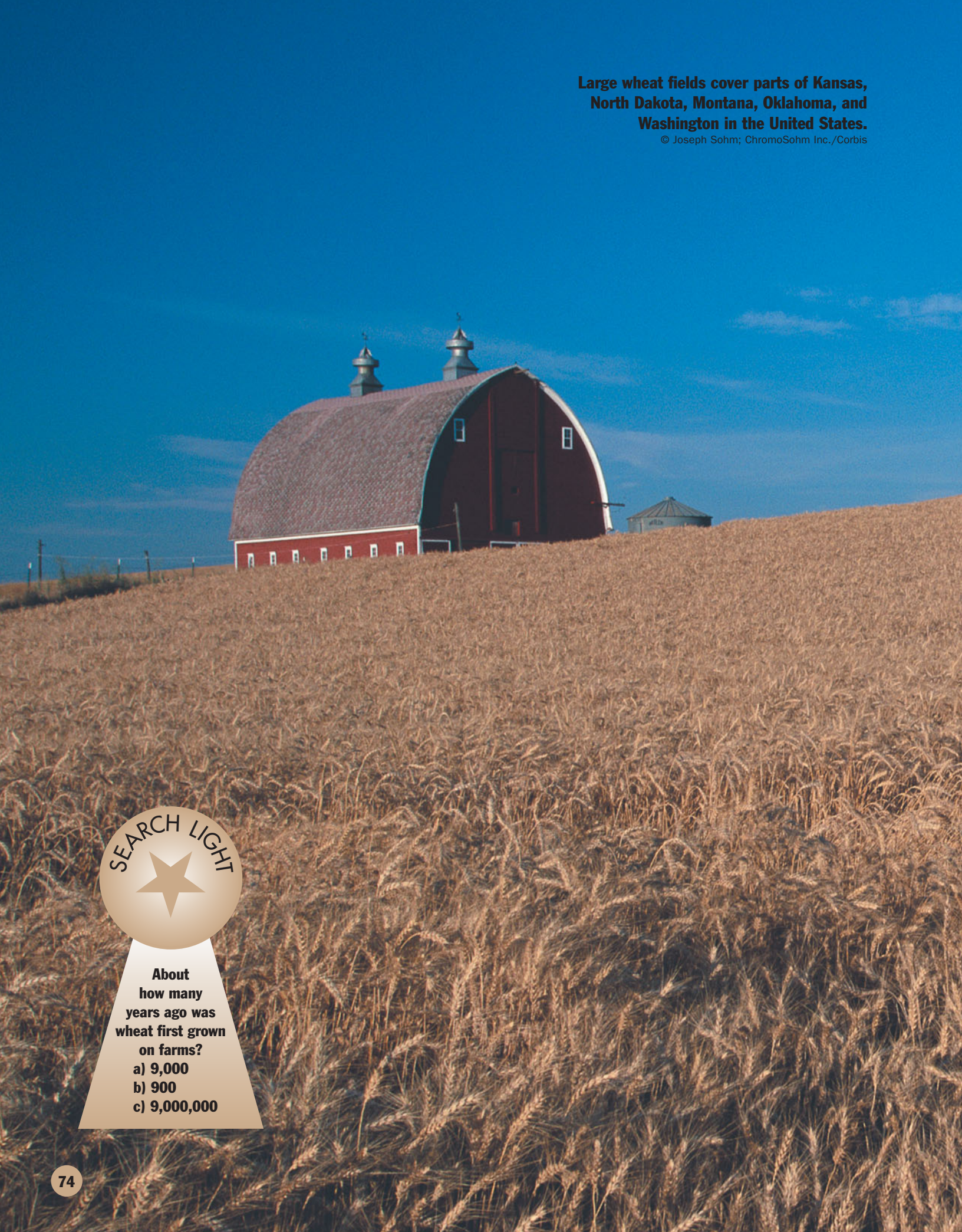
DID YOU KNOW?

Rice was first grown as a crop about 5,000 years ago in India. It later spread from there. It reached North America in the 1600s.

LEARN MORE! READ THESE ARTICLES…
BUFFALO (VOLUME 12) • CHINA (VOLUME 7) • GRASSES (VOLUME 10)

In order to grow rice in hilly areas, giant steps called "terraces" are dug into the hillsides. Each giant step has a little wall of mud at its edge to hold in the water that covers the rice as it is growing.
© Dave G. Houser/Corbis

Answer: a) grass.



Large wheat fields cover parts of Kansas, North Dakota, Montana, Oklahoma, and Washington in the United States.

© Joseph Sohm; ChromoSohm Inc./Corbis

SEARCH LIGHT

About how many years ago was wheat first grown on farms?

a) 9,000
b) 900
c) 9,000,000

The Bread of Life

Wheat is one of the oldest and most important of the **cereal** crops. Many people eat wheat products at every meal. It is an important ingredient of many breads, pastries, and pastas. Wheat has lots of **nutrients** and is a major source of energy for humans.



Wheat ready for harvesting.
© Bohemian Nomad Picturemakers/Corbis

Wheat can be eaten simply by soaking and cooking the seeds, or grain. But for many foods the grain has to be turned to flour first. This requires grinding the wheat.

The wheat plant is a kind of grass with long slender leaves. In most kinds of wheat the stems are hollow. The top part of the plant is made up of a number of flowers. Two to six flowers form groups called "spikelets." Two to three of the flowers in each spikelet produce grains. It's the grains that are used as food.

More of the world's farmland is used for growing wheat than for any other food crop. The world's largest producer of wheat is China. Other leading producers are India, the United States, Russia, France, Ukraine, and Turkey.

Many thousands of varieties of wheat are known. The most important ones are used to make bread and pasta. Club wheat, a soft variety, is used for cakes, crackers, cookies, pastries, and household flour.

Wheat was first grown on farms about 9,000 years ago in the Euphrates River valley of the Middle East. In ancient Egypt, wheat was so important that the people buried some with the pharaohs (kings). In this way, they believed, the pharaohs would never go hungry in the afterlife.

DID YOU KNOW?
Although most wheat is eaten, some of it is used to make paste. (Be careful not to confuse the two!)

LEARN MORE! READ THESE ARTICLES…
EGYPT: THE PHARAOHS AND THE PYRAMIDS (VOLUME 8)
FERTILE CRESCENT (VOLUME 7) • GRASSES (VOLUME 10)

Answer: a) 9,000

A Sweet and Syrupy Plant

The sugarcane plant is a giant grass that grows year-round in warm and wet regions of the world. The island of New Guinea is probably the original home of sugarcane. Gradually, the plant was introduced to Southeast Asia, India, Polynesia, and other areas. Today Asia is the largest producer of sugarcane, followed by South and North America.



Workers harvesting sugarcane.
© Otto Lang/Corbis

The sugarcane plant is grown for its sweet **sap**. Much of the world's sugar and molasses comes from sugarcane sap. And in many parts of the world, people enjoy sucking on a piece of sugarcane for a sweet treat.

Sugarcane grows in clumps of stalks that reach a height of 10 to 20 feet. The color of the stalk varies from almost white to yellow to deep green, purple, red, or violet.

The sugarcane crop needs at least 60 inches of water per year and nine months for the stalks to ripen. Once the stalks are ripe, they are stripped of their leaves and trimmed. The stalks are then washed and cut into short lengths. Most of this work is still done by hand.

Sugar is removed from the cane by two methods. In the first method, the finely cut stalks are put in hot water. This separates the sugar from the stalks. In the second method, the juice is squeezed from the stalks by pressing them between heavy rollers.

The juice taken from the cane is heated until it is boiling. Next, the water in the juice is allowed to **evaporate**. The resulting syrup is boiled again until sugar crystals have formed. The syrup left behind is called "molasses."

DID YOU KNOW?

Raw sugar is brown, not white.

LEARN MORE! READ THESE ARTICLES…
ASIA (VOLUME 7) • CACAO (VOLUME 10) • MAPLE (VOLUME 10)

Sugarcane is sold at market in a village in India.
© Earl & Nazima Kowall/Corbis



SEARCH LIGHT

Fill in the blanks: We get _____ and _____ from sugarcane sap.

Answer: We get sugar and molasses from sugarcane sap.


DID YOU KNOW?
The saguaro cactus blossom is the state flower of Arizona, U.S., where it is illegal to kill the saguaro cactus.

Don't Touch!

Cactus plants nearly always grow in dry areas where it hardly ever rains. In all there are about 1,650 different kinds of cactus plants (cacti). All of them except one live in North and South America, especially in Mexico. Cacti can be very tall or really tiny. Some have strange shapes or features. In the Arizona desert of the United States, you can see miles of giant treelike saguaro cacti. Another type, the old-man cactus, got its name from its woolly white "hair." Some prickly pear cacti have a fruit that can be eaten. You can find prickly pears at some city fruit stands. You can even make sugary candy from a cactus.

Most plants give off water through their leaves. But water is rare and **precious** in the deserts where cacti live. Cacti save water by having no leaves or only small ones that drop off early. A cactus also stores up water inside its thick stem. Almost every cactus has sharp spines that look like thorns or needles. These help protect it from people and animals that want to eat the moist parts inside. In the old days in the American West, the watery juice inside a barrel cactus often saved people's lives.

Some types of cacti are used for making medicines. Dried-up cacti are sometimes used as firewood, and cacti planted around houses can provide a thorny fence. Many people like to keep cacti as houseplants for their unusual appearance. Some cacti also produce big colorful flowers. Maybe you could grow a cactus garden!

LEARN MORE! READ THESE ARTICLES…
DESERTS (VOLUME 1) • MEXICO (VOLUME 9) • PORCUPINES (VOLUME 12)

SEARCH LIGHT

There are more than how many different kinds of cacti in the world?
a) 650
b) 16,500
c) 1,650

Answer: c) 1,650


DID YOU KNOW?
The cedar tree is featured on the flag of Lebanon. In early historic times cedars of Lebanon were plentiful throughout the area.

A Sweet-Smelling Wood

SEARCH LIGHT

Fill in the blank: Cedarwood is used to make clothing chests because its scent is supposed to keep _____ out.

The cedar is an evergreen tree that grows in the mountains. There are four kinds of cedar. Three of them—including the cedar of Lebanon—originally grew only in the mountain areas of the Mediterranean. They later spread to other areas. The fourth kind grows in the Himalayas, a mountain system in South Asia.

Cedars are tall trees with large trunks and huge heads of spreading branches. They usually grow to a height of 50 feet or so. The leaves are stiff and needlelike. They are scattered along the branches in clusters. Each cluster may have as many as 30 needles. The cedar tree also bears large barrel-shaped cones. The cones are greenish or purplish and are covered with woody scales. The cones hold the seeds that can grow new cedars.



Forest worker sampling a cedar tree.
© Walter Hodges/Corbis

Cedarwood has been used for building for a very long time. In fact, people were building with cedarwood even before the great pyramids of ancient Egypt were built. The wood is light and soft and lasts for a long time. It is very sturdy and stands up to all kinds of weather. It has a pretty reddish color, is easy to work with, and has a pleasant smell.

Many other trees that have sweet-scented wood are commonly called cedars. But they may actually belong to the cypress or juniper family. The scented wood of these cedars has long been popular for making clothing chests and closets because the smell is supposed to keep insects out. Cedar oil is even used in perfumes because of its strong scent.

LEARN MORE! READ THESE ARTICLES…
BEIRUT, LEBANON (VOLUME 7) • KENYA (VOLUME 8) • PINE (VOLUME 10)

Western red cedar trees grow in the Hoh Rain Forest in Olympic National Park in Washington state, U.S.
© Michael T. Sedam/Corbis

Answer: Cedarwood is used to make clothing chests because its scent is supposed to keep insects out.



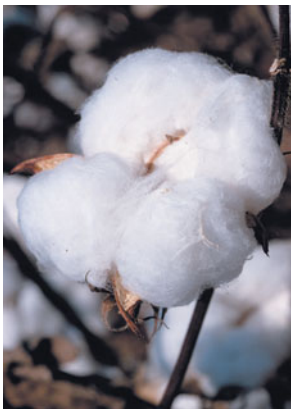
Cotton has long been an important crop in the American South. These cotton plants are being harvested in the state of Mississippi.

SEARCH LIGHT

Find and correct the error in the following sentence: White puffs of cotton grow on cotton plants inside "balls."

Summer Snowballs

Blue jeans are made of cotton. So are T-shirts and socks. The curtains in your room may be cotton, along with the sheets on your bed. And all these items start out as balls of fluff on cotton plants.



Puffs of cotton on the stem of a cotton plant.
© Richard Hamilton Smith/Corbis

In places as different as Egypt, the Czech Republic, India, and the southern United States, you can see fields filled with creamy white and pink cotton flowers. During the summer the petals fall off the flowers, and green knobs, or "bolls," appear. Inside the bolls, white cotton is growing. These bolls grow big and turn dry and brown. Then they burst open, and thick white puffs of cotton with little seeds in them spring out. Suddenly the fields look like fields of snowballs.

Then it's time to pick the cotton. This is done either by hand or by a machine like a **tractor** with a big basket at the back. Handpicking results in a higher quality **harvest**. But machines are less expensive to use. As a machine moves through the field, it pulls the cotton from the bolls. The cotton gets sucked up through large tubes and dropped into the big basket.

After the cotton is picked, it is sent to a "cotton gin." The gin takes the seeds out of the cotton. The cotton is then cleaned, packed tightly in heavy bundles called "bales," and shipped to factories to be made into thread. The cotton cloth woven from the thread makes good clothing because it is cool and comfortable and easy to wash.

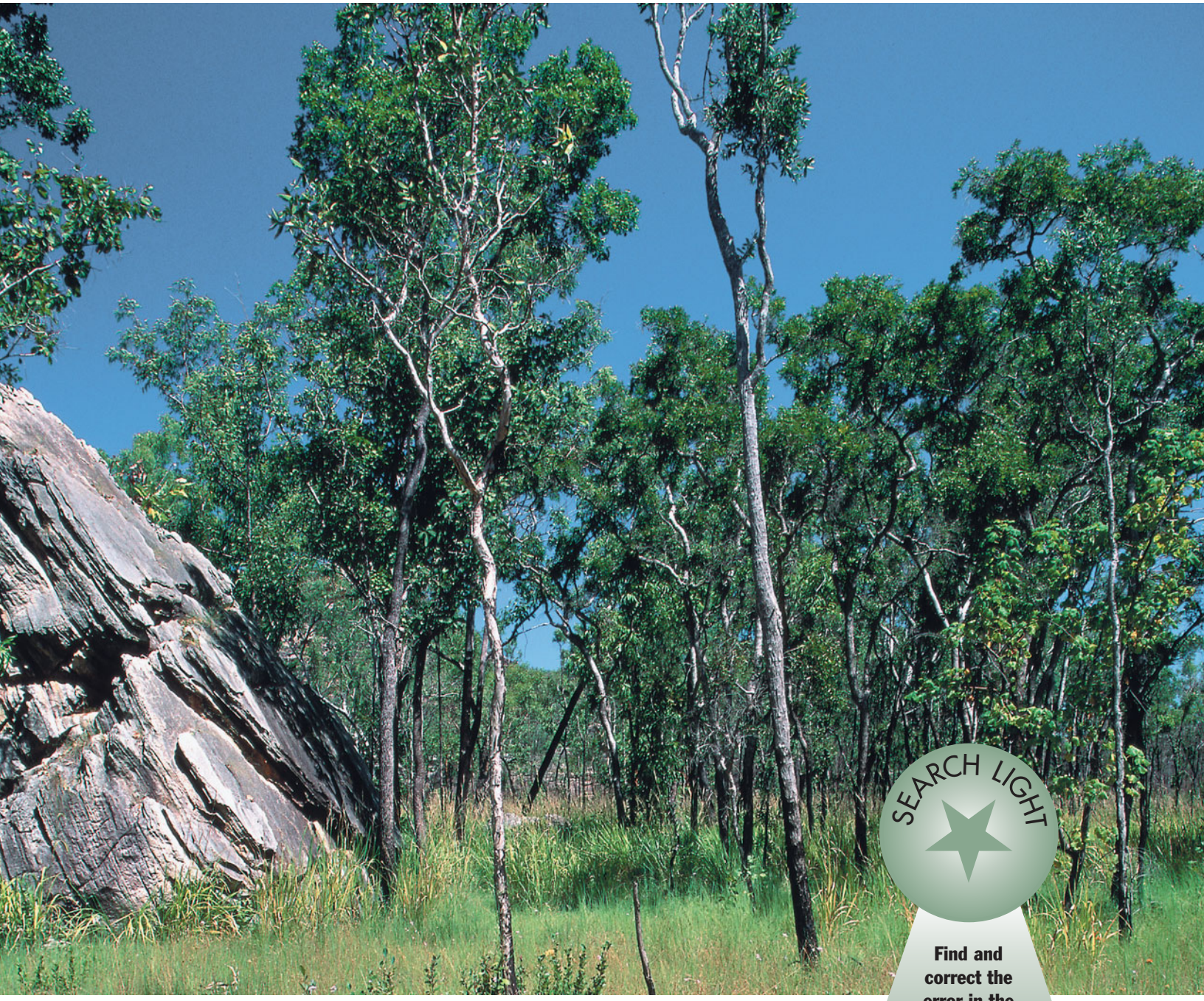
Cotton seeds are important too. They are sold to make margarine, salad oil, food for farm animals, and many other things. And, of course, they're used to plant more cotton.

DID YOU KNOW?
In 1793 Mrs. Samuel Slater became the first woman to file for a U.S. patent. The patent was for a new kind of cotton thread.

LEARN MORE! READ THESE ARTICLES…
NILE RIVER: EGYPT'S GIFT (VOLUME 8)
SHEEP (VOLUME 12) • WEAVING (VOLUME 2)

Answer: White puffs of cotton grow on cotton plants inside "bolls."

© Richard Hamilton Smith/Corbis



Most species of eucalyptus have long, slender leathery leaves. Eucalyptus trees are plentiful in areas of Kakadu National Park in Australia's Northern Territory.
© Paul A. Souders/Corbis

SEARCH LIGHT

Find and correct the error in the following sentence: The eucalyptus tree is the tallest tree in the world.

Australia's Gum Trees

The giant gum trees of Australia are among the tallest trees in the world. Only two trees grow taller: the Douglas fir (of North America and Asia) and the giant redwoods (of North America). The giant gum can grow to be 300 feet tall. In Australia "gum tree" and "stringybark tree" are names for the eucalyptus tree.

The name "eucalyptus" comes from two Greek words that mean "well-covered." The name probably refers to the tight-fitting cap that covers the eucalyptus flower until it is ready to bloom. There are nearly 500 kinds of eucalyptus. Common varieties include the ironbark, blue gum, jarrah, and Sydney peppermint. Eucalyptus flowers vary from creamy white to yellow to many shades of pink and red.

DID YOU KNOW?

Not only do koalas eat eucalyptus leaves, but they also live in the eucalyptus trees.

The trees originally grew only in Australia, New Zealand, and Tasmania and on nearby islands. You can find them now in other warm areas of the world. They are popular in the warmer parts of the Americas and Europe and in northern Africa.



Eucalyptus leaves.
© Australian Picture Library/Corbis

Eucalyptus trees grow rapidly. That is one reason why they are planted along avenues and are used as windbreaks. The trees also are planted in certain areas to keep the soil from washing away. Eucalyptus wood is used as lumber for outdoor building projects because the wood resists water damage.

Some kinds of eucalyptus are especially useful because of the oil found in their leaves. Eucalyptus oil is used in many medicines, especially in cough syrups and **inhalers**. And one of the most popular animals in Australia loves the eucalyptus tree. Eucalyptus leaves are almost the only thing that koalas eat.

LEARN MORE! READ THESE ARTICLES…
ADDIS ABABA, ETHIOPIA (VOLUME 8)
CANBERRA, AUSTRALIA (VOLUME 7) • KOALAS (VOLUME 12)

Answer: The eucalyptus tree is the third tallest tree in the world.


SEARCH LIGHT
How does moss help prevent floods?

The Thirsty Plant

It's soft and green and spreads over the ground like grass, but it isn't grass. This soft green stuff grows on wood too, but it isn't leaves. It even grows on rocks. It likes the shade, and it's thirsty. It's always thirsty. It's moss.



Moss forming on a decaying log.
© David Muench/Corbis

There are many different types of moss. Some of these plants are very tiny, while others grow more than 40 inches long. Many mosses rise just barely above the ground. Most mosses are green, but some are red or reddish-brown.

Moss can be found all over the world, from swamps to high mountains, forests, and even deserts. But most moss grows in moist places. It soaks up water and holds it, somewhat like a sponge. And it's good that it does. Whole villages might be flooded if the mountain mosses didn't drink up some of the melted snow in the springtime. Early American pioneers once stuffed moss between the cracks of their log cabins. The tiny moss stems and leaves drank up the raindrops. This helped keep the cabins warm and dry.

Usually, you'll see many of these plants growing very closely together. This helps them store more water. Mosses can be found growing in dark caves or on rotting logs or wet cliff walls. Some kinds cover the forest floor like a carpet. Another type of moss, called "peat moss," is found in swamps or bogs. When dead peat moss plants decay, or break down, they form a substance called "peat." Peat is dried and burned for fuel.

DID YOU KNOW?
Birds line their nests with moss, which they can pick easily. Unlike most plants, moss doesn't have roots that go deep into the ground.

LEARN MORE! READ THESE ARTICLES…
FLOODS (VOLUME 1) • SPONGES (VOLUME 11) • SWAMPS (VOLUME 1)

Mosses are often found on wet boulders and on dripping cliffs in steep, narrow valleys and passages.
© Pat O'Hara/Corbis

Answer: Moss helps prevent floods by soaking up water, such as from melting snow.



Pine trees grow in a rainforest in Alaska.

SEARCH LIGHT

True or false? The leaves of a pine tree stay green even in the winter.

A Useful, Long-Lived Tree

Some pine trees are among the oldest living trees on Earth. In fact, the oldest living tree we know of is a bristlecone pine that's some 4,800 years old.

Pines are found in mountainous places and the cool areas of the Northern Hemisphere (the northern half of the Earth). There are about 90 varieties of pines. You may recognize pines from their cones, the hard scaly clusters that are often used for decorations in the winter. Pine trees look like spruce and fir trees, which belong to the same family and also grow cones.



Umbrella pine trees in Donana National Park near Sevilla, Spain.
© Andrew Brown—Ecoscene/Corbis

There are two kinds of pine trees: soft pines and hard pines. Both kinds have needlelike leaves that stay green all year-round. Soft pines have needles that grow in bunches of five. Their cones have no prickles on them. The wood of these trees is soft and easy to cut. Hard pines have needles growing in groups of two or three. Their cones are covered in prickles. These trees have hard wood that is difficult to cut but lasts for a long time.

There are several ways pine trees can be damaged. The trees catch fire very easily, and they can get sick if they catch diseases caused by **fungi**. Also, insects—such as sawflies, bark beetles, and caterpillars—can chew through parts of the trees.

People use pines for many things. Their wood is used in construction as well as for making paper products. Resin, a liquid from the wood, makes **turpentine**, paints, and varnishes. Some pine seeds are sold as nuts for eating.

DID YOU KNOW?
Some kinds of pine trees can actually benefit from fire because the heat opens their cones and releases their seeds.

LEARN MORE! READ THESE ARTICLES…
CEDAR (VOLUME 10) • INSECTS (VOLUME 11) • PAPER (VOLUME 2)

© Tom Bean/Corbis

Answer: TRUE. The tree's leaves are its needles, and they remain green year-round.

A Tree with Bounce

More than 200 years ago, an English chemist named Joseph Priestley received a gift from an American friend: a ball that bounced. Besides being bouncy, the ball could rub away pencil marks. Priestley had never seen anything like it before. He named the new material "rubber."



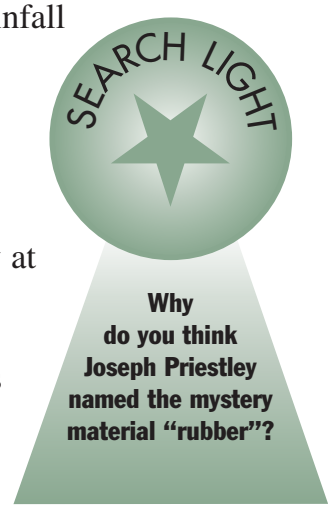
Latex drips out of a rubber tree.
© Neil Rabinowitz/Corbis

The ball was made from the milky sap of a tree that came to be known as the rubber tree. The tree was first found growing in Brazil. Now it's grown in many places, such as Malaysia, Indonesia, and Thailand and parts of India and China.

Rubber trees need heavy rainfall of at least 100 inches per year. And they can grow only in areas where frost doesn't form. Only tropical areas can give the rubber tree all that it needs to survive.

Wild rubber trees may reach a height of 120 feet. But rubber trees that people raise on **plantations** grow only to about 80 feet. The people who grow these trees make sure that leaves grow only at the top. This makes the **tapping** of the tree easier.

To tap a rubber tree, workers shave off a slanted strip of bark halfway around the tree. The milky **sap**, called "latex," then flows out along the cut until it reaches a spout. Finally it drops into a collection cup. Rubber trees can be tapped for latex for up to 30 years. But the trees get to rest between tappings.



LEARN MORE! READ THESE ARTICLES…
BRAZIL (VOLUME 9) • MAPLE (VOLUME 10) • PALM (VOLUME 10)

An Indonesian woman cleans a groove in the bark of a rubber tree to help increase the flow of the milky liquid called "latex."
© Dean Conger/Corbis



DID YOU KNOW?

Before being used, most rubber is treated with heat and the substance called "sulfur." This process is called "vulcanization." It was named after Vulcan, the Roman god of fire.

Answer: Priestley called the new material rubber because it could rub away pencil marks.


SEARCH LIGHT
There are many different kinds of seaweed. Can you name three of them?

Wild Plants of the Ocean

You are in the waves at the seashore when suddenly something that feels cold and clammy slaps you on the back! Is it a friendly fish? No, it's probably just seaweed. These plants grow wild in the sea, just as weeds grow wild on land.



Seaweed on a New Zealand beach.
© Richard Hamilton Smith/Corbis

Seaweed grows all over the world. Some kinds float along the top of the water. Others are attached to the sea bottom or to rocks. Seaweed comes in many colors, such as red, brown, purple, and green. It may look like a red carpet or like tree branches with leaves and berries. The "berries" are actually little gas-filled balloons that help keep the leaves afloat. Some kinds of seaweed, called "kelp," can grow longer than 100 feet and have tough and leathery branches. Other kinds look like lettuce and are actually called "sea lettuce."

People have found many uses for seaweed. The plants have been used for stuffing furniture and making paper. Giant kelps have been used as ropes. Laver, dulse, gulfweed, sea lettuce, and other kinds of seaweed are eaten, either by themselves or as part of other foods. Brown seaweed is used for making **fertilizers** for plants.

Even animals take advantage of seaweed. Tangled clumps of seaweed provide homes and hiding places for fish and other sea creatures. In the Atlantic Ocean, a huge floating mass of gulfweed between the United States and Africa is a resting place for seabirds. This gulfweed is called *Sargassum*, and this part of the Atlantic is the famous Sargasso Sea.

DID YOU KNOW?
If you like sushi or maki rolls, then you've probably eaten seaweed. Many of these Japanese delicacies are wrapped in seaweed.

LEARN MORE! READ THESE ARTICLES…
GULLS (VOLUME 11) • OCEANS (VOLUME 1) • RUSHES AND REEDS (VOLUME 10)

Giant kelp grows off the coast of California.
© Ralph A. Clevenger/Corbis

Answer: Kelp, sea lettuce, laver, dulse, and gulfweed are all names for different kinds of seaweed.

GLOSSARY

ambassador person who officially represents his or her own government in a foreign country

brew to prepare by steeping (soaking) or boiling in hot water

calorie unit that measures the amount of heat energy that food provides to the body

carbohydrates plentiful, energy-producing natural substances that are formed by many food plants eaten by animals

cereal starchy seeds of certain grass plants grown for food

citrus kind of tree or shrub grown in warm regions and having thick rind (skin) and fleshy fruits, including oranges, grapefruits, and lemons

climate average weather in a particular area

concentrated condensed, or made thicker, by removing water

cultivate to plant crops and to care for them as they grow

cutting section of an adult plant capable of developing into a new individual

disk the central part of certain flower heads, as in daisies and sunflowers; the disks, in turn, are surrounded by ray flowers

dome large rounded structure shaped like half of a ball

evaporate to change into a vapor or gaseous form, usually by means of heating

evergreen (adjective) having leaves that remain green and working through winter and more than one growing season

exotic unusual and unfamiliar

fertilizer natural or artificial substance used to make soil better for growing crops

fiber strand or thread-like structure

flourish to grow successfully; to do well

fodder coarse food for farm animals

foliage the leaves of a plant

fragrance (adjective: fragrant) sweet, pleasant, and often flowery or fruity smell

fungus (plural: fungi) organism (such as a mushroom or mold) similar to a plant but lacking a stem, roots, leaves, and the substance called "chlorophyll"

harvest the gathering of a crop

hemisphere half of the planet Earth or any other globe-shaped object

herb pleasant-smelling plant (such as mint, oregano, basil, and coriander) often used in cooking, either in part or as a whole

hull hard outer shell of a seed; also, the outer layer of a boat or ship

husk usually thin dry outer covering of a fruit or seed

inhaler device through which medicine is drawn in through the nose or mouth

kernel whole grain or seed of a cereal plant

marmalade clear, usually sugary jelly containing pieces of fruit and fruit rind

medicinal used as a medicine

native living or growing naturally in a particular region

nursery place where plants are grown for farming, for scientific experiments, or for sale to the public

nutrient substance that a living thing needs in order to stay healthy and grow

plantation large farming property, usually worked by resident laborers

pleated folded and laid over another part of some material, especially a piece of cloth

poultry birds raised for their eggs or meat

precious of great value or high price

prehistoric having to do with times before written history

pulp the juicy fleshy part of a soft fruit; also, a mashed-up pasty glop such as the plant material used in making paper

repel to force away or resist

rind the usually hard or tough outer layer or "skin" of a fruit or vegetable

sap the liquid inside a plant

saw-toothed having an edge or outline like the teeth (cutting points) of a saw

spout tube, pipe, or hole through which liquid flows

stalk plant's main stem

starchy containing starch, a natural substance that is made by green plants and is part of many foods

Stone Age the oldest period in which human beings are known to have existed, characterized by the making of stone tools

tallow the solid fat of cattle and sheep, used chiefly in making soap, margarine, and candles

tap (verb) to make a hole in something in order to remove the liquid inside

thatch to cover the roof of a building with plant material such as straw

tractor heavy vehicle used to pull farm equipment

train (verb) in gardening and farming, to direct the growth of a plant, usually by bending, trimming, and tying off

tropical having to do with the Earth's warmest and most humid (moist) climates

tuft in plants, a small cluster of flexible leaves or fibers that are attached or close together at the base and free at the opposite end

turban head covering made of a long cloth wrapped around the head or around a close-fitting cap

turpentine oil used to dissolve or thin out paint and other substances

universal present or occurring everywhere

wildlife manager scientist who watches over the conditions, habitats, and populations of wild animals and plants



I N D E X

Alaska (state in the U.S.)
pines photograph *page* **88**

Amazon (river and region in South America)
Did you know? *page* **15**

American Indians, *also called* First Nations, *or* Native Americans
sunflowers *page* **7**
LEARN MORE *look under* Aztec civilization

apples (fruit) *page* **41**

Aztec civilization
Did you know? *page* **52**
LEARN MORE *look under* American Indians

bamboo (plants) *page* **67**

bananas *page* **21**

barley (grain) *page* **69**

bell peppers (plants)
peppers *page* **34,** photograph *page* **35**

birds (animals)
Did you know? *page* **6**

black tea
tea *page* **39**

bodhi trees
Did you know? *page* **51**

broccoli (vegetable)
cabbages *page* **29**

Brussels sprouts (vegetables)
cabbages *page* **29**

bulbs
tulips *page* **9**

cabbage (vegetable) *page* **29**

cacao (tree) *page* **53**

cactus (plant) *page* **79**

caffeine
coffee *page* **37**

carnivorous plants, *also called* insect-eating plants *page* **19**

Carver, George Washington (American researcher)
peanuts *page* **30**

cattails (plants)
rushes and reeds *page* **65,** illustration *page* **65**

cauliflower (vegetable)
cabbages *page* **29,** photograph *page* **29**

cedars (trees) *page* **81**

China (country)
wheat *page* **75**

China oranges, *also called* common oranges, *or* sweet oranges (fruit)
oranges *page* **49**

chocolate
cacao *page* **53,** illustration *page* **53**

citric acid
Did you know? *page* **47**

civilizations: *look under* American Indians; Aztec civilization

climbing roses
roses *page* **11,** photograph *page* **10**

club wheat (grain)
wheat *page* **75**

coco de mer, *also called* double coconut trees (trees)
palm *page* **45**

coconuts (fruit)
palm *page* **45**

coffee *page* **37**
LEARN MORE *look under* tea

color
roses *page* **11**

common oranges (fruit): *look under* China oranges

corn (plants) *page* **70**

cotton (plant and fiber) *page* **83**

double coconut trees: *look under* coco de mer

eucalyptus trees, *also called* gum trees, *or* stringybark trees *page* **85**

farming: *look under plants:* barley; corn; grapes; peanuts; rice; rubber trees; seaweed; sugarcane; wheat

figs (plants) *page* **51**

fire
Did you know? *page* **89**

First Nations: *look under* American Indians

flowers: *look under* cactus; carnivorous plants; honeysuckle; orchids; roses; sunflowers; tulips; water lilies

food: *look under* cacao; coffee; maple; spices; tea

forests: *look under* rainforests

France (country)
Did you know? *page* **28**

fruit bats (animals)
Did you know? *page* **42**

fruits and vegetables: *look under* apples; bananas; cabbage; cacao; coffee; figs; grapes; jackfruit; lemons; mangoes; nuts; olives; oranges; palms; peanuts; peppers; potatoes; strawberries; tea; tomatoes; yams

grapes (fruit) *page* **25**

grasses *page* **63**
rice *page* **73**
LEARN MORE *look under* bamboo; barley; corn; rushes and reeds; sugarcane; wheat

green tea
tea *page* **39**

gum trees: *look under* eucalyptus trees

Holland (country): *look under* Netherlands, the

honeysuckle (plant) *page* **12**

iced tea
Did you know? *page* **39**

India (country)
Did you know? *page* **73**
mangoes *page* **43**

Indians (Native Americans): *look under* American Indians

Indonesia (country)
tea photograph *page* **39**

insect-eating plants: *look under* carnivorous plants

jackfruit *page* **55**

kelp (seaweed)
seaweed *page* **93**

koalas (animals)
Did you know? *page* **85**

kola nuts
Did you know? *page* **58**

latex (chemical)
rubber trees *page* **90,** photograph *page* **90**

layering (farming)
grapes *page* **25**

legumes (plants)
peanuts *page* **30**

lemons *page* **47**

Malaysia (country)
tea photograph *page* **38**

mangoes (fruit) *page* **43**

maple (tree) *page* **56**

maple sugar
maple *page* **56**

maple syrup
maple *page* **56,** illustration *page* **56**

marshes: *look under* rushes and reeds

molasses (syrup)
sugarcane *page* **76**

mosses (plants) *page* **87**

Native Americans: *look under* American Indians

navel oranges (fruit)
oranges photograph *page* **48**

Netherlands, the, *also called* Holland (country)
tulips *page* **9**

nuts (fruits) *page* **58**

olives *page* **61**

oolong tea
tea *page* **39**

orange juice
oranges *page* **49**

oranges (fruit) *page* **49**

orchids (plants) *page* **17**

palms *page* **45**

paper
rushes and reeds *page* **65**

paprika (plant)
peppers *page* **34**

Papua New Guinea (country)
yams photograph *page* **32**

papyruses (plants)
rushes and reeds *page* **65**

peanuts *page* **30**
nuts *page* **59**

peat moss (plant)
mosses *page* **87**

peppers (plants) *page* **34**

pharaohs (Egyptian kings)
wheat *page* **75**

pimientos (plants)
peppers *page* **34**

pines (trees) *page* **89**

pistachios
nuts *page* **59**

pitcher plant
carnivorous plants *page* **19**

potatoes (vegetables)
Did you know? *page* **40**

prairies
grasses *page* **63,** photograph *page* **63**

rainforests
pines photograph *page* **88**

reeds (plants): *look under* rushes and reeds

resins (chemicals)
pines *page* **89**

rice *page* **73**

roses *page* **11**

rubber trees *page* **90**

rushes and reeds (plants) *page* **65**

Sargassum (seaweed)
seaweed *page* **93**

sea lettuce (seaweed)
seaweed *page* **93**

seaweed *page* **93**

Seville oranges (fruit)
oranges *page* **49**

shrub roses
roses *page* **11**

spices (food)
peppers *page* **34**
LEARN MORE *look under* vanilla

strawberries (fruit and plant) *page* **27**

stringybark trees: *look under* eucalyptus trees

sugarcane (plants) *page* **76**

sunflowers (plants) *page* **7**

sweet oranges (fruit): *look under* China oranges

sweet potatoes (plants)
yams *page* **33**

tea *page* **39**
LEARN MORE *look under* coffee

tea roses
roses *page* **11,** photograph *page* **11**

terraces (agriculture)
rice photograph *page* **72**

tomatoes *page* **23**

trees: *look under food trees:* apples; cacao; figs; jackfruit; lemons; mangoes; maple; nuts; olives; oranges; palms; *and other trees:* bodhi trees; cedars; eucalyptus trees; pines; rubber trees

tubers (parts of plants)
yams *page* **33**

tulips (plants) *page* **9**

Turkey (country)
tulips *page* **9**

vanilla
Did you know? *page* **17**

Venus's-flytrap (plant)
carnivorous plants *page* **19,** illustration *page* **19**

vines (plants)
grapes *page* **25**

viticulture (farming)
grapes *page* **25**

vulcanization
Did you know? *page* **91**

walnuts (plants)
nuts *page* **59**

water lilies (plants) *page* **15**

wheat (grain) *page* **75**

wines
Did you know? *page* **24**

yams (plants) *page* **33**
LEARN MORE *look under* potatoes

Discover the many kinds and uses of vegetation in PLANTS


Volume 1: The Earth and Earth Sciences


Volume 2: Physical Sciences and Technology


Volume 3: The Arts


Volume 4: People in History


Volume 5: Folklore and Religions


Volume 6: Europe


Volume 7: Asia, Australia, and New Zealand


Volume 8: Africa


Volume 9: The Americas


Volume 10: Plants


Volume 11: Birds, Insects, Reptiles, and Aquatic Life


Volume 12: Mammals


Volume 13: Reference Guide and Index

ENCYCLOPÆDIA
Britannica®

AV

My First Britannica



Birds, Insects, Reptiles, and Aquatic Life

11

My First Britannica

Birds, Insects, Reptiles, and Aquatic Life

11



Chicago London New Delhi Paris Seoul Sydney Taipei Tokyo

© 2008 by Encyclopædia Britannica, Inc.

International Standard Book Number: 978-1-59339-476-9 (set)

No part of this work may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, recording, or by any information storage and retrieval system, without permission in writing from the publisher.

My First Britannica:
Volume 11: Birds, Insects, Reptiles, and Aquatic Life 2008

Britannica.com may be accessed on the Internet at http://www.britannica.com.

Encyclopædia Britannica, Britannica, and the Thistle logo are registered trademarks of Encyclopædia Britannica, Inc.

Birds, Insects, Reptiles, and Aquatic Life

TABLE OF CONTENTS

INTRODUCTION 5

Birds

Birds: Birds of a Feather 6
Kingfishers: Laugh, Kookaburra! 8
Parrots and Cockatoos:
Bright Colors and Brilliant Whites 10
Owls: The Nighttime Hunters 12
Eagles: Riders of the Wind 14
Albatrosses: Forever Gliding 16
Gulls: The Ocean's Cleanup Crew 18
Ducks: Dabblers, Divers, and Perchers 20
Geese: Fine-Feathered Travelers 22
Swans: Birds of Beauty, Grace, and Speed 24
Penguins: Well-Dressed Swimmers 26
Peacocks: Proud Birds 28
Ostriches: The Biggest Birds in the World 30
Kiwis: New Zealand's Feathered Favorites 32

Fish and Other Aquatic Life

Fish: Citizens of the Waters 34
Carp: The Fishy Survivor 36
Salmon: Leaping Up the Waterfall 38
Piranhas: Frightening Little Fish 40
Sharks: Predators of the Sea 42
Coral: Builders in the Sea 44
Sponges: Plant or Animal? 46
Mollusks: Shell-Dwelling Animals 48
Octopuses: Eight-Armed Wonders 50
Jellyfish: Boneless Blobs of the Sea 52
Deep-Sea Life: Flashing Lights! 54

Insects and Arachnids

Insects: The World's Largest Population 56
Ants: Insect Castle Builders 58
Bees: Inside the Hive 60
Butterflies and Moths: Fly by Day, Fly by Night 62
Cockroaches: Indestructible Insect 64
Crickets: The Wing-Singers 66
Grasshoppers: Garden-Variety Hoppers 68
Mosquitoes: An Itchy Situation 70
Spiders: The Silk Spinners 72

Reptiles and Amphibians

Reptiles:
Snakes, Lizards, and Other Dry-Scaled Beasts 74
Alligators and Crocodiles: Modern Dinosaurs 76
Snakes: Legless Wonders 78
Anacondas: A Tight Squeeze 80
King Cobras: Reptile Royalty 82
Lizards: Cousins of the Dinosaurs 84
Chameleons: The Color-Wizard Lizards 86
Turtles: Taking Their Time 88
Amphibians: The Land-and-Water Dwellers 90
Frogs: Amazing Changing Amphibians 92

GLOSSARY 94
INDEX 95



Great white shark
© Amos Nachoum/Corbis

Cover photos (top): great white shark, © Amos Nachoum/Corbis; (center): chameleon, © David Aubrey/Corbis; (bottom): scarlet macaw, © Craig Tuttle/Corbis

Birds, Insects, Reptiles, and Aquatic Life

I N T R O D U C T I O N

How did the "dabbler duck" get its name?
Do snakes chew their food? What insect might survive a nuclear bomb blast?
Is a sponge a plant or an animal?

In Volume 11, ***Birds, Insects, Reptiles, and Aquatic Life,*** you'll discover answers to these questions and many more. Through pictures, articles, and fun facts, you'll learn about the great diversity of animal life found around the world.

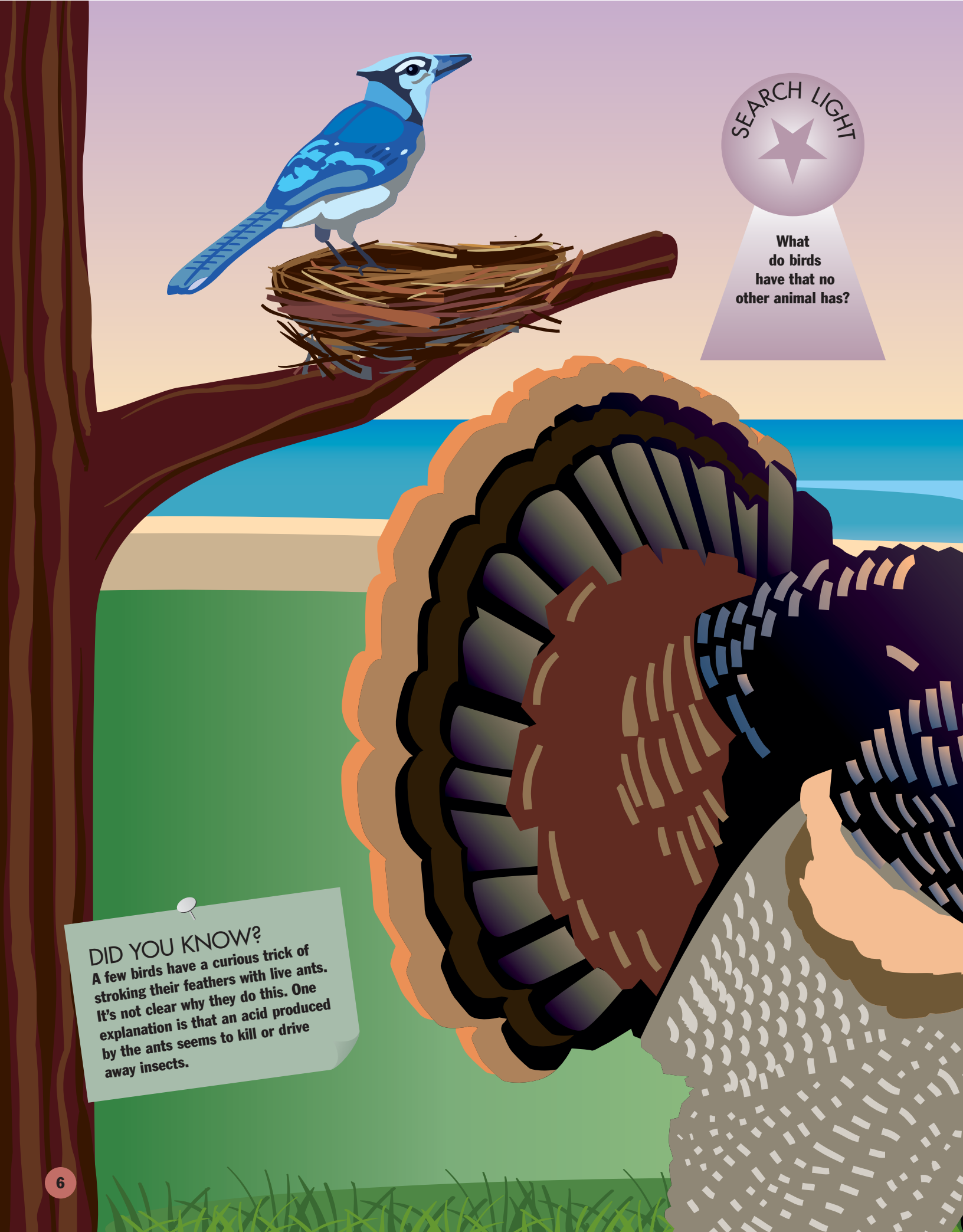
To help you on your journey, we've provided the following guideposts in *Birds, Insects, Reptiles, and Aquatic Life*:

- **Subject Tabs**—The colored box in the upper corner of each right-hand page will quickly tell you the article subject.
- **Search Lights**—Try these mini-quizzes before and after you read the article and see how much—*and how quickly*—you can learn. You can even make this a game with a reading partner. (Answers are upside down at the bottom of one of the pages.)
- **Did You Know?**—Check out these fun facts about the article subject. With these surprising "factoids," you can entertain your friends, impress your teachers, and amaze your parents.
- **Picture Captions**—Read the captions that go with the photos. They provide useful information about the article subject.
- **Vocabulary**—New or difficult words are in **bold type**. You'll find them explained in the Glossary at the back of this volume. And there's a complete listing of all Glossary terms in the set in the ***Reference Guide and Index***, Volume 13.
- **Learn More!**—Follow these pointers to related articles throughout the set.

And don't forget: If you're not sure where to start, where you saw something before, or where to go next, the Index at the back of this volume and the ***Reference Guide and Index*** (Volume 13) will point the way.

Have a great trip!

MY FIRST BRITANNICA


SEARCH LIGHT
What do birds have that no other animal has?
DID YOU KNOW?
A few birds have a curious trick of stroking their feathers with live ants. It's not clear why they do this. One explanation is that an acid produced by the ants seems to kill or drive away insects.

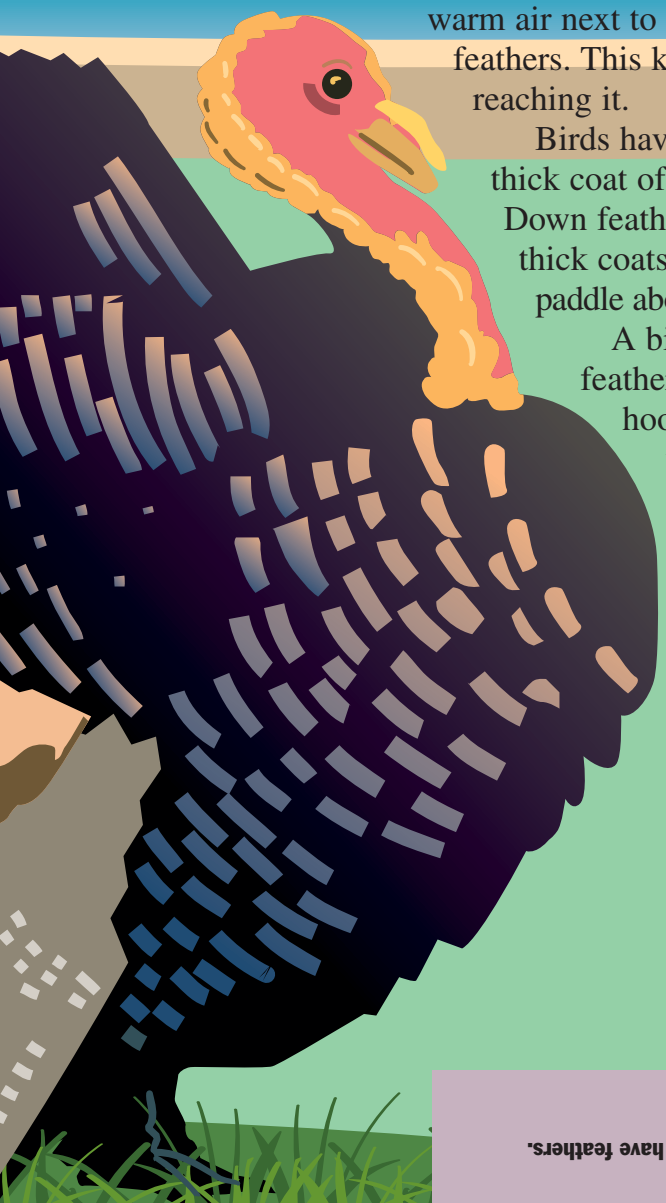
Birds of a Feather

Like many animals, birds are **warm-blooded**. They have many other features in common with other animals, too. But they have one feature that makes them **unique** among all living animals: birds have feathers.

The entire covering of feathers is called the bird's "plumage." Feathers are an important part of why most birds can fly. And feathers help protect all birds from rain, cold, and heat.



The next time it rains, watch for birds outside the window. You may see them standing with wings and tail drooping to the ground. The water simply slides off without soaking through. On a cold winter day you may notice that birds fluff out their feathers. Fluffed-out feathers hold a layer of warm air next to the skin. In hot weather a bird flattens its feathers. This keeps the skin cool by stopping hot air from reaching it.



Birds have different kinds of feathers. In many birds a thick coat of feathers called "down" lies closest to the skin. Down feathers are soft and warm. Waterbirds have extra-thick coats of down. That's one reason why ducks can paddle about in icy winter waters without getting cold.

A bird's main body feathers are called "**contour** feathers." Most contour feathers have many small hooks. The tiny hooks lock together like a zipper, which makes the feathers smooth in a single direction. Some contour feathers are colorful and are for show only. Other contour feathers are special "flight feathers." These are found on the edges and tips of the wing and in the tail. They can be adjusted as a bird flies to help the bird steer and change speed.

LEARN MORE! READ THESE ARTICLES…
AIRPLANES (VOLUME 2) • BATS (VOLUME 12)
MAMMALS (VOLUME 12)

Answer: Birds are the only living animals to have feathers.



The diet of the kookaburra includes lizards, insects, and even poisonous snakes.
© Martin Harvey—Gallo Images/Corbis

Laugh, Kookaburra!

The birds known as kingfishers are found all over the world, but most kinds live in **tropical** areas. Many kingfishers are brightly colored, especially the ones found in Southeast Asia. All are famous for their swift dives.



© Len Robinson—Frank Lane Picture Agency/Corbis



© Lanz Von Horsten—Gallo Images/Corbis

(Top) Sacred kingfisher; (bottom) Malachite kingfisher.

Kingfishers are often boldly patterned. Many of them have **crests** on their large heads. Their bodies are squat, and their bills are long and heavy. A kingfisher's long bill helps it to catch fish as it swoops into the water.

The most commonly spotted kingfisher in North America is the belted kingfisher. It ranges from Canada to the Gulf Coast. You can recognize the belted kingfisher by its shaggy black crest. It also has bluish gray feathers on the upper part of its body and white on the bottom part. Both the male and the female seem to be wearing a belt! The male kingfisher has a belt of gray breast feathers. The female has a chestnut-colored belt.

The belted kingfisher makes its nest in a hole that it digs in the ground close to streams and lakes. The nest is full of fish bones. The belted kingfisher eats only fish, which it catches. Once the fish has been caught, the kingfisher whacks it against a branch a few times and then eats it whole!

Some kingfishers live in forests rather than near water. Among the forest kingfishers is the well-known kookaburra of Australia. It eats reptiles, including poisonous snakes. The kookaburra is sometimes called the "**bushman's** clock," because it is heard early in the morning and just after sunset. It has a loud laughing or **braying** voice.

LEARN MORE! READ THESE ARTICLES…
AUSTRALIA (VOLUME 7) • FISH (VOLUME 11)
KANGAROOS (VOLUME 12)

DID YOU KNOW?

A pair of belted kingfishers will take turns digging a tunnel into a riverbank to create their nest. They dig with their bills and use their feet to kick the loose dirt from the tunnel's mouth.

Answer: The most commonly seen kingfisher in North America is the belted kingfisher.

Bright Colors and Brilliant Whites

Parrots and cockatoos have long fascinated humans. These lively birds not only are beautiful but they entertain us with their chatter and behavior as well. Many parrots are brightly colored, with green feathers and patches of red, orange, or blue. Most cockatoos are white, and all have a patch of long feathers called a "crest" on their head that stands up straight when the bird is excited.



Citron-crested cockatoo.
© Eric and David Hosking/Corbis

Parrots and cockatoos belong to the same family as cockatiels, macaws, parakeets, and many other colorful birds. The tiniest parrot is the pygmy parrot, which is only 3 inches long. The largest member of the family is a type of macaw that can be as much as 40 inches long.

All the birds in this family have strong hooked bills that can crack open nuts. Their thick fleshy tongues help them eat. Some birds have brush-tipped tongues that are useful in sucking **nectar** from flowers and juice from fruits.

Parrots and cockatoos have unusual feet. Two toes point forward and two point backward. This lets them climb trees swiftly and grasp their food firmly as they eat it. The birds can also use their strong bills to help them climb.

SEARCH LIGHT

Fill in the blanks: Parrots and cockatoos have unusual feet, with _____ pointing forward and _____ pointing backward.

Parrots and cockatoos are found in most **tropical** regions of the world, especially in rainforests. These birds can live for 30 to 50 years. Some have been known to live for 80 years!

Some parrots talk, sing, laugh, and whistle. They have a sharp sense of hearing and can **echo** human sounds and speech. Cockatoos can talk too. They are very **impish** and like to play tricks—like figuring out how to escape from their cages!

LEARN MORE! READ THESE ARTICLES…
AMAZON: A CLOSE LOOK AT RIVER LIFE (VOLUME 9)
BIRDS (VOLUME 11) • RAINFORESTS (VOLUME 1)

Macaws gather at Manu National Park in Peru to eat clay. The clay adds minerals to the birds' diet.
© Michael & Patricia Fogden/Corbis

DID YOU KNOW?

Like many rainforest animals, wild parrots are endangered. This is partly because their homes are destroyed when the forest is cut down or burned. But they are also threatened by people who hunt them in order to sell them as pets.

Answer: Parrots and cockatoos have unusual feet, with two toes pointing forward and two toes pointing backward.



DID YOU KNOW?

Owls swallow their food whole, and then afterward they cough up hard balls of the parts they can't eat, such as bones and fur. If you find these hairy lumps scattered under a tree, it's a pretty good bet there's an owl nearby.

The Nighttime Hunters

Maybe it's because they fly mostly at night that owls seem so mysterious. Some **superstitions** connect them with scary things such as witches. But owls aren't that mysterious, and they aren't scary. They are simply **nocturnal** birds. And they are very helpful to people.



Saw-whet owls.
Ron Austing—Frank Lane Picture Agency/Corbis

Owls are hunters. Some owls eat insects or fish, but most eat rodents, such as mice, gophers, and rats. Without owls, there would be too many rodents, and rodents are serious pests.

Owls can see better at night than most animals. They have excellent hearing and can detect the smallest scratchings of a mouse. When it comes to locating **prey**, their hearing helps them more than their eyesight. Because of their soft feathers, owls fly silently and almost always surprise their prey. Owls catch their prey in their long strong claws and swallow it without chewing.

The only way an owl can look around is to turn its head. It can turn its head almost all the way around, turning it so fast that you can hardly see it move. Sometimes it looks as though the owl is turning its head all the way around in a full circle!

Some people say owls are wise. That is because they were once associated with Athena, the Greek goddess of wisdom.

Owls sleep during the day, hidden among tree branches. If you were to see an owl, you'd probably mistake it for a piece of bark. It would sit still, not moving a feather. It wouldn't even move its eyes. It couldn't, because an owl's eyes can't move! This is why owls seem to stare at you—if you're lucky enough to see one!

LEARN MORE! READ THESE ARTICLES…
BATS (VOLUME 12) • BIRDS (VOLUME 11) • EAGLES (VOLUME 11)

Common barn owls live all over the world, except in Antarctica and Micronesia.
© Eric and David Hosking/Corbis

SEARCH LIGHT

Why do some people think that owls can turn their heads all the way around in a circle?

Answer: Owls can turn their heads to the left or the right almost all the way around. It's because the head snaps back so quickly, truly in the blink of an eye, that people think owls can turn their heads all the way around.

Riders of the Wind

If an eagle spread its wings in your room, it would take up as much space as your bed. Eagles have been called the "king of birds" because of their **majestic** appearance and power of flight. They fly easily, using air currents to ride the wind.

Eagles are birds of prey, which means that they hunt other animals for food. One reason they are such good hunters is that they have excellent eyesight. Even when an eagle is so high in the air that it can hardly be seen, it can still see small objects on the ground. When it spots a meal, it swoops down and grabs the animal with its strong claws. Then it uses its hooked beak to tear the animal apart.



Golden eagle.
© Royalty-Free/Corbis

Eagles build huge nests of sticks on rocky cliffs or in the treetops. Their nests are big enough to hold people! Eagles use the same nest year after year, returning to it with the same mate.

When there are eggs to hatch, both the mother and the father eagles take turns sitting on them. Both parents care for the little eagles afterward, taking them mice, fish, rabbits, ducks, snakes, and squirrels to eat. But eagles don't always catch their own food. Sometimes they steal food from another bird by chasing the bird until it gets tired and drops whatever it is carrying.

Not all eagles look alike. A golden eagle has a cap of gold feathers on its head. A bald eagle is not really bald, but it looks that way because its head feathers are white and its body feathers are brown.

LEARN MORE! READ THESE ARTICLES…
BIRDS (VOLUME 11) • NORTH AMERICA (VOLUME 9)
RABBITS (VOLUME 12)

DID YOU KNOW?

When eagles choose a mate, they do a dramatic high-flying act called cartwheeling. Gripping each other with their claws, they plunge together toward the ground. At the last moment they pull apart and fly upward again.



Near Kenai, Alaska, a bald eagle perches on a branch.
© Theo Allofs/Corbis

SEARCH LIGHT

Find and correct the error in the following sentence: Only female eagles take care of the babies.

Answer: Both male and female eagles take care of the babies.



Albatrosses use their long wings to soar and glide on air currents. They can stay in the air for hours without flapping their wings. The black-browed albatross, shown here in flight, has a dark marking around the eye that makes it look as though it is frowning.

Forever Gliding

The albatross is an amazing seabird. It spends most of its life soaring above the water. The only time albatrosses ever go ashore is when they lay eggs and raise their chicks. Groups (called "colonies") of the birds build nests on isolated Antarctic islands. A single large white egg is laid in a bowl-shaped nest built from plants and soil. Sometimes the nest is just a patch of bare ground.



Scientists measuring an albatross' wingspread.
© Wolfgang Kaehler/Corbis

A young albatross grows slowly. It takes at least four months for it to develop all the feathers it will need to fly. Once it's able to fly, the albatross will spend the next five to ten years out at sea. The albatross can glide for hours at a time, without flapping its long narrow wings. To stay in the air like this, it needs windy weather. In calm weather the albatross has trouble keeping its heavy body in the air, so it rests on the water and floats like a cork. It feeds on small **squid** and fish. But it will also follow fishing boats and eat scraps that are thrown overboard.

Some kinds of albatrosses are brown, but most of them are white with some brown or black markings on their bodies or wings. Albatrosses are the largest of all flying birds. In fact, the wandering albatross has the largest wingspread among living birds. The wings of a wandering albatross can measure 11 feet from tip to tip.

Albatrosses live very long lives and are one of the few species of birds that die of old age.

LEARN MORE! READ THESE ARTICLES…
AIRPLANES (VOLUME 2) • GULLS (VOLUME 11) • INDIAN OCEAN (VOLUME 1)

DID YOU KNOW?

In the past, sailors believed albatrosses had special powers. They believed that killing the bird would bring bad luck.

© Peter Johnson/Corbis

Answer: c) It goes to land only to lay eggs.



Gulls are among the most common waterbirds of ocean and coastal zones worldwide. Some gulls travel enormous distances between their summer and winter homes.

SEARCH LIGHT

How are gulls helpful to humans?

The Ocean's Cleanup Crew

A fishing boat chugs back into the harbor with its day's catch. The gulls follow close behind. They know that the fishermen will be throwing goodies overboard as they empty the bait bag and clean the deck. The gulls dip into the waves to scoop up bits of food. They fill the air with their excited cries. This often happens when they are fighting over something good to eat.



Seagull stands on a rock.
© Guy Motil/Corbis

Along the shore, gulls are helpful to the people who clean beaches and harbors. They swoop down to pick up messy things. Gulls eat almost anything, from dead fish to potato chips and scraps of hot dogs. And they clear away lots of insects too.

Gulls eat all day long. They have to just to stay alive. Gulls are big birds that fly great distances. While flying, they use up a lot of energy. Gulls can fly many miles without stopping. They can fly from one end of a country to the other. But all the time they're up there, they're looking down to see if they can find something to eat.

Gulls are good swimmers too. Their feet are webbed. The little stretches of skin between their toes make their feet act as paddles.

Gulls are also floaters. They stay on top of the water like a piece of wood does. On long trips over the ocean, they drop down onto the water and float while taking a nap.

DID YOU KNOW?

The type of gull called Bonaparte's gull was named after Charles-Lucien Bonaparte, a nephew of the famous French emperor Napoleon Bonaparte. The younger Bonaparte spent much of his life studying the world's birds.

LEARN MORE! READ THESE ARTICLES…
FISH (VOLUME 11) • OCEANS (VOLUME 1) • SHIPS (VOLUME 2)

© Chris Jones/Corbis

Answer: Gulls clean up a lot of food waste from beaches, harbors, picnic areas, dumps, and parking lots that would otherwise be left behind as trash.



DID YOU KNOW?

Ducks make their feathers waterproof by rubbing oil on them. They get the oil from special glands on their chests and rub it on their feathers with their bills.

A male wood duck is easily identifiable by his purple and green head, his reddish-brown breast flecked with white, and his bronze sides.

© Gary W. Carter/Corbis

SEARCH LIGHT

Unscramble these words that have to do with a duck.

wsmimre
nblbiadg
dlwaed

Dabblers, Divers, and Perchers

Ducks are champion swimmers and are at home almost anywhere near water. Some feed and nest in streams and ponds. Others live near deep wide lakes. Some make their homes on rocky cliffs by the ocean.

There are three kinds of ducks:

"Dabbling ducks" put their heads underwater to eat plants that grow there. This way of feeding is called "dabbling." They build their nests in hollows near the water. There they also eat plants and insects found near the shore. Dabbling ducks can fly very fast.

© Roger Wilmshurst—Frank Lane Picture Agency/Corbis



© Royalty-Free/Corbis



(Top) A dabbling gadwall duck; (bottom) young girl holding a fluffy duckling.

"Diving ducks" dive deep down into the water to find things to eat. They mostly eat fish. They are very strong swimmers.

"Perching ducks" make nests in trees and hold on to the branches with their long-clawed toes. This is called perching. Some may perch on the tall stalks that grow over marshy ponds.

All ducks are graceful fliers and swimmers. But on the ground they waddle from side to side, moving slowly in a funny, jerky way. You usually don't see a duck waddling too far away from water.

In winter many ducks fly south, where the water is warmer and there's more to eat. But icy cold water doesn't bother them. A thick inner layer of soft fluffy feathers called "down" keeps them warm. And their bigger outer feathers help too. They're **waterproof**. Feathers are a duck's raincoat. Every year ducks lose their old feathers, and new feathers grow in. This is called "molting." Until the new feathers grow, ducks can't fly. So they hide in the grass or on the water to keep safe from enemies.

LEARN MORE! READ THESE ARTICLES…
GEESE (VOLUME 11) • MARSHES (VOLUME 1) • OCEANS (VOLUME 1)

Answer: wsmimre = swimmer
nbibiadg = dabbling
dlwaed = waddle

Fine-Feathered Travelers

Geese are found virtually everywhere. There's the wild Canada goose, and halfway around the world is the snow goose of Siberia. There is the **pied** goose, which lives "down under" in Australia. The rarely seen Hawaiian goose lives out in the middle of the Pacific Ocean. The little brant goose nests in very cold Arctic areas. The wild goose called the greylag is found in Europe.

Geese spend a lot of time in the water. Like ducks, they have a coat of oil on their feathers that keeps them from getting too wet. And the soft feathers beneath, called "down," keep them warm even in the iciest of waters. Down is so good at keeping things warm that people often use it in winter coats and in comforters. It's also good in pillows because it's so soft.



© Julie Habel/Corbis



© D. Robert & Lorri Franz/Corbis

(Top) Mother goose nuzzling her gosling (young goose); (bottom) snow geese flying in a V formation.

Geese are fairly large birds, often standing three feet tall despite their short legs. Geese may look somewhat silly when they waddle on land. But their **sturdy** legs actually help them walk more steadily than ducks or swans do.

Geese have webbed feet that make them strong swimmers. They are also powerful fliers. They can make especially long flights during their annual **migrations** to their winter feeding grounds. You may see groups of geese traveling south in the fall in lines that make a V shape. This formation helps keep them from getting tired as they fly because each goose gets a lift from the air flowing off the goose ahead.

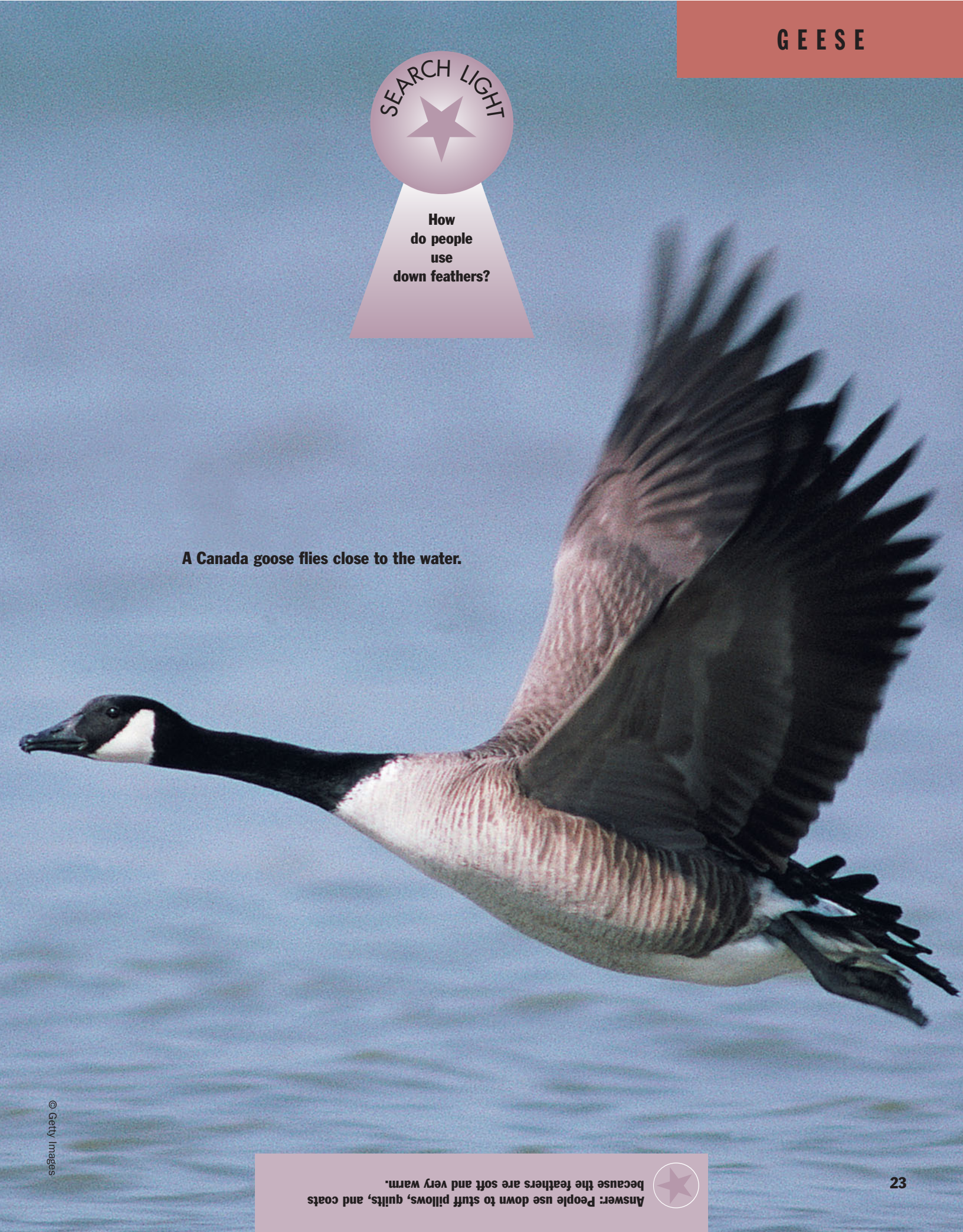
LEARN MORE! READ THESE ARTICLES…
CANADA (VOLUME 9) • DUCKS (VOLUME 11)
EUROPE (VOLUME 6)

DID YOU KNOW?

People in Asia and Europe have kept geese as guards. Geese make loud honking cries when danger appears. After chasing the enemy away, they cackle triumphantly.

SEARCH LIGHT

How do people use down feathers?



A Canada goose flies close to the water.

© Getty Images

Answer: People use down to stuff pillows, quilts, and coats because the feathers are soft and very warm.

Birds of Beauty, Grace, and Speed

Ducks, geese, and swans are the three main kinds of waterfowl. Swans are the largest of the three, and they are also the fastest flyers and swimmers. They have a stately and dignified appearance when swimming on a pond.

Like the other waterfowl, swans have oily feathers that stay dry in the water. Their webbed feet make them strong swimmers. Swans are heavy-bodied birds that feed by dabbling—dipping the long neck into shallow water for plants. They don't dive for food. They have powerful wings for flying long distances.



Mother swan and cygnets.
© AFP/Corbis

The whistling swan and the trumpeter swan are found in North America, while the mute swan lives in Europe and Asia. These birds are white. South America is the home of the black-necked swan, while the beautiful black swan lives in Australia. It is the state emblem of Western Australia.

Swans make a variety of sounds. Even the mute swan often hisses or makes soft snoring sounds. It may even grunt sharply.

The male swan is called a "cob." The female is called a "pen." They look alike. A pair of swans usually stays together for life. The female swan lays about six pale eggs on a heap of plant material, while the male keeps close guard. The young swans are called "cygnets." They can run and swim just a few hours after they hatch. But father and mother swan look after them carefully for several months. Sometimes the cygnets will ride on their mother's back when they get tired from swimming or need protection from enemies.

LEARN MORE! READ THESE ARTICLES…
DUCKS (VOLUME 11) • GEESE (VOLUME 11)
WESTERN AUSTRALIA (VOLUME 7)

DID YOU KNOW?
E.B. White's *The Trumpet of the Swan* is a story about a voiceless swan that learns to play a trumpet.

SEARCH LIGHT

What's one way that ducks and swans are alike? How are they different?



A family of mute swans, with cygnets riding on their mother's back, swim along the water.

© Philip Perry—Frank Lane Picture Agency/Corbis

Answer: Both ducks and swans are waterbirds with oily feathers and webbed feet for swimming. But swans are considerably bigger than ducks. They fly and swim faster than ducks too.



Penguins are excellent divers and swimmers. Here, gentoo penguins enjoy a romp through the water.

SEARCH LIGHT

Do penguins have feathers?

Well-Dressed Swimmers

When a penguin swims, its light-colored belly and dark-colored back help hide it from enemies. From underneath, its light belly looks like the sky. This makes it hard for its enemy the leopard seal to see it. From above, its dark back looks like the dark water, which helps hide it from big hunting birds.



Members of the emperor penguin species, the largest of the penguins.
© Tim Davis/Corbis

Penguins cannot fly, but they swim extremely well. The shape of their bodies, sort of like a submarine, lets them swim very fast. They use their short flat wings like flippers and practically fly through the water. In fact, they often leap out of the water and look as if they are trying to flap through the air.

There are 17 types of penguins. They live in Antarctica and along the cool portions of the coasts of Africa, New Zealand, Australia, and South America. Penguins have a thick layer of fat that helps to protect them from the cold. And although they don't look like they do, they actually have feathers all over their bodies. These short feathers also help to keep them warm.

Penguins' short legs give them an odd walk. They do, however, run quickly. Sometimes they'll build up speed and then slide on their bellies to travel quickly over ice and snow.

Penguins live in nesting **colonies**. These colonies can be enormous. Penguins return to the same place, the same nest, and the same partner every year—sometimes traveling long distances. Penguins use the Sun to help them find their direction. Most penguins build a nest on the ground with pebbles, mud, and vegetation. The females lay one or two eggs, and then both parents take turns looking after them.

DID YOU KNOW?

Penguins are the only birds that can swim but not fly.

LEARN MORE! READ THESE ARTICLES…
ANTARCTICA (VOLUME 1) • BIRDS (VOLUME 11) • WALRUSES (VOLUME 12)

© George D. Lepp/Corbis

Answer: Like all birds, penguins have feathers. But theirs are so short and close to their bodies that the feathers look more like skin.

Proud Birds

A peacock's feathers are brilliant shades of bronze, blue, green, and gold. It even has a little crown of feathers, called a "crest," on the top of its head. The center of attraction, though, is the peacock's long tail. At the tip of each tail feather is a big shiny spot ringed with blue and bronze that looks like an eye.

When the male peacock wants to attract a female peacock (called a "peahen"), it dances! And again the action is all in the tail. The peacock lifts its tail and spreads it out like a fan. Every feather is shown off this way. At the end of this show, the peacock makes its tail feathers **vibrate**. This makes the quills in the long tail feathers rattle and rustle. The peahen is charmed!

Peahens do not have long tails or crests. They are green and brown in color and almost as big as the males.

Peacocks live in the wild in Southeast Asia and belong to the pheasant family. Two important kinds of peacocks are the green, or Javanese, peacock and the blue, or Indian, peacock. The green peacock is found from Myanmar to Java. The blue is found in India and Sri Lanka. These beautiful birds can also be seen in zoos around the world.

A long time ago, people kept peacocks at home. The ancient Greeks called the peacock "Hera's bird." In their religion, Hera was the wife of Zeus, the god of sky and weather. She was thought of as the queen of heaven. According to an old story, the eyelike markings on peacock feathers were the 100 eyes of the giant Argus.

SEARCH LIGHT

The male peacock in the picture is spreading his tail feathers to try to
a) scare the peahen.
b) attract the peahen.
c) hide the peahen.

LEARN MORE! READ THESE ARTICLES…
BIRDS (VOLUME 11) • INDIA (VOLUME 7) • SRI LANKA (VOLUME 7)

The male peacock displays his feathers to get the attention of the female.
© Terry W. Eggers/Corbis



DID YOU KNOW?

Peacocks may be beautiful birds, but they definitely don't have beautiful voices. Peacocks make a harsh screeching when they "sing," if you can call it that.

Answer: b) attract the peahen.


SEARCH LIGHT
Which of the following can be said about ostriches?
- Ostriches eat a lot of meat.
- Ostriches are the biggest bird.
- Ostriches are great runners.

The Biggest Birds in the World

Ostriches are the largest living birds in the world. They are about 8 feet tall and may weigh as much as 345 pounds. They have wings but they can't fly. The wings do help them move in a way, however, because flapping their wings while they run helps the birds go faster on the ground. Ostriches can run up to 40 miles an hour. This makes them not just the biggest but also the fastest bird on the ground!



Male ostrich protecting eggs in a nest.
© Kevin Schafer/Corbis

Ostriches don't use their speed to catch food. Instead, they run to keep away from their enemies. But the first thing ostriches do when they see an enemy is hide. To avoid being seen, ostriches generally lie flat on the ground with their necks outstretched. This makes them look like just another bush. People sometimes say that ostriches bury their heads in the sand when they sense danger. But this isn't true. You just can't see their heads when ostriches are lying down.

Ostriches don't always hide or run away from trouble. If their babies are in danger, ostriches will fight. They use their beaks, and they kick with their very powerful legs. An ostrich could easily kill a person with a few kicks of its feet.

Wild ostriches live in groups in Africa. Sometimes there are as many as 50 birds in a single group. Ostriches eat mostly plants, fruits, and berries, but once in a while they'll also eat small animals and insects.

A tame ostrich that's been treated well may do a very special thing: it can be trained to carry people on its back. In fact, in some parts of the world people have ostrich races.

LEARN MORE! READ THESE ARTICLES…
AFRICA (VOLUME 8) • PEACOCKS (VOLUME 11)
PENGUINS (VOLUME 11)

DID YOU KNOW?
In the days when fashionable women wore showy hats, they were often decorated with ostrich feathers.

© Wolfgang Kaehler/Corbis

Answer: Ostriches are the biggest bird.
Ostriches are great runners.



© Geoff Moon—Frank Lake Picture Agency/Corbis

New Zealand's Feathered Favorites

The kiwi is a strange little bird found only in the forests of the island nation of New Zealand. During the day it sleeps in its burrow, and at night it looks for food, as the one in the large photo is doing. Kiwis eat worms, insects, **larvae**, spiders, and berries.

Kiwis have a strong sense of smell, which they use to hunt. They are the only birds whose nostrils are on the very tip of the bill. The kiwi's bill is long and narrow. Having their noses at the very end of their bills is a big help when they are hunting!



"Kiwi crossing" road sign in New Zealand.
© Paul A. Souders/Corbis

Kiwis also have a good sense of hearing, though they have poor vision in daylight. To escape enemies they rely on their strong legs. Kiwis are fast runners and fierce fighters. They have four toes on each foot, each with a large claw. The claws are very useful when kiwis are facing enemies.

The kiwi is an unusual bird. It is a grayish brown and about as big as a chicken. It has wings that are not fully formed, so it does not fly. The wings are hidden in its feathers, which are shaggy and hairlike. It also has sensitive whiskers at the base of its bill.

The bird is much loved by the people of New Zealand, even though they don't see it very often. New Zealanders themselves are sometimes called Kiwis. A fruit, a breakfast cereal, and an airline are named after the kiwi too. Pictures of the bird can be seen on New Zealand's postage stamps and coins.

DID YOU KNOW?

Compared with the size of the bird, the kiwi's egg isn't just large, it's enormous. The egg is about 20 percent of the mother's weight. It fills almost her entire body right before it's laid.

LEARN MORE! READ THESE ARTICLES…
BIRDS (VOLUME 11) • NEW ZEALAND (VOLUME 7) • OSTRICHES (VOLUME 11)

Answer: The kiwi is an unusual bird. Its wings are not fully formed, so it does not fly.

Citizens of the Waters

A fish is a cold-blooded animal that has a backbone, lives in water, and breathes by means of **gills**. It normally has two pairs of fins in place of arms and legs, as well as several other fins. Most fish are covered with **scales**.

Fish are fascinating in their variety. The sea horse looks something like a tiny horse standing on its tail. Flounders are as flat as a dinner plate. The rabbitfish, a small relative of the shark, has a head and teeth resembling those of a rabbit. Anglerfish carry their own "fishing rod" to catch other fish. An extended part of the back fin has wormlike pieces of flesh at the tip, which are the "bait." Anglers of the deep sea have bait that lights up to attract victims.

Size differs as much as shape. Some Philippine gobies reach an adult size of less than half an inch. The whale shark, the largest of all fishes, reaches 50 feet in length and weighs about 20 tons.

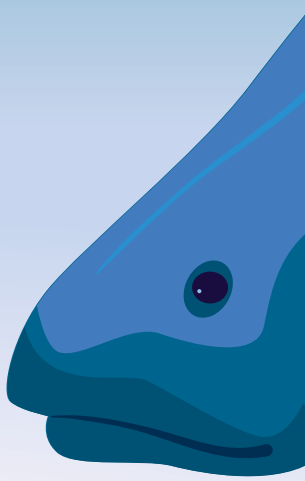
Fish swim mainly by sideways movements of the body and tail. The fins are used for balancing, steering, and braking. To move quickly from a resting position some fish shoot a stream of water out of the gills, which causes them to lunge forward. The fastest swimmers, such as the tuna, can travel 30 miles per hour.

Most fish continue to grow as long as they live. Fish that live to an old age can become very large. Carp are among this group. They may live 100 years!

LEARN MORE! READ THESE ARTICLES…
GREAT BARRIER REEF (VOLUME 7) • RIVERS (VOLUME 1)
SHARKS (VOLUME 11)







DID YOU KNOW?

Fish called "mudskippers" can crawl across mudflats and wet fields in search of food. Lungfish can burrow into mud when their pools dry up. They lie there, for months if necessary, until rain refills the pools.



Answer: Fish breathe through gills.



DID YOU KNOW?

The common goldfish, often a child's first pet, is a member of the carp family.

The Fishy Survivor

The common carp is a fish that lives along the muddy bottoms of ponds, lakes, and rivers. It swallows plants, insects, and anything else it finds to eat. It was first found in Asia but was later taken into Europe and North America. Some people like to eat carp.

Sometimes carp can live 100 years and grow to weigh 80 pounds or more. But not all carp grow that old or that heavy. The fish that are caught usually are under 10 years old and do not weigh more than 10 pounds.



Goldfish swimming in a bowl.
© Doug Wilson/Corbis

The carp has a blunt nose and a small thick-lipped mouth. From its upper lip dangle two pairs of feelers that are called "barbels."

There are three kinds of common carp. The scale carp has large scales all over its wide heavy body. Its back is olive green, its sides are gold-colored, and its belly is bright yellow. The mirror carp has only three or four rows of huge scales along its sides. The leather carp is almost without scales, but it has a very thick skin.

In some ways the carp is a **nuisance**. In hunting for food, the carp muddies the water. This affects the life of many plants and animals. A carp sometimes pushes more valuable fish away from their food and also eats their eggs. The carp has a habit of pulling out plants from their roots. This keeps ducks away. It is very difficult to get rid of carp. The fish can thrive even in dirty water and can also survive in very warm and very cold water.

SEARCH LIGHT

True or false? Carp live in the ocean.

LEARN MORE! READ THESE ARTICLES…
FISH (VOLUME 11) • GREAT LAKES (VOLUME 9) • RIVERS (VOLUME 1)

Colorful carp swim in a pond outside a restaurant in Japan. In Asia and Europe carp are often raised in ponds because it is possible to grow many fish in a small amount of water.
© Wolfgang Kaehler/Corbis

Answer: FALSE. They live in freshwater rivers, lakes, and ponds.



DID YOU KNOW?

Each generation of salmon returns to the same river, to the same spot, to lay their eggs every year. So a salmon's parents, grandparents, and great-grandparents all chose the same river.

Leaping Up the Waterfall

SEARCH LIGHT

True or false? Salmon travel upstream against the river current to lay their eggs.

These fish aren't going down a waterfall. They're going up! Not much can stop these big strong salmon—not even a waterfall. The salmon are swimming up the river to return to the quiet waters where they **hatched**. They're returning in order to spawn—that is, to lay their own eggs. They started their journey far out in the ocean.

Somehow the salmon manage to find the river they are looking for. Night and day they swim on. They eat nothing at all after getting into their river. Finally, they reach the waters where they came from.



Male sockeye salmon.
© Natalie Fobes/Corbis

We don't know how salmon can find their way on this long trip up the river. But we know what they do when they reach the end. At the bottom of the stream, the mother salmon digs a long hole with her tail and **snout**. She fills the hole with thousands of tiny eggs. She covers the eggs with sand to keep them safe.

The eggs hatch. When the baby salmon are about as long as your finger, they are big enough to start the swim to the ocean. They float backward down the long river—tails first and heads last! They seem to steer better that way.

Many of the babies never reach the ocean because there are too many enemies. Birds, bears, and bigger fish along the way love to eat them. The salmon that do reach the ocean will one day start the long hard trip up the river.

LEARN MORE! READ THESE ARTICLES…
AMERICAN INDIANS (VOLUME 4) • FISH (VOLUME 11) • RIVERS (VOLUME 1)

These Pacific salmon are trying to leap up a waterfall of the Brooks River in Katmai National Park, Alaska, to spawn upstream.
© Galen Rowell/Corbis

Answer: TRUE.

Frightening Little Fish

The piranha is found in the rivers and lakes of South America. It is a meat-eating fish with long, triangular, razor-sharp teeth. When hungry, the piranha can be both bold and **savage**. But for such a frightening fish, it is not very big. Most are about the size of an adult's hand.

Some piranhas are silver with orange undersides. Others are almost totally black. All have blunt heads and strong jaws.

In the Amazon River, there are 20 different kinds of piranhas. The most famous is the red-bellied piranha. It has the strongest jaws and the sharpest teeth. When water levels are low, this piranha hunts in schools of more than 100 fish. Many schools join in the feast if a large animal has been attacked. But normally red-bellied piranhas prefer prey only slightly larger than themselves.



Red-bellied piranha.
© Kevin Schafer/Corbis

Usually a group of red-bellied piranhas swim around together in search of prey. The moment the prey is found, the fish signal each other. Piranhas have excellent hearing, so it's possible that they signal each other with sounds. Each fish in the group has a chance to take a bite and then swim away, making way for the others.

Most piranhas never kill large animals, and they almost never kill humans. The smell of blood attracts piranhas, but most of them feed on what is left by others rather than making fresh kills. For this reason their reputation for being ferocious is not deserved.

SEARCH LIGHT

Why do you suppose that when water levels get low, piranhas hunt in larger schools than they would otherwise? (Hint: How much of your body can you fit underwater in the tub once you start letting the water out?)

LEARN MORE! READ THESE ARTICLES…
AMAZON: A CLOSE LOOK AT RIVER LIFE (VOLUME 9)
FISH (VOLUME 11) • RIVERS (VOLUME 1)

Groups of piranhas hide out and chase and attack fish that swim by.
© John Madere/Corbis



DID YOU KNOW?

The name "piranha" comes from the Portuguese words for "fish" and "tooth."

Answer: When river water levels are low, there's less room for fish to spread out, so piranhas have to hunt together in large groups.

Predators of the Sea

When the first dinosaurs walked on Earth, sharks were already swimming in the sea. The dinosaurs are long gone, but sharks are still a force to be reckoned with.

Great white sharks, in particular, are feared as man-eaters. It's hard to fight them, because they are so strong and fast in the water. Their tough skin is protected by tiny toothlike scales. In their big mouths are rows and rows of sharp teeth that rip like the edge of a saw. Sharks continue to grow teeth all their lives. A great white can make a quick meal out of almost anything!

© Amos Nachoum/Corbis



© Royalty-Free/Corbis



(Top) Scalloped hammerhead shark; (bottom) swimming shark.

The hammerhead shark can also be dangerous. Don't be fooled by its awkward-looking rectangle of a head. In general, most shark attacks take place in shallow water, where sharks sometimes go to hunt for fish. A hungry shark can easily mistake a human arm or leg for a tasty fish.

Most kinds of sharks are not dangerous to people. This includes the largest shark of all, the whale shark. Whale sharks can be 50 feet long, but they feed on small fish and on tiny life-forms called plankton. Other sharks eat fish of all sizes. The shark appears out of nowhere, often from below, to take its prey by surprise.

Did you know that a shark has to keep swimming all the time? Its body is made in such a way that if it doesn't swim, it will sink to the bottom of the sea. Good thing sharks know how to sleep while they swim!

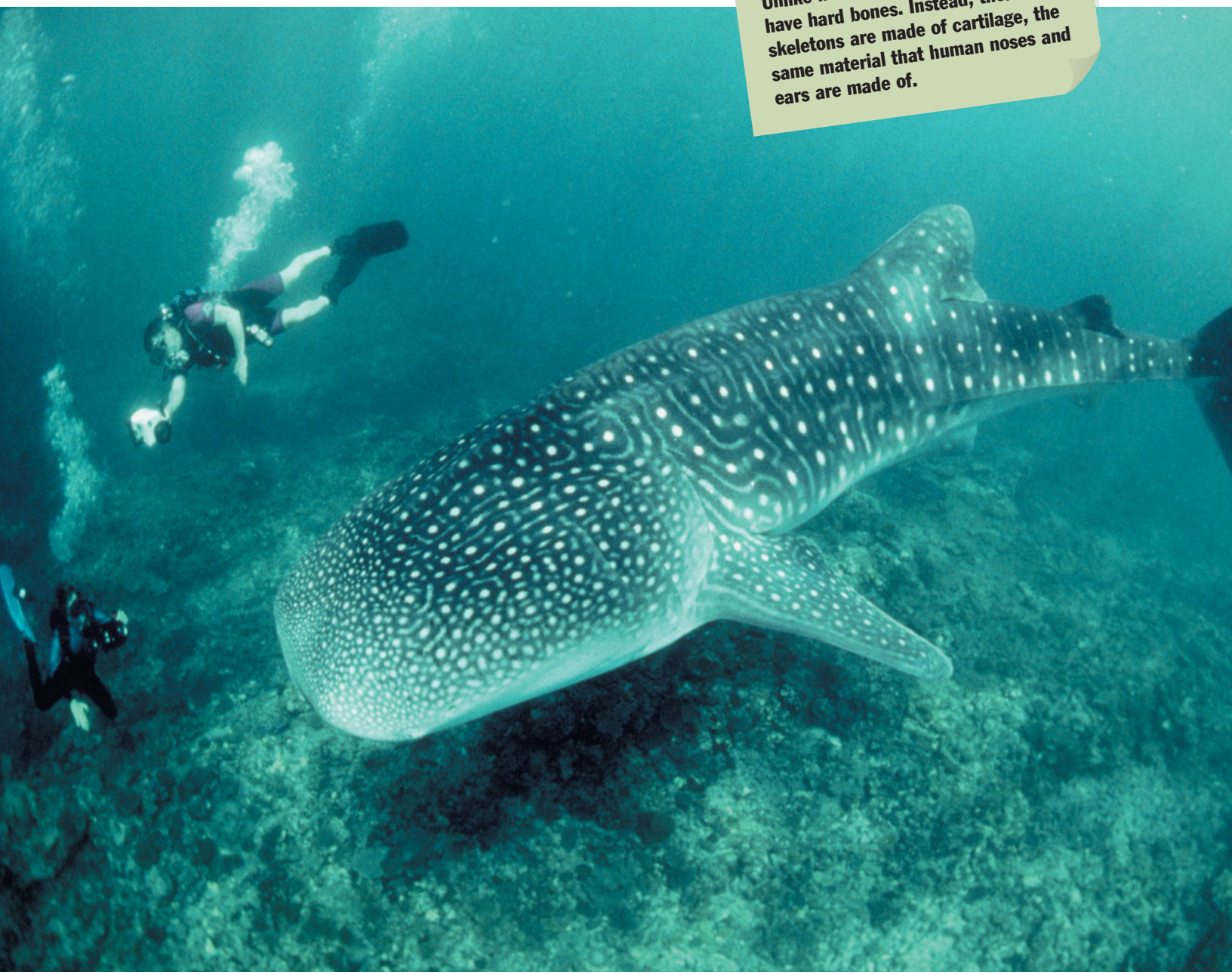
LEARN MORE! READ THESE ARTICLES…
DEEP-SEA LIFE (VOLUME 11) • OCEANS (VOLUME 1)
WHALES (VOLUME 12)

SEARCH LIGHT

Find and correct the error in the following sentence: Hammerhead sharks got their name because they bash their prey over the head.

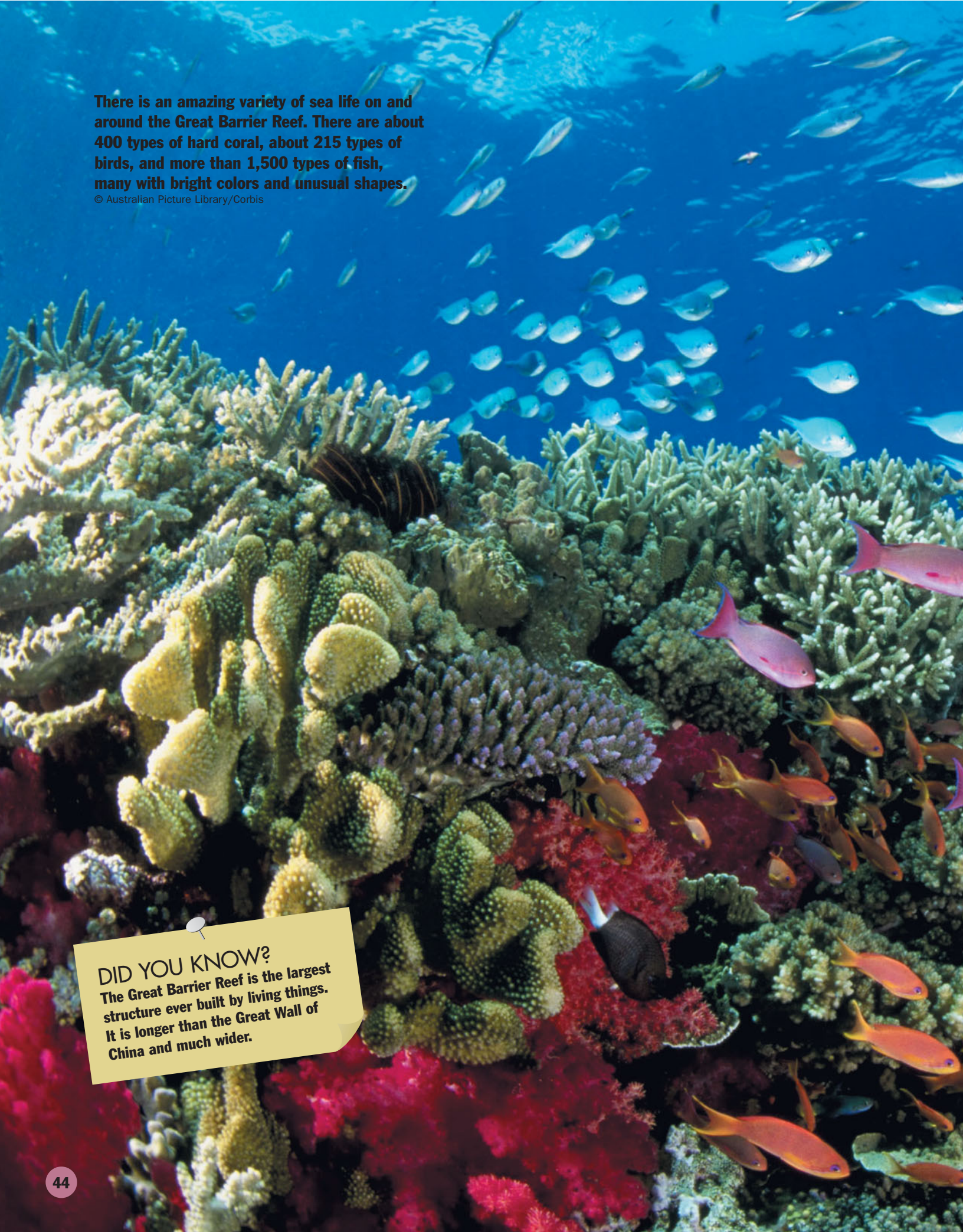
DID YOU KNOW?

Unlike most other fish, sharks don't have hard bones. Instead, their skeletons are made of cartilage, the same material that human noses and ears are made of.



Scuba divers photograph a whale shark. Whale sharks usually swim slowly near the surface and have even been hit by ships.
© Jeffrey L. Rotman/Corbis

Answer: Hammerhead sharks got their name because their heads look like hammers.



There is an amazing variety of sea life on and around the Great Barrier Reef. There are about 400 types of hard coral, about 215 types of birds, and more than 1,500 types of fish, many with bright colors and unusual shapes.

© Australian Picture Library/Corbis

DID YOU KNOW?

The Great Barrier Reef is the largest structure ever built by living things. It is longer than the Great Wall of China and much wider.

Builders in the Sea

A coral is a soft little sea animal that looks like a bit of jelly. It is no bigger than the end of your little finger. At one end it has a mouth surrounded by little arms called "tentacles." The tentacles gather food. When they touch a tiny plant or animal floating nearby, they pull these inside the mouth.

The baby coral swims through the water until it finds a place to build its house, and then it never swims again. Using special glue from inside its body, it sticks itself to a rock or to another piece of coral. Once it is stuck, it starts to build itself a house with a juice from its body that turns into a kind of stone. The hard little shell houses are called coral too.

SEARCH LIGHT

Two parts of the animal are called coral. What are they?



© Royalty-Free/Corbis



© Royalty-Free/Corbis

(Top) Orange cup coral; (bottom) yellow and gray coral.

In the ocean where the water is warm, the coral grows in lovely ocean gardens. It grows in just about every color and shape you can think of. It may grow to look like lace, a fan, a leaf, a brain, the horns of a deer, or a ribbon.

One day a bud grows on the coral. This bud grows into a new coral animal. After many years there are so many coral houses built on top of one another and next to each other that they become a great wall called a "reef."

Sometimes coral may grow together to form a reef a hundred miles long. The largest coral reef in the world is the Great Barrier Reef near Australia. It is more than 1,250 miles long.

LEARN MORE! READ THESE ARTICLES…
GREAT BARRIER REEF (VOLUME 7) • OCEANS (VOLUME 1)
THE GREAT WALL (VOLUME 7)

Answer: Coral refers to the soft jellylike animal living inside the hard shell, as well as to the shell itself. People also call many of these shells stuck together "coral."


SEARCH LIGHT
Which of the following statements are true about sponges?
a) Sponges can be found mainly in the ocean.
b) Sponges eat by straining the water around them.
c) The sponges in your house probably came from the ocean.

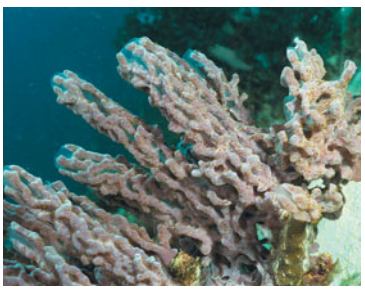
Plant or Animal?

DID YOU KNOW?
Not all sponges are spongy. Some have glasslike skeletons.

Sponges are strange animals. They don't have the body parts—inside or outside—that we expect an animal to have. They don't even move around. Instead, they stay attached to an underwater rock or coral reef, just like plants. For a long time, people thought sponges were plants. Scientists decided that sponges are animals only after watching them eating food by drawing it into their bodies.



© Stephen Frink/Corbis



© Royalty-Free/Corbis

(Top) Vase sponge; (bottom) marine sponges.

There are nearly 5,000 different kinds of sponges. Most live in the ocean, but a few like freshwater. Sponges may be flat like spreading moss. Or they may look like trees with branching arms. Some are as tiny as a bean, while others are as tall as a person. Some are smooth and mushy, while others are rough, hard, and prickly. Some are dull and drab, while others are brightly colored.

A sponge gets oxygen to breathe and food particles to eat by straining water through its body. Sometimes fish, shrimp, and other creatures live inside a sponge. A few sponges attach themselves to crab shells and go wherever the crab goes.

People dive to collect sponges or pull them up with hooks. Afterward the sponges are dried, cleaned, and trimmed. The fleshy parts are thrown away, and only the "spongy" skeleton is used. The ancient Greeks and Romans used sponges to pad their armor and helmets. People still use sponges for scrubbing themselves clean, for painting, and for making medicines. However, factory-made sponges have taken the place of natural sponges in most homes.

LEARN MORE! READ THESE ARTICLES…
CORAL (VOLUME 11) • MOLLUSKS (VOLUME 11) • OCEANS (VOLUME 1)

A school of fish swims near some sponges. A few animals eat sponges, but most leave them alone because of their unpleasant taste and smell.
© Royalty-Free/Corbis

Answer: a) Sponges can be found mainly in the ocean. b) Sponges eat by straining the water around them.



DID YOU KNOW?

Mollusks have been a popular food for humans for thousands of years. Scientists have found old piles of shells, some over ten feet tall, where ancient people threw the trash from their meals of clams and oysters.

Shell-Dwelling Animals

There are many different shelled animals. The smallest live in shells as tiny as the letter "O." The largest, such as the giant squid, weigh more than 4,000 pounds! Some of these animals belong to a group called "mollusks." And you might be surprised to know that there are about 100,000 kinds of them!

Most mollusks—such as snails, clams, oysters, and mussels—have shells. But some, such as octopuses and squid, have little or none at all. And not all kinds of animals with shells are mollusks. Crabs and lobsters have shells, but they are not mollusks.



Snail on a child's hand.
© Lance Nelson/Corbis

Although most mollusks live in the water, some are found on land. Snails live in forests and gardens.

Newborn mollusks are squishy and helpless. They need protection from enemies that would eat them. They get this protection from the shell they build around themselves. Shells are really one-room houses that mollusks build out of their own bodies. It's as easy for them to do this as it is for you to grow fingernails. Each shell has room for just one animal.

Mollusks eat tiny bits of food that float with the moving water. They also eat the **algae** that cover rocks. Part of this food is used to build their bodies. The rest helps them build their shells. A mollusk and its shell keep growing as long as the mollusk lives.

When a mollusk dies, it leaves behind its shell. That is why most of the shells you find on the beach are empty. Mollusk shells can last for thousands of years—a reminder of how long mollusks have been living on the Earth.

SEARCH LIGHT

Which of the following are mollusks?
- crabs
- snails
- shrimps
- oysters
- squid

LEARN MORE! READ THESE ARTICLES…
GREAT BARRIER REEF (VOLUME 7) • OCEANS (VOLUME 1) • OCTOPUSES (VOLUME 11)

Mussels, pictured here in a tide pool, are a kind of mollusk. Mussels are found all over the world, mostly in cool seas.
© Kennan Ward/Corbis

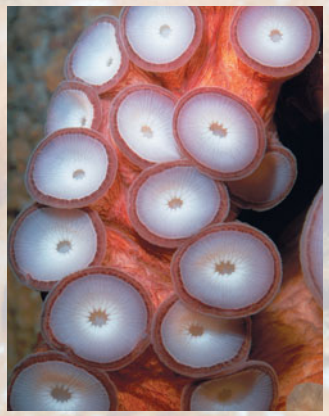
Answer: Snails, oysters, and squid are all mollusks.


SEARCH LIGHT
What are two ways that an octopus can escape from an enemy?

Eight-Armed Wonders

People used to tell scary stories about a deep-sea monster that wrapped its many long arms around a ship and dragged it down to the bottom of the ocean. They called the monster a "devilfish."

Today we know that this wasn't a monster at all. It was an octopus—an animal with eight arms that lives in the ocean. Octopuses are members of an animal group called mollusks, which includes squid, clams, and oysters.



Suckers on the underside of the tentacle of a giant Pacific octopus.
© Stuart Westmorland/Corbis

There are nearly 50 kinds of octopuses. Some are only a few inches long. The largest is longer than 30 feet and may weigh more than 150 pounds. But no octopus grows large enough to attack a ship!

An octopus usually lives alone among the rocks on the bottom of the ocean. Sometimes it moves rocks with its long arms, or **tentacles**, to make a little cave for itself. Underneath each tentacle are many little round suckers, or **suction** cups. These help the octopus climb over rocks and hold on to things.

Octopuses like to eat shellfish such as crabs, lobsters, and mussels. An octopus will crawl about on its rubbery tentacles as it looks for food. But it can also swim very fast. An octopus sometimes hunts fish, chasing them until they are too tired to swim anymore. Then the octopus tightly wraps its arms around the fish and eats them.

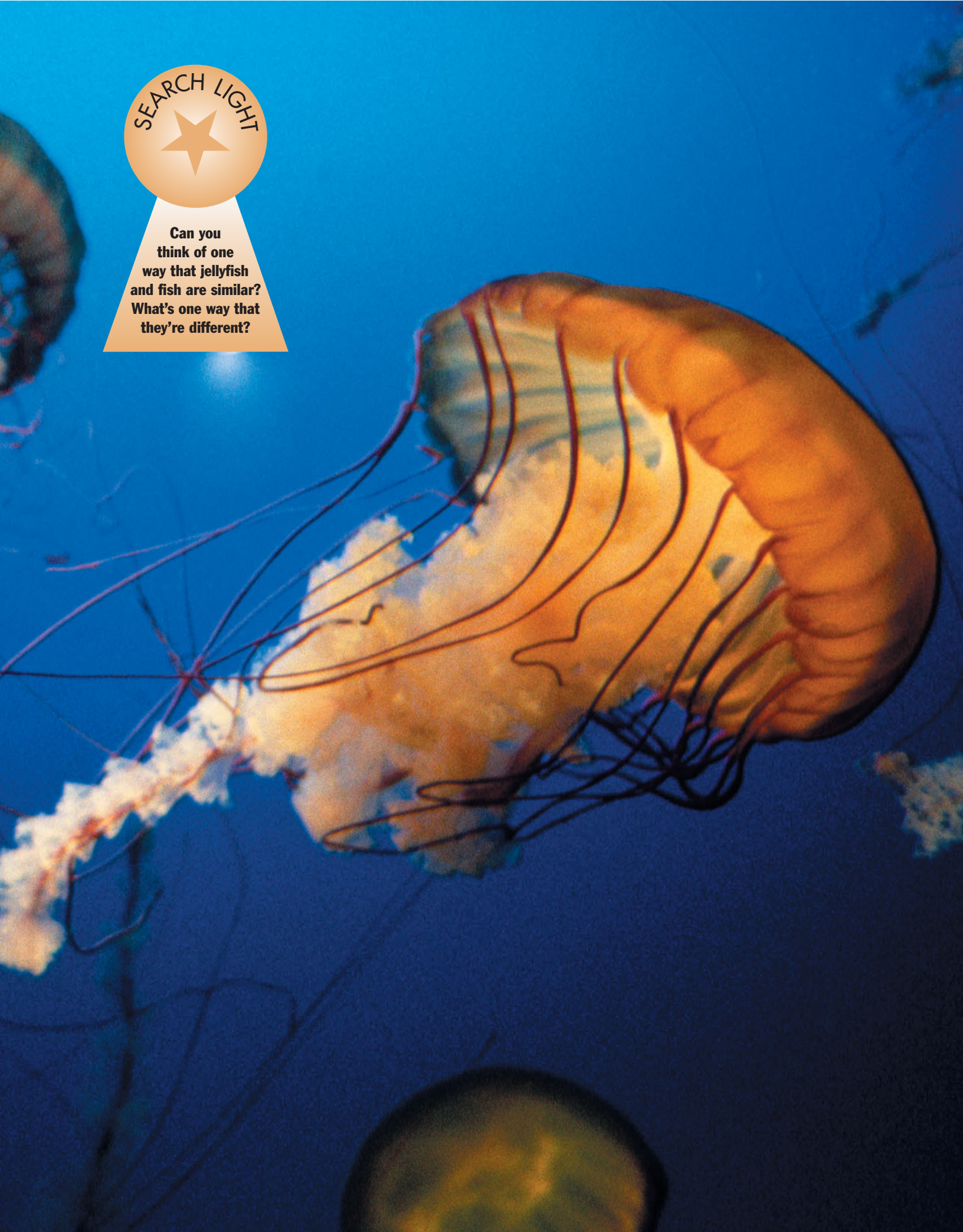
But the octopus has enemies too. It usually tries to hide from them. Many octopuses can hide by changing their colors to match the area around them. If that doesn't work, the octopus shoots black ink into the water. The cloudy water confuses the enemy and helps the octopus get away.

LEARN MORE! READ THESE ARTICLES…
DEEP-SEA LIFE (VOLUME 11) • MOLLUSKS (VOLUME 11)
OCEANS (VOLUME 1)

An octopus has eight arms, or tentacles. Its name comes from a Greek word that means "eight-footed."
© Stephen Frink/Corbis

DID YOU KNOW?
Octopuses are very smart. In fact, next to dolphins and whales, the common octopus is perhaps the smartest animal living in the ocean!

Answer: It can change colors and squirt ink into the water.


SEARCH LIGHT
Can you think of one way that jellyfish and fish are similar? What's one way that they're different?

Boneless Blobs of the Sea

DID YOU KNOW?
Sometimes a jellylike blob breaks away from a jellyfish and grows into another adult jellyfish.

A jellyfish is not a fish at all. Unlike fish it has no bones, and most of its body is like jelly. It does not have a brain or a heart. What it does have is a set of **tentacles** that can sting its prey—or a person!

Jellyfish are related to the corals and the sea anemones. They can be found in all oceans. There are about 200 kinds of jellyfish, in different forms, sizes, and colors. Some jellyfish are barely large enough to be seen. Others are six feet or more around. Jellyfish may be see-through or brown, pink, white, or blue. Some kinds glow in the dark sea.



Jellyfish in dark waters.
© Jeffrey L. Rotman/Corbis

A jellyfish usually has the shape of an umbrella. It can have a few or many tentacles. Sometimes it has simple eyes around the edge of the "umbrella." The mouth and the stomach are in the middle of the "umbrella." The jellyfish has simple muscles on the underside that **contract** the body, much like the closing of an umbrella. This helps it swim.

Inside the tentacles of a jellyfish are poisonous stinging cells. These cells can stun small animals, which the jellyfish then pulls into its mouth. Some jellyfish feed on tiny animals and plants that their bodies catch as they drift through the water.

Some jellyfish can be very dangerous to humans. Even a small sting from the jellyfish called sea wasps can cause death within a few minutes. It's best just to look at jellyfish from a distance and not get too close.

LEARN MORE! READ THESE ARTICLES…
CORAL (VOLUME 11) • GREAT BARRIER REEF (VOLUME 7)
OCEANS (VOLUME 1)

Jellyfish sometimes sting swimmers who accidentally brush up against them in the water. Even dead jellyfish that have washed up on the beach can be dangerous and should not be touched.
© Danny Lehman/Corbis

Answer: The most obvious thing that jellyfish and fish share is their ocean home. One big difference between them is that jellyfish have no bones but fish do.

Flashing Lights!



It is very dark deep below the surface of the oceans of the world. This dark area is called the "**abyssal** zone." It is a black, soundless place where the water is very still. This zone lies thousands of feet below the water's surface.

You wouldn't think it, but there are many kinds of living things to be found in the abyss. For a very long time, people believed that nothing could live down there because there isn't any light. But scientists who investigated the deep sea found plenty of life!

Many forms of life were discovered near cracks on the ocean floor. These are called "rift communities." The huge cracks, or fissures, are between two of the **plates** that make up the Earth's crust. These fissures are hot-water vents that raise the temperature of the water around them. The fissures are rich in **minerals**.



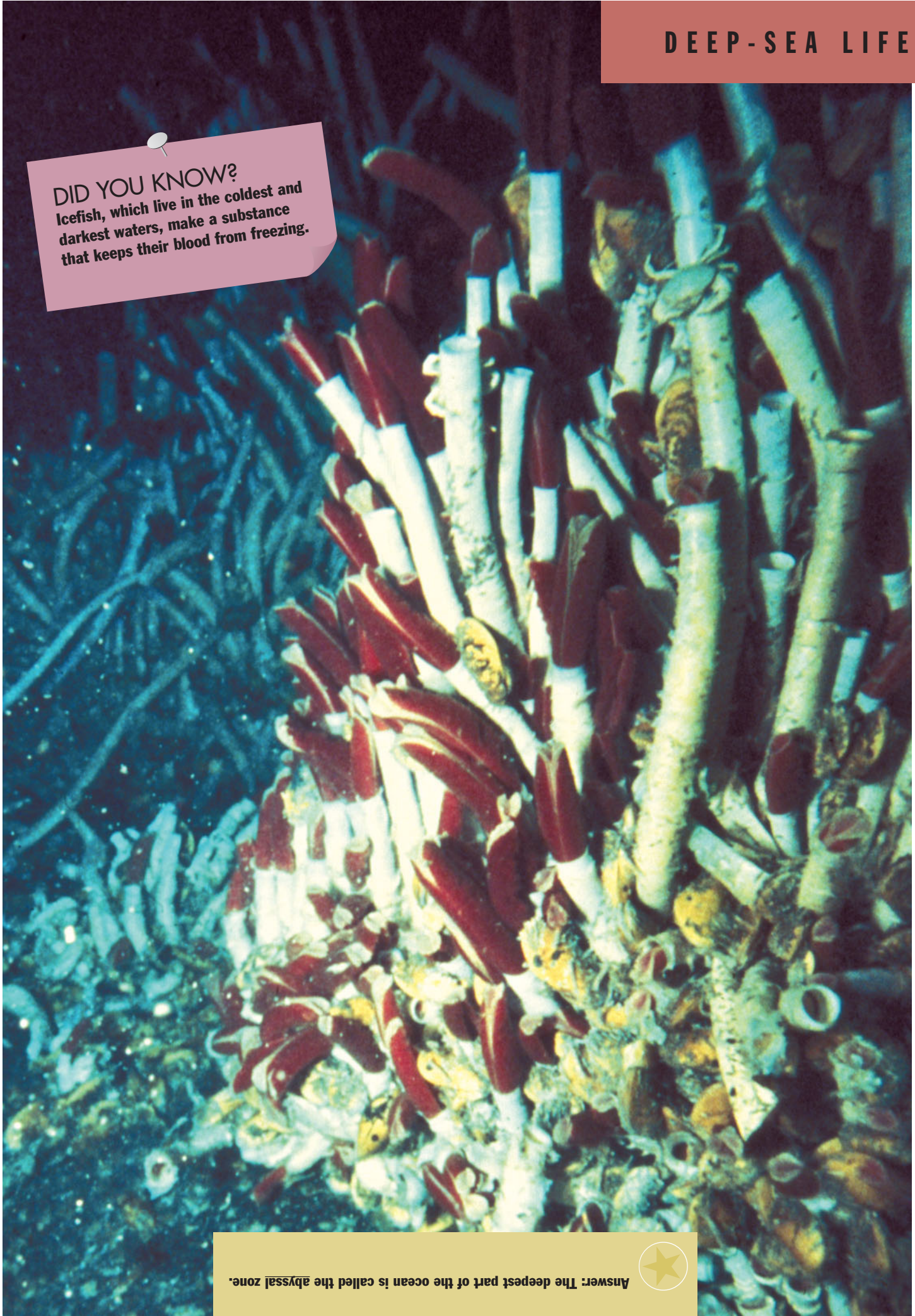
Deep-sea anglerfish.
© Bruce Robinson/Corbis

Deep-sea animals include certain kinds of squid, octopuses, worms, and fish. Because it is difficult to study animals at such levels, not much is known about their behavior or surroundings. But it is known that deep-sea animals have special features that allow them to live in conditions in which other animals could not. These features are called **adaptations**.

Many deep-sea fish and other creatures flash with their own lights. This ability to give off light is called "bioluminescence." It is an adaptation for living in the darkness of the deep sea. Some deep-sea animals have colored lights on different parts of the body. Their bodies keep flashing on and off. It is possible that the animals are speaking to each other with their lights.

LEARN MORE! READ THESE ARTICLES…
FISH (VOLUME 11) • OCEANS (VOLUME 1) • SUBMARINES (VOLUME 2)

Tube worms are just one example of the many types of life found deep in the ocean. They are worms that live inside tubes that are attached to the ocean floor.
© F. Grassle, Woods Hole Oceanographic Institution



DID YOU KNOW?

Icefish, which live in the coldest and darkest waters, make a substance that keeps their blood from freezing.

Answer: The deepest part of the ocean is called the abyssal zone.

The World's Largest Population

The Earth is home to more insects than any other kind of animal. Insects are unique among all creatures because their bodies are divided into three parts—the head, the thorax, and the abdomen. The head contains the mouth, the eyes, and the **antennas**. Some insects use their antennas for smelling. The thorax is similar to a person's chest. If an insect has wings, they are attached to the thorax. And some insects have ears on the thorax. The abdomen contains a large part of the **digestive system**.

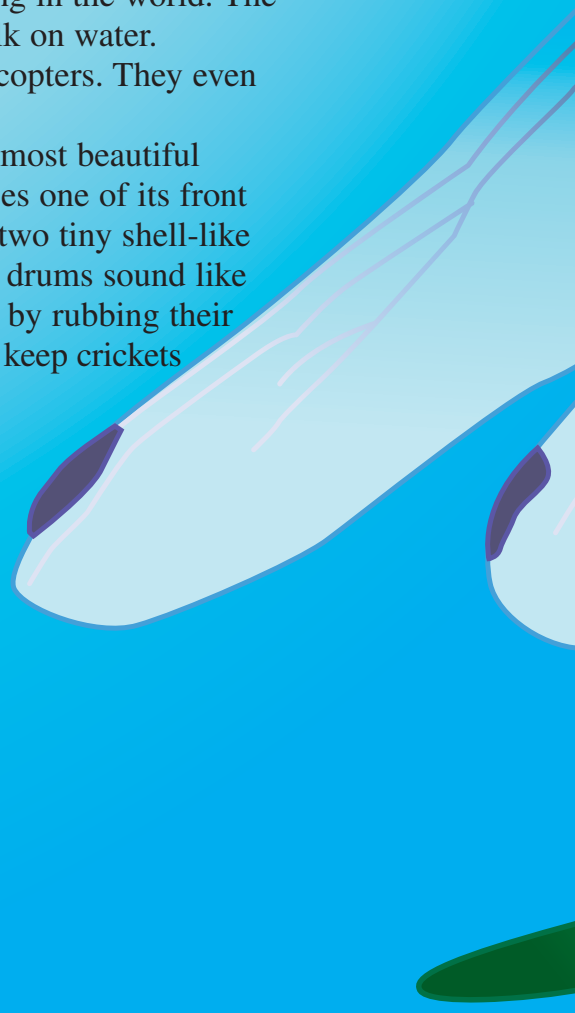
Instead of having bones, insects have an outer covering to support the body. The muscles are attached to this covering. The outer layer of the covering is waxy and **waterproof**.

All insects have six legs. Their legs, like their wings, are attached to the thorax. Each leg has five different bending places. It's like having five knees.

Each kind of insect has features that help it get along in the world. The water strider has little cups on its feet so that it can walk on water. Dragonflies can hover and turn in the air like little helicopters. They even look like helicopters!

Some insects make sounds like music. Perhaps the most beautiful music is made by the snowy tree cricket. This insect uses one of its front wings as a fiddle and the other as a bow. Locusts have two tiny shell-like drums close to their wings. When the wings flap, these drums sound like fingers tapping on a tin lid. Grasshoppers make sounds by rubbing their wings or their back legs together. In some places people keep crickets or grasshoppers in cages to listen to their songs.

LEARN MORE! READ THESE ARTICLES…
AMPHIBIANS (VOLUME 11) • MAMMALS (VOLUME 12)
REPTILES (VOLUME 11)



DID YOU KNOW?

It may seem hard to believe, but out in the country almost all the noises you hear at night are made by insects and frogs—even the ones that sound like birds or people.



SEARCH LIGHT

What are the three parts of an insect's body?

Answer: The three parts of an insect's body are the head, the thorax, and the abdomen.

DID YOU KNOW?

One type of ant travels as an army. Millions of army ants move in lines that look like rivers of ants! These ant armies weigh so much that they can knock over trees and even bring down large animals, which they then eat.



Two leafcutting ants are hard at work clipping out pieces of a leaf in a rainforest in Costa Rica. The fragments are transported to an underground nest that can include over 1,000 chambers and house millions of individual ants. The ants physically and chemically create "gardens" of fungus that grow on the chewed leaves. The fungus then provides them with food.

© Steve Kaufman/Corbis

Insect Castle Builders

Most ants live in nests that they build in protected places. Many live underground, sometimes under a rock. Some ants live in trees or inside wild plants. Others build their nests on the ground, using tiny sticks, sand, mud, gravel, and even leaves.



Large anthill in the Northern Territory of Australia.
© Penny Tweedie/Corbis

An anthill is a mound of sand or dirt where thousands of ants live and work. Inside the hill are special rooms where food is kept and other rooms for baby ants. Tunnels connect the rooms. Worker ants build the nest, make tunnels, and repair any damage to the anthill.

Soldier ants guard the anthill day and night and protect it from enemies. An ant has long feelers, called antennas, that stick out from its head. It can give messages to other ants by tapping them with its antennas. Ants smell with their antennas too. They use scents to tell whether another ant is a friend or an enemy. If an ant from another nest wanders into the anthill, the soldiers will attack it. Deadly wars are often fought between two nests of ants.

The whole nest is ruled by the queen ant, the mother of all the ants. The queen lays her eggs in a special room in the anthill, while the other ants feed, clean, and protect her.

The "ant castle" doesn't have a barn or a stable. But in one room certain kinds of ants keep aphids, which are tiny green insects. Aphids are called "ant cows" because the ants "milk" them to get a sweet juice the aphids produce. Other ants are like farmers too. They grow fungus inside their nests, and the fungus is all they eat!

SEARCH LIGHT

Why do you think ants touch feelers whenever they meet? (Hint: What important function do the feelers, or antennas, serve?)

LEARN MORE! READ THESE ARTICLES…
CARNIVOROUS PLANTS (VOLUME 10) • INSECTS (VOLUME 11) • SAND (VOLUME 1)

Answer: Ants touch when they meet because that's how they communicate with one another. They also use their feelers to tell if an ant is an enemy or a friend.


SEARCH LIGHT
True or false? Drones have stingers.

Inside the Hive

Inside a honeybee hive you'll see bees. But you'll also see hundreds of little six-sided rooms, or "cells." The bees build these cells with a wax—beeswax—that they make inside their bodies.

The bees store many things in the wax cells, including honey, **nectar**, and a food called "bee bread." Bee bread is made of flower **pollen** mixed with honey. The cells are also used to hold the tiny eggs that will hatch into baby bees.



A bee pollinates a flower.
© George D. Lepp/Corbis

Most of the bees' work is done in spring and summer. That's when the honey is made and stored and when the queen bee lays most of her eggs. The queen bee is the biggest bee in the hive.

There are two other kinds of bees in the hive: drones and workers. Drones are larger than the workers and have no stingers. They don't do any work, but one drone mates with the queen and is the father of all the hive's workers.

Each of the worker bees has a special job. Some build the cells in the hive, and others keep the hive clean. Some workers are soldiers that guard the hive and chase away any bees, wasps, and other insects that might try to steal the hive's honey. Other worker bees fly out to visit flowers and blossoms. They take pollen and nectar back to the hive to make bee bread and honey. Some bees even stay by the door of the hive and flap their wings quickly to blow cool air through the hive.

DID YOU KNOW?

Bees can tell if an intruder has entered the hive because the intruder smells different. But one kind of moth has found a way to sneak into hives. It fakes the smell of the hive just long enough to get in and steal some honey.

LEARN MORE! READ THESE ARTICLES…
BATS (VOLUME 12) • HONEYSUCKLE (VOLUME 10) • INSECTS (VOLUME 11)

Bees go about their work on a man-made honeycomb.
© Lynda Richardson/Corbis

Answer: FALSE. Only worker bees and queens have stingers.

Fly by Day, Fly by Night

Butterflies and moths are found throughout the world, from deserts to hot jungles to high up in snowy mountains. You can see them on every continent except Antarctica.

Butterflies and moths are insects, and like all insects they have three pairs of legs. Their bodies are divided into three sections: head, **thorax**, and **abdomen**. On either side of the head is a large special eye. These eyes are able to detect the smallest movement. But they cannot see faraway things very clearly.



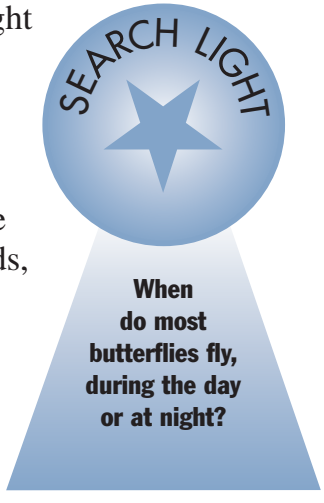
Brown moth.
© Karen Tweedy-Holmes/Corbis

The thorax, the middle section of the body, has two pairs of wings. The wings in front are usually larger. Dustlike scales cover the wings, body, and legs. If you happen to touch a butterfly or moth, these scales will come off in your hand.

If you want to know whether you are looking at a butterfly or a moth, you should look at its **antennas**. Butterflies and moths use their antennas to hear and smell. Butterfly antennas end in little round knobs. Moth antennas may look like tiny feathers or threads.

The most striking thing about butterflies is their coloring. Most are bright and beautiful. But most moths are dull colored, with thicker bodies and smaller wings. Butterflies hold their wings straight up over their backs when they rest. Moths rest with their wings spread out. Butterflies are active during the day. But moths usually fly around at night.

Many butterflies and moths seem to like sweet things. **Nectar** from flowers is an important part of their diet. Some will eat mosses and ferns. Others like cones, fruits, and seeds, but some do not eat at all and live for only a short time!



LEARN MORE! READ THESE ARTICLES…
BATS (VOLUME 12) • HONEYSUCKLE (VOLUME 10)
INSECTS (VOLUME 11)

DID YOU KNOW?

The viceroy butterfly protects itself by looking like the monarch butterfly, which has an unpleasant taste. So animals often avoid eating the viceroy because it looks so much like the bad-tasting monarch.



A cracker butterfly rests on the leaf of a plant.
© George D. Lepp/Corbis

Answer: Most butterflies fly during the day.



Cockroaches usually run and hide when a light is turned on in a dark room.

Indestructible Insect

Cockroaches have been around for many millions of years. This means that cockroaches lived through times when many other animals disappeared forever. They are very tough insects indeed. One type, the Oriental cockroach, can live for a month without food!

Cockroaches are found nearly everywhere. Some kinds live outside, but others live indoors alongside humans. These kinds are pests. They like warm dark areas in homes, offices, ships, trains, and even airplanes. Their broad flat bodies can squeeze through the narrowest of cracks. Although cockroaches may look like beetles, they are related to crickets. Like them, roaches use the long **antennas** on their heads for feeling through dark places.

SEARCH LIGHT

True or false? Most cockroaches hide at night and come out during the day.

Cockroaches usually hide during the day and come out at night to feed. They eat all sorts of plant and animal products, including paper, clothing, books, and other insects. Some cockroaches even eat other roaches.

Their feeding causes a lot of damage. And they have a nasty smell too. They can also cause allergies and are thought to spread diseases to humans. No wonder cockroaches are considered among the worst household pests.

Humans get rid of cockroaches with common poisons and traps. But cockroaches have many other enemies besides humans. Spiders, frogs, toads, lizards, and birds all feed on them.

There are more than 3,500 types of cockroaches. Some are small, while others reach lengths of three inches. Many are colorful. Most have two pairs of wings. Some, such as the American cockroach, can fly long distances. Others, such as the Oriental cockroach, can't fly at all. But all roaches have long powerful legs and can run very fast.

LEARN MORE! READ THESE ARTICLES…
BATS (VOLUME 12)
CARNIVOROUS PLANTS (VOLUME 10)
MOSQUITOES (VOLUME 11)

DID YOU KNOW?
Many scientists believe that cockroaches are some of the few animals that could survive a nuclear bomb blast.

© Gallo Images/Corbis

Answer: FALSE. Cockroaches usually hide during the day and come out at night to feed.

SEARCH LIGHT

True or false? Some crickets can fly.



There are a number of myths about crickets. Some people believe that harming a cricket will lead to bad luck.

© Cordaiy Photo Library Ltd./Corbis

The Wing-Singers

A cricket never opens its mouth to chirp. Instead, it raises its stiff leathery front wings and rubs one over the other to make its high creaking sound. It's a loud noise for such a tiny fellow. Some crickets are as small as your thumbnail.



Cricket on the head of a flower.
© Dennis Johnson—Papilio/Corbis

Only male crickets have music-making wings. The chirping lets female crickets know where to find them, and it also keeps other male crickets away. The smooth wings of female crickets make no sound. Some kinds of male and female crickets use their back wings for flying. But most crickets travel by hopping and jumping.

Some crickets eat only tiny insects. Others will eat almost anything. If one gets into your closet, it may make big holes in your clothes. Crickets have such strong jaws that they can even bite through leather.

Like other insects, a cricket has six legs. On its feet there are tiny claws that help it run along on a tree limb or ceiling. You'll never guess where a cricket's ears are. They're down near the joints of its front legs!

You may see black field crickets more often than others. But you may find green-brown, whitish, and straw-colored crickets too. There are many different kinds of crickets. There are field crickets and brown house crickets. Both chirp during the day and night. But white and green tree crickets and bush crickets chirp only at night.

A special kind of cricket in North America is called a "thermometer cricket." Try counting how many times it chirps in 15 seconds and add 40 to it. Now you know the temperature in Fahrenheit degrees! The crickets chirp faster as the weather gets warmer.

DID YOU KNOW?

Crickets are known to be such good "singers" that they were once commonly kept in Chinese houses as pets.

LEARN MORE! READ THESE ARTICLES…
GRASSHOPPERS (VOLUME 11) • INSECTS (VOLUME 11) • TEMPERATURES (VOLUME 2)

Answer: TRUE.



Grasshoppers are green, olive, or brown and may have yellow or red markings.
© Karl Switak—Gallo Images/Corbis

SEARCH LIGHT

Farmers really don't like some kinds of grasshoppers. What are these grasshoppers called?

Garden-Variety Hoppers

DID YOU KNOW?
In the story called "The Ant and the Grasshopper," the grasshopper spends all of its time eating while the ant stores up food for winter. Come winter, the grasshopper is very hungry. Of course, in real life grasshoppers don't act this way at all.

Grasshoppers are insects that are found all over the world. They live in all kinds of places but are most common in grasslands and tropical forests. One type spends most of its life on floating plants. But you're probably more familiar with the grasshoppers that live in gardens. Their brown or green coloring helps them blend in with the plants and dirt around them.



Bladder grasshopper.
© Anthony Bannister—Gallo Images/Corbis

The reason grasshoppers are fond of gardens is that they are **vegetarians**. And people grow many things that grasshoppers like to eat. In some parts of the world, grasshoppers called "locusts" travel in huge swarms that can destroy a whole season's worth of crops.

The grasshopper itself has to be careful as well. Some of its relatives, such as the mantises, will make a meal out of a grasshopper. Many birds, frogs, and snakes also eat any grasshopper they find. In certain parts of the world, even people eat grasshoppers. Whether they are dried, fried, jellied, roasted, dipped in honey, or ground into **meal**, they can be a good source of **nutrients**.

But grasshoppers have their ways of avoiding danger too. They can smell and hear an enemy, and of course they can hop. A grasshopper can hop so well because of its long hind legs. And though grasshoppers usually hop or crawl to get around, most kinds can also fly.

Usually, male grasshoppers are the ones that chirp or sing. They rub their wings together, or they rub their hind legs against their front wings. The song is the male's way of calling the female grasshopper.

LEARN MORE! READ THESE ARTICLES…
CRICKETS (VOLUME 11) • KANGAROOS (VOLUME 12) • WHEAT (VOLUME 10)

Answer: Farmers don't like locusts because they destroy crops.

An Itchy Situation

"M-m-m-m-m-m-s-s-z-z-sz-sz-n-n-z-z-zing-ing-ing!"

The humming sound you hear when a mosquito is near your ear comes from the fast beat of the mosquito's wings. Actually, that's the hum of the female mosquito. It is only the female mosquito that bites and leaves those itchy lumps on your arms or legs. The male mosquito seems to be satisfied with a meal of nectar and other plant juices.

Mosquitoes are insects that are usually found wherever the weather is damp or where there are rivers, lakes, or swamps. That's because mosquitoes must lay their eggs in water. Otherwise, the eggs could not hatch. Mosquitoes sometimes lay their eggs in ponds, and other times they lay them in ditches. They will even lay them in tin cans partly filled with rainwater. When the eggs hatch, the young mosquitoes look like little worms.

Sometimes mosquitoes fly so high up in the air that they even get in through the open windows of tall apartment buildings in big cities. In the far north, near the North Pole, there are so many mosquitoes in summer that when they fly they look like black clouds.



Magnified image of young, newly hatched mosquitoes.

© Science Pictures Limited/Corbis

Getting rid of mosquitoes is difficult. One way is to drain all the water out of ditches, swamps, and ponds where they lay their eggs. To destroy full-grown mosquitoes, different kinds of insecticides are used. An insecticide is a powder or liquid for killing harmful insects. Unfortunately, it can be dangerous for animals and people too.

SEARCH LIGHT

Find and correct the errors in the following sentence: Mosquitoes live in dry places such as deserts, because they must lay their eggs in sand.

LEARN MORE! READ THESE ARTICLES…
BEES (VOLUME 11) • INSECTS (VOLUME 11) • SWAMPS (VOLUME 1)

© Richard T. Nowitz/Corbis

DID YOU KNOW?

Diseases such as malaria, which kills thousands of people each year, are spread to humans by mosquito bites. This is the main reason that people are so eager to kill mosquitoes.



A female mosquito sucks blood from a human arm.

Answer: Mosquitoes live in damp places or near rivers, swamps, and lakes, because they must lay their eggs in water.

The Silk Spinners

SEARCH LIGHT

How does the pirate spider catch its food?

Spiders belong to a large group of animals called "arthropods." This group also includes crabs, centipedes, and insects. Arthropods have their skeletons on the outside of their bodies.

Though they're part of the same larger group, spiders are not insects. Insects have six legs, while spiders have eight. This makes them part of a smaller group, the arachnids. Arachnids—including **scorpions** and ticks—have eight walking legs. Many spiders and other arachnids use **venom** to kill their prey.

Spiders also spin silk. In fact, the word "spider" comes from an old English word that means "to spin." Spiders have silk-making organs called "spinnerets" near the back of their bodies. They spin silk from a liquid made by special **glands**. It becomes solid thread after the spider pushes it out of its body.

Spiders spin different types of silk for different uses. Some silk is stronger than steel wire. Spiders use silk for webs to trap food, for lining their nests, and to hold the eggs they lay. When a spider has to escape from an enemy, it may quickly spin a getaway thread and drop out of sight on it.



Jumping spider ready to pounce.
© Robert Pickett/Corbis

Not all spiders catch food with a web. Some, such as the jumping spider, pounce like a cat to capture insects. Others spin silk funnels, where they hide during the day before going hunting at night. The brightly colored crab spider hides between flower petals and grabs insects looking for nectar. Pirate spiders creep inside the webs spun by other spiders and then eat them up.

LEARN MORE! READ THESE ARTICLES…
AMAZON: A CLOSE LOOK AT RIVER LIFE (VOLUME 9) • INSECTS (VOLUME 11)
A STORY FROM GHANA: ANANSE AND THE WISDOM POT (VOLUME 5)

Many spiders spin webs to trap food—most often insects such as this unfortunate butterfly.
© Tecmap Corporation—Eric Curry/Corbis



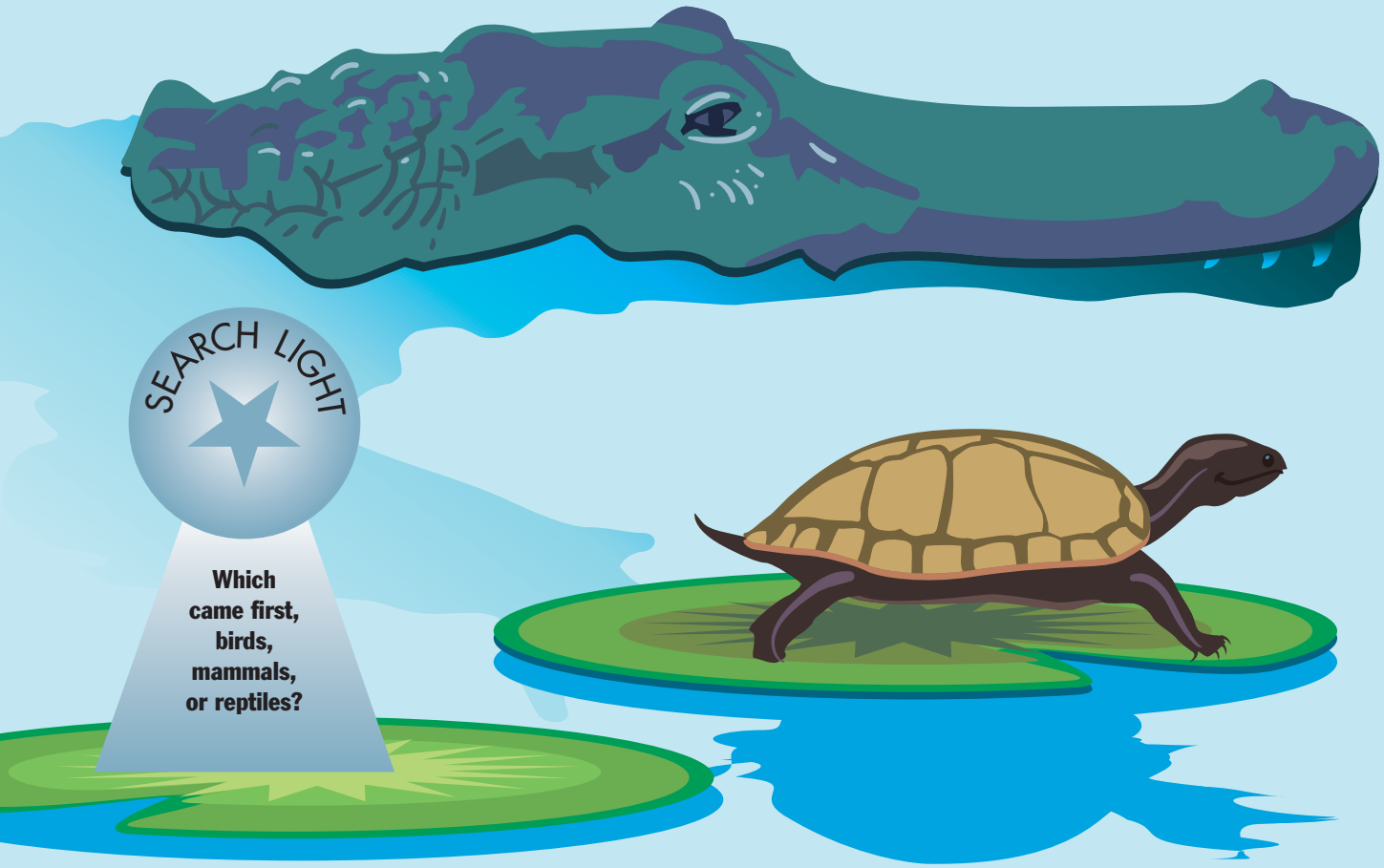
DID YOU KNOW?

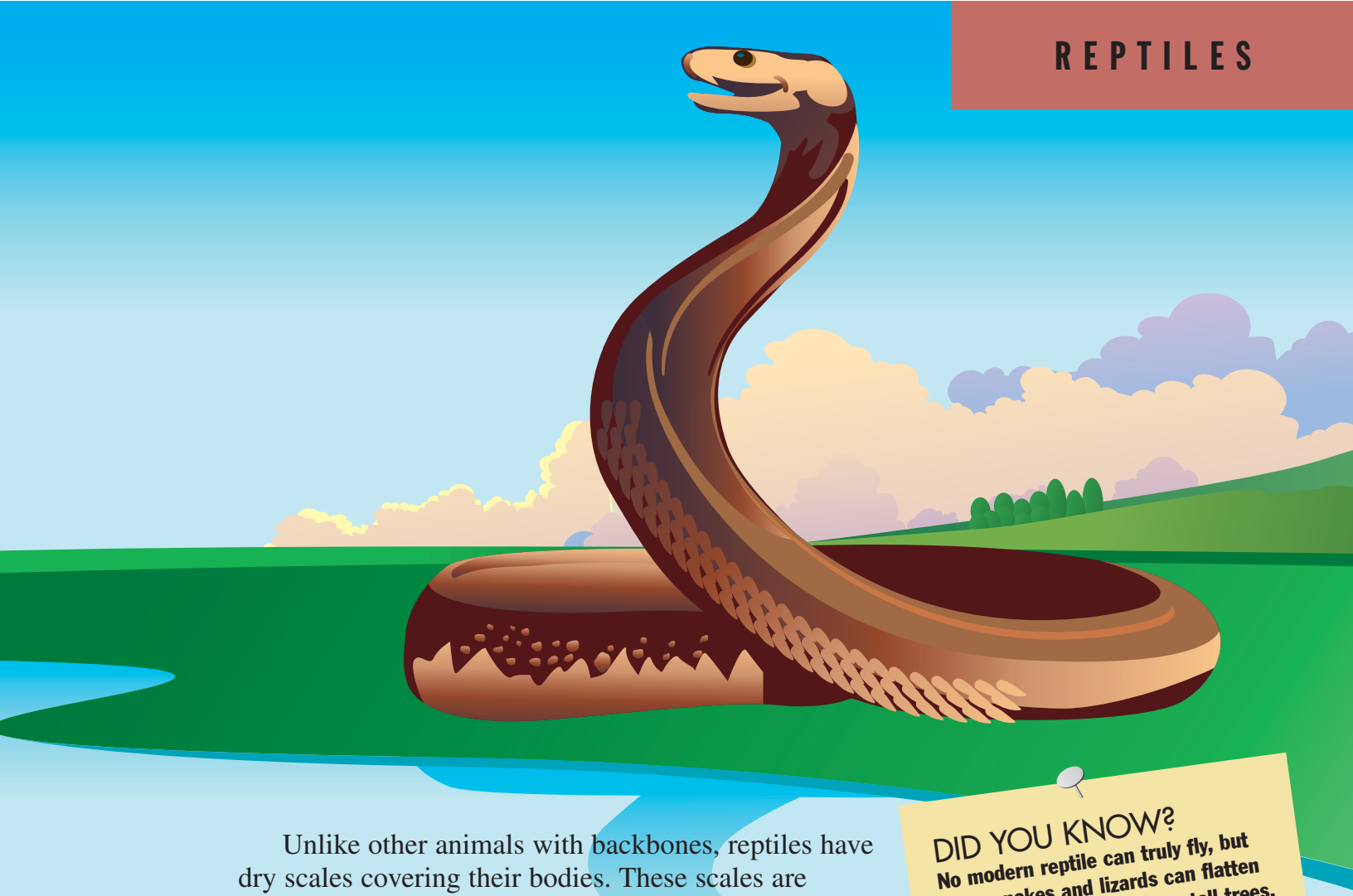
Spiders live everywhere, even underwater. Water spiders are called "diving bells" because they build bell-shaped webs underwater. The bell webs trap air bubbles for the spider to breathe.

Answer: A pirate spider eats other spiders out of their own webs.

Snakes, Lizards, and Other Dry-Scaled Beasts

Long before there were any birds, and long before mammals, there were reptiles. In fact, scientists believe that the first reptiles appeared on Earth more than 300 million years ago. The reptiles that exist today include snakes, lizards, turtles, crocodiles, and alligators. Snakes and lizards account for the greatest number of reptiles. Altogether there are more than 5,500 different kinds of snakes and lizards.





DID YOU KNOW?
No modern reptile can truly fly, but some snakes and lizards can flatten their bodies and glide from tall trees.

Unlike other animals with backbones, reptiles have dry scales covering their bodies. These scales are replaced throughout a reptile's lifetime. Snakes shed all of their scales at once. Lizards, crocodiles, and turtles shed their scales bit by bit.

Birds and mammals **evolved** from reptiles millions of years ago. But while birds and mammals are warm-blooded, meaning that their temperature stays the same all the time, a reptile's body temperature is changed by the surrounding area's temperature. Because of this, reptiles are said to be "cold-blooded." They warm or cool themselves by moving to warmer or cooler locations. Most reptiles **hibernate** during the winter.

Today's reptiles come in many sizes. Some tiny lizards are less than 2 inches long. Anacondas, the world's largest snakes, grow to more than 30 feet long. The largest of the lizards is the Komodo dragon, which can reach more than 10 feet long. And the leatherback sea turtle can be more than 6 feet long and weigh more than 1,500 pounds.

One of the most fascinating aspects of reptiles is how long many of them can live. Many kinds of reptiles have lived for more than 20 years in zoos. And some types of turtles have been known to live for more than 150 years!

LEARN MORE! READ THESE ARTICLES…
BIRDS (VOLUME 11) • CHARLES DARWIN (VOLUME 4) • MAMMALS (VOLUME 12)

Answer: Reptiles came first, more than 300 million years ago.

SEARCH LIGHT

True or false? Alligator is another name for a crocodile.



Today, many alligators and crocodiles are in danger of becoming extinct. One reason is that many are killed each year for sport or for their skins, which are used to make purses, shoes, and belts. These crocodiles are lying in the grass near Moramanga, Madagascar.
© Wolfgang Kaehler/Corbis

Modern Dinosaurs

If you're looking for reptiles that have been around since the days of the dinosaurs, try alligators and crocodiles. These large lizardlike animals are related to the giant reptiles of the past.

Alligators and crocodiles are closely related. They look a lot alike, but alligators have a broad flat head with a rounded **snout**. Most crocodiles have a narrow, pointed snout. When a crocodile closes its mouth, the fourth tooth on each side of its lower jaw sticks out. Crocodiles are larger than alligators. They range from 7 to more than 20 feet long, while most alligators are about 6 to 8 feet long.



Alligators in the Okefenokee Swamp, Georgia.
© David Muench/Corbis

Alligators and most crocodiles live along the edges of large bodies of freshwater such as lakes, swamps, and rivers. They spend a lot of time in the water, but they can also be found on land near the water. Large adults can stay underwater for over an hour without breathing.

Both animals have long snouts, powerful tails, and thick skin with bony plates underneath. Their eyes, ears, and nostrils are located on top of their long heads. Alligators and crocodiles often float with only their eyes and noses showing.

Crocodiles can be found in **tropical** swamps and rivers in Asia, Australia, Africa, and South America. Alligators are less widespread. The American alligator lives in the southeastern United States. In South America there are various alligators called caimans. The Chinese alligator lives in the Yangtze River and is smaller than the American alligator.

Adult alligators and crocodiles eat mostly fish, small mammals, and birds. Sometimes they may kill deer or cattle. Crocodiles are more likely than alligators to attack humans, though alligators will attack if cornered.

DID YOU KNOW?

There are saltwater crocodiles living in northern Australia and Southeast Asia. Australians call their crocodiles "salties."

LEARN MORE! READ THESE ARTICLES…
AMAZON: A CLOSE LOOK AT RIVER LIFE (VOLUME 9)
DINOSAURS: GIANTS OF THE PAST (VOLUME 1) • REPTILES (VOLUME 11)

Answer: FALSE. Though they are related, alligators and crocodiles are two different animals.

Legless Wonders

Aside from worms, almost every animal you see on land has legs. But snakes are different. They don't have legs, or arms either. Most snakes move around by pushing against the ground, scraping it with their tough scales.



© David A. Northcott/Corbis



© Michael & Patricia Fogden/Corbis

(Top) Ghost corn snake; (bottom) woma python.

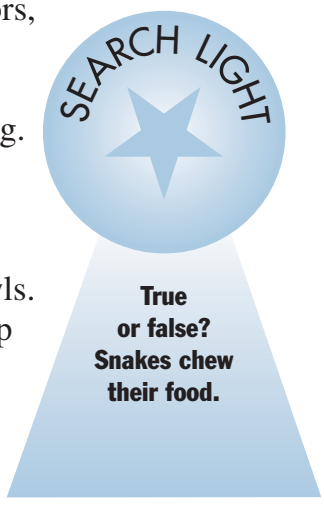
Snakes look slippery and slimy, but they're not. Their skin actually feels like cool soft leather. As a snake gets bigger, its skin gets tighter and tighter until the snake wiggles right out of it, wearing a new skin. A snake sheds its skin this way a few times a year.

The smallest snakes are no larger than worms. All snakes are hunters, though. Small snakes eat insects. Larger snakes eat rats or squirrels or rabbits. The huge pythons and anacondas can swallow a deer.

Some snakes use poison called "venom" to catch animals. They deliver their poison with a bite. Others are constrictors, which means that they wrap themselves around their prey and suffocate it. Still other snakes eat bird eggs. Snakes swallow their food whole, without chewing. The jaws may be hinged so that the snake can eat something larger than its own head. A snake that has just eaten may not need another meal for days and days.

Snakes are eaten by big birds such as eagles, hawks, and owls. The Indian mongoose (a mammal) kills cobras. Wild hogs stamp on snakes to kill them. And, of course, many people kill snakes on sight.

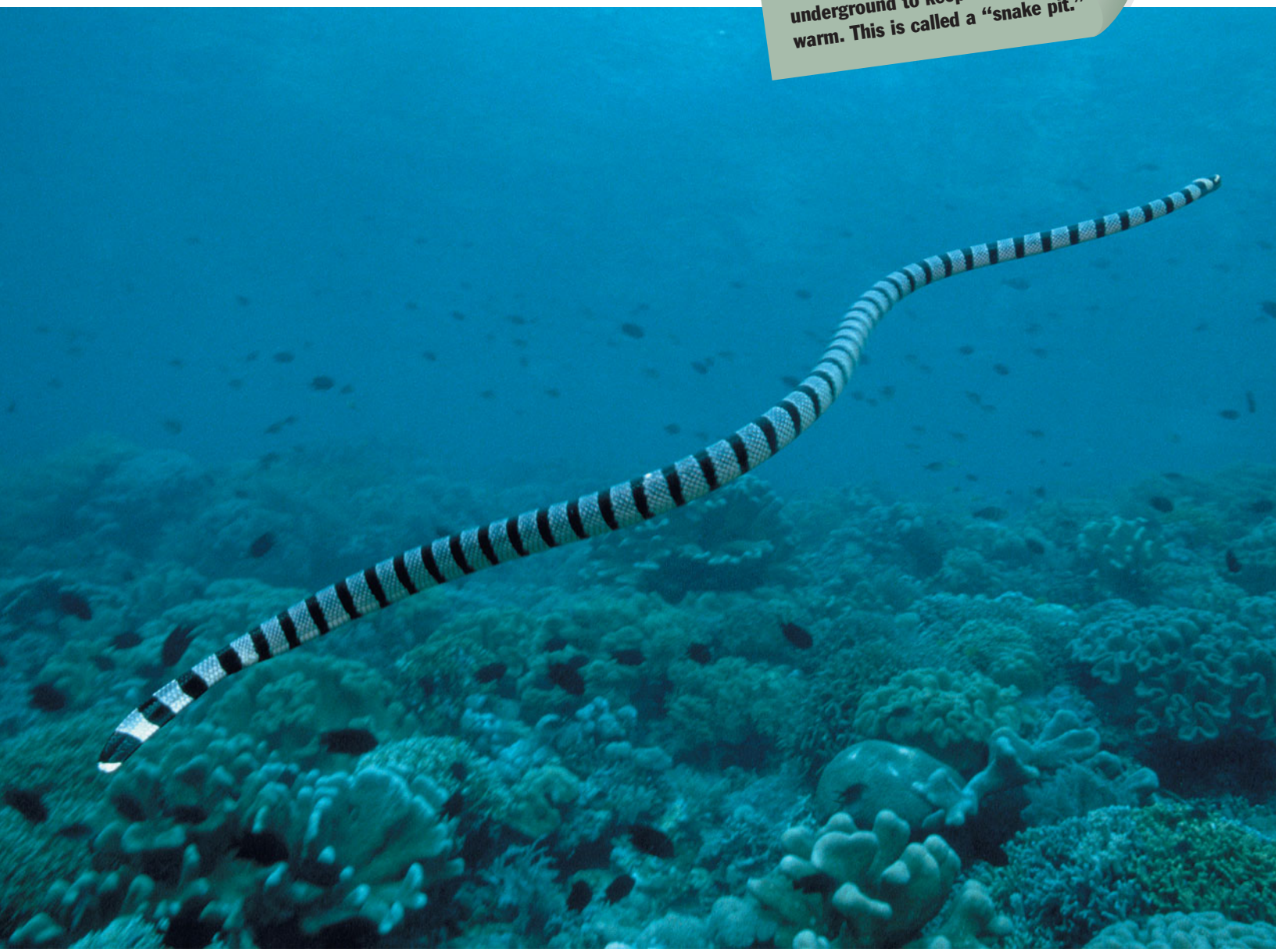
Most snakes avoid people and won't hurt you if you don't bother them. Still, it's a good idea to leave wild snakes alone.



LEARN MORE! READ THESE ARTICLES…
ANACONDAS (VOLUME 11) • KING COBRAS (VOLUME 11) • MONGOOSES (VOLUME 12)

DID YOU KNOW?

During cold winters, thousands of snakes may sleep together in a hole underground to keep each other warm. This is called a "snake pit."



The sea snake has a flat tail that it can use like an oar to move itself through the water.
© Brandon D. Cole/Corbis

Answer: FALSE. Snakes swallow their food whole.



SEARCH LIGHT

Find and correct the error in the following sentence: Anacondas kill their prey with a poisonous bite.

A Tight Squeeze

The giant anaconda is one of the longest and heaviest snakes in the world. But this South American animal is not poisonous. The anaconda kills its prey by squeezing it so hard that it cannot breathe.

The anaconda spends most of its time in water. When an animal goes to a river to drink, the anaconda grabs it. If the prey is large, the snake wraps itself around the animal and can choke it. The anaconda then drags the body into the water to keep it away from jaguars and biting ants that would be attracted to the **carcass**. When an anaconda eats a large animal, it gets so stuffed that it lies still for weeks to digest its meal!



Giant anaconda.
© Z. Leszczynski/Animals Animals

There are two types of anacondas. The yellow anaconda is the smaller of the two. It is tan or greenish yellow with large black markings across its back and black blotches along its sides. Yellow anacondas are found in the southern Amazon River area. The giant anaconda is twice as big as the yellow anaconda. It's olive green with black spots. The giant anaconda lives in the South American tropics east of the Andes Mountains and on the Caribbean island of Trinidad. Giant anacondas can measure over 33 feet long.

Despite its size, a giant anaconda is not really violent. Scientists can simply pick up an anaconda and carry it off. But it may take several of them to lift the snake, especially if it just ate!

LEARN MORE! READ THESE ARTICLES…
AMAZON: A CLOSE LOOK AT RIVER LIFE (VOLUME 9)
REPTILES (VOLUME 11) • SNAKES (VOLUME 11)

A yellow anaconda lies on a log at the edge of the water. Although the anaconda spends much of its time in water, it may also crawl on land and even climb into trees to catch birds.
© Joe McDonald/Corbis

DID YOU KNOW?
Like most snakes, anacondas swallow their food whole. They can open their mouths wide enough to fit around an entire goat.

Answer: Anacondas kill their prey by squeezing it.

Reptile Royalty

The king cobra is the world's largest poisonous snake. It may grow to twice the length of a Ping-Pong table. Its **venom** is so powerful that elephants have died within three hours of a bite on the toe or trunk.

King cobras are yellow-olive to brownish black, sometimes with lighter bands across the back. Like other cobras, the king cobra is known for its unique "threat display." When it is angered or disturbed, it raises its head and **flares** its narrow, unmarked hood. This shows its yellow or red throat, which often is striped.

The king cobra can raise its head to a third of its entire length and may even move forward while upright. It is very curious by nature and often sits upright to see farther. It may be the most intelligent of all snakes.



People are afraid of cobras and as a result often kill the snakes. Why do you think people are scared of cobras? (Hint: What would you worry about if you came face to face with a cobra?)

The king cobra prowls in forests, fields, and villages. It mostly eats other snakes and normally does not bite humans. In **captivity** it is aggressive to strangers but recognizes its keeper and knows when it's mealtime. However, it can become dangerous during the mating season or when cornered or startled.

The female cobra builds a nest for egg laying. Using a loop of her body as an arm, she pulls leaves, soil, and ground litter into a mound. In this nest she lays 20 to 40 eggs. She coils above or near the eggs for about two months and fiercely defends them.

The king cobra is found in parts of Asia from southern China to the Philippines, Indonesia, and India.

LEARN MORE! READ THESE ARTICLES…
INDIA (VOLUME 7) • REPTILES (VOLUME 11)
SNAKES (VOLUME 11)

DID YOU KNOW?
The king cobra has an unusual hiss that is much lower than other snakes'—more like a growl than a hiss.

The king cobra (like other cobras) performs the famous "threat display" by pulling the ribs of the neck sideways and forward. This flattens the neck into a hood.
© E. Hanumantha Rao/NHPA

Answer: Because cobras are poisonous and have occasionally killed people with their bite, many consider the snake a danger to humans. Cobras also have a flaring "hood" that makes them look threatening. Actually, far more snakes are injured and killed by people each year than the other way around.

Cousins of the Dinosaurs

When scientists first found remains of dinosaurs they thought they had found giant lizards. They later realized that dinosaurs and lizards are different types of animals, but they are related. Both are types of reptiles.

© Norman Owen Tomalin/Bruce Coleman Inc.



© Kim Taylor/Bruce Coleman Inc.



(Top) Komodo dragon; (bottom) gecko.

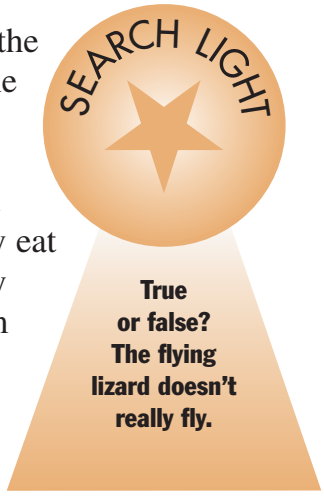
There are many kinds of lizards. They may be green, gray, red, brown, blue, yellow, black, or almost any color! Some are longer than a man, and some are so tiny you could hold them between your fingers. The smallest lizards in the world belong to the skink and gecko families. The largest is the Komodo dragon of Southeast Asia.

Most lizards have a long tail, dry scaly skin, strong short legs, and long toes. They also have sharp claws. Some have spiny scales under their toes, which help them cling to rocks or branches.

Draco lizards are also called the "flying lizards." They can't fly the way a bird does, but they have a tough skin that can spread out. They can jump from a tree and sail a long way through the air.

A little lizard called the "American chameleon" is pretty and friendly. These tiny creatures are helpful to humans because they eat harmful insects. They seem to be able to change color when they want to. They can't really do that, but their skins do change from brown to green when there are changes in light and temperature.

The Gila monster is one of the few lizards that are dangerous. It is black and pink or orange, which makes it easy to see. And that's a good thing because the Gila has a poisonous bite.



LEARN MORE! READ THESE ARTICLES…
CHAMELEONS (VOLUME 11) • DINOSAURS: GIANTS OF THE PAST (VOLUME 1)
REPTILES (VOLUME 11)

© Buddy Mays/Corbis



DID YOU KNOW?

If another animal tries to eat the glass lizard by grabbing its tail, the tail comes off. The other animal may then think it has caught the whole lizard.

The five-lined skink is very small. It usually grows to be only about five to eight inches long.

Answer: TRUE. It jumps and glides through the air.


SEARCH LIGHT
What's wrong with the following statement: Chameleons can make their skin color change in order to match their surroundings.

The Color-Wizard Lizards

Many people believe that the lizards known as "chameleons" can make their color change to match their surroundings. It's true that the color of a chameleon's skin can change, but not because the chameleon decides to. The color change may help the chameleon avoid its enemies. The color change is a form of **camouflage**, a disguise that lets something blend in with its surroundings.

Chameleon skin contains color-causing substances called "pigments" that change under certain conditions. For instance, on a day when there is no bright sunlight, chameleons appear gray or green. Bright sunlight causes the skin to darken. On cool nights the color fades to a creamy color. The skin also changes color when chameleons are excited, angry, or afraid.



Chameleon of South Africa.
© Erice Reisinger–Gallo Images/Corbis

There are many types of chameleons. About half are found only in the African island of Madagascar. The others occur mostly south of Africa's Sahara desert, with another few in western Asia and southern Europe. The "false chameleon," or anole, is often sold in pet stores. This lizard of the Americas changes color, but not as dramatically as a true chameleon.

Chameleons live in trees, where they usually eat insects. They catch their prey with the help of their long and slender tongue. They shoot the tongue out, grab the prey on the sticky end, and then draw the tongue back into the mouth. Very large chameleons may even use their sticky tongues to catch birds.

Another unusual thing about chameleons is that each eye can move independently of the other, so they can see in different directions at once. This makes it very hard to sneak up on a chameleon.

DID YOU KNOW?

Some say that the chameleon's eyes helped inspire the invention of the military turret, a revolving tower. You can see turrets today on the tops of tanks.

LEARN MORE! READ THESE ARTICLES…
AFRICA (VOLUME 8) • LIZARDS (VOLUME 11) • MADAGASCAR (VOLUME 8)

The Parson's chameleon, from Madagascar, is one of the largest of its family.
© Royalty-Free/Corbis

Answer: Chameleons' skin color does change. But they don't decide to change it, and it doesn't always change in order to match their surroundings.

Taking Their Time

Turtles are known as slow-moving animals. They were around during the age of dinosaurs more than 100 million years ago. Dinosaurs are gone now, but turtles are still here. Slow but steady wins the race!

Like the dinosaurs, turtles are reptiles. There are nearly 250 kinds of turtles in the world today. All turtles breathe air at least part of the time, even sea turtles, which spend almost their whole life in the ocean. In addition to the ocean, turtles can live in ponds, lakes, or rivers. Other turtles live in forests or even hot desert sands, miles away from water. Some people refer to land turtles as "tortoises."



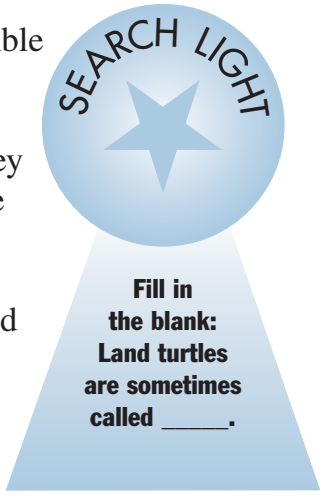
Three painted turtles perched on a rock.
© William Manning/Corbis

Turtles come in all sizes. Some are no more than 4 inches long. At the other end of the scale, the Atlantic leatherback turtle may weigh as much as 1,500 pounds.

Even sea turtles go ashore to lay their eggs. The newly hatched baby turtles are completely on their own. They scramble from their nest under the sand and walk on their tiny new flippers to the water.

Land and sea turtles can take care of themselves because they carry their houses with them wherever they go. Their houses are their shells. Some turtles can close their shells completely. The snapping turtle can't, but it has a powerful bite for protection.

No matter where they live, turtles don't need to hunt for food or water all the time. Some have a special place inside their bodies where they can store water. And they can store food in the form of fat. Turtles can live for days or even weeks without having anything to eat or drink.



LEARN MORE! READ THESE ARTICLES…
AMPHIBIANS (VOLUME 11) • DINOSAURS: GIANTS OF THE PAST (VOLUME 1)
REPTILES (VOLUME 11)

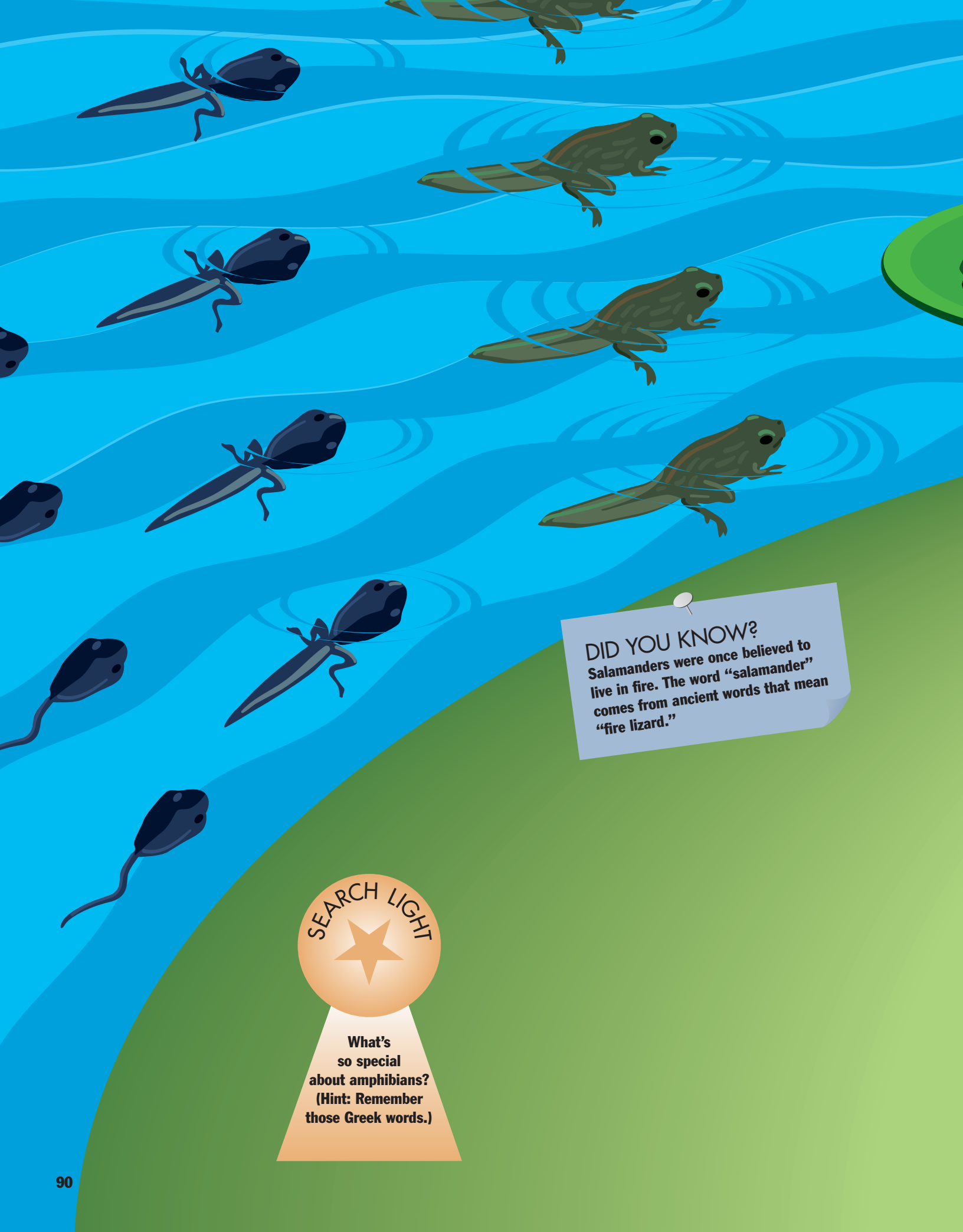
DID YOU KNOW?

Turtles can live longer than people can. Turtles are known to have lived 150 years in the wild, and there are reports of turtles that were even older than that.



A boy kneels to investigate a small turtle. Turtles are found in lakes, ponds, salt marshes, rivers, forests, and even deserts.
© Ariel Skelley/Corbis

Answer: Land turtles are sometimes called tortoises.


DID YOU KNOW?
Salamanders were once believed to live in fire. The word "salamander" comes from ancient words that mean "fire lizard."
SEARCH LIGHT
What's so special about amphibians? (Hint: Remember those Greek words.)

The Land-and-Water Dwellers





Millions of years ago, a group of fish began to breathe both in and out of the water. Eventually these fish made their way onto land and began to develop legs. These animals became amphibians, the ancestors of frogs, toads, and salamanders.

The word "amphibian" comes from the Greek words *amphi*, which means "both," and *bios*, which means "life." As their name suggests, amphibians live both in freshwater and on land.

Amphibians are cold-blooded animals. This means that an amphibian's body temperature generally matches the temperature around it. To warm up, amphibians often **bask** in the sun, and to cool off, they move into the shade. Amphibians must also stay near water. If their skin dries out, they will die.

There are three main groups of amphibians. The largest group includes the true frogs, tree frogs, and toads. True frogs have long hind legs and can swim and leap very well. Tree frogs have suction pads on their fingers and toes and can hold on to smooth surfaces. Toads have shorter legs than frogs, and their skin has a warty appearance.

The second group of amphibians is the salamanders, which have tails. The giant salamander of Japan and China is the largest of all amphibians. It can grow to a length of more than five feet.

The third group is the caecilians. These odd amphibians are rarely seen. They have long slender bodies with no arms or legs. They are also blind. A long flexible structure called a "tentacle" sticks out next to each of their useless eyes. They use these tentacles to feel and sniff their way around.

LEARN MORE! READ THESE ARTICLES…
FROGS (VOLUME 11) • MARSHES (VOLUME 1) • RIVERS (VOLUME 1)

Answer: Amphibians are one of the few groups of animals that can live comfortably both in the water and on the land.



Amazing Changing Amphibians

DID YOU KNOW?
The Goliath frog of West Africa is nearly 12 inches long!

Frogs are amphibians. This means they can live both in water and on land. And they have a life cycle that takes place in both environments.

A mother frog lays her eggs in the water. In a few days tiny tadpoles, or pollywogs, wriggle out of the eggs. The tadpoles don't look like frogs at all. They have long tails for swimming and slits called **gills** for breathing.

As a tadpole grows into a frog, it changes in many ways. Its tail gets shorter and shorter until it disappears. At the same time, the frog grows front and hind legs. The hind feet have long toes with webs between them to help in swimming and leaping. Plus, the gills disappear and **lungs** develop. Once these changes are complete, the creature is ready to live on land as well as in the water. It's now a frog. For some kinds of frogs, this process of change takes just two months. For others, it may take as long as three years.



Red-eyed leaf frog tadpoles.
© Michael & Patricia Fogden/Corbis

A frog has smooth moist skin. Its eyes are so big that they seem about to pop out of its head. These eyes help it find food. Its hind legs are more than twice as long as its front ones. The frog travels in great leaps on these long strong legs.

Frogs are closely related to toads. What's the difference between a frog and a toad? Well, a toad's skin is dry and bumpy. Its legs are short, so it can only hop, not leap. And toads spend more of their time on land than frogs do.

LEARN MORE! READ THESE ARTICLES…
AMPHIBIANS (VOLUME 11) • MARSHES (VOLUME 1)
SWAMPS (VOLUME 1)

SEARCH LIGHT

Unscramble the following words that relate to frogs.
daploet
sligl
traew

The tree frog has long legs and sticky suckerlike disks on its feet for climbing.
© Darren Maybury—Eye Ubiquitous/Corbis

Answer: daploet = tadpole
sligl = gills
traew = water

GLOSSARY

abdomen the end portion of an insect's body that is behind the head and thorax (middle section)

abyssal having to do with an area of the ocean that is thousands of feet below the surface of the water

adaptation change in an organism or its parts that allows the organism to survive better in its environment

algae (singular: alga) of organisms that are similar to plants and live mostly in the water

antenna (plural: antennas) long slender organ on the head of an insect that allows it to sense its environment

bask to lie or relax in a warm place

bray to make a sound like the loud harsh call of a donkey

bushman in Australia, a person who lives in the bush (wilderness)

camouflage colors and patterns that allow a person, animal, or thing to blend in with the surroundings

captivity taken and held in a cage or as a prisoner

carcass dead body or leftover parts of an animal

colony in biology, a group of similar organisms that live together in a particular place

contour the outline of a figure, body, or surface

contract (verb) to make smaller by tightening or squeezing together

crest standing clump of fur or feathers, usually on an animal's head

digestive system parts of the body that work together to break down food into simpler forms that can be used by the body

echo (verb) to repeat or imitate a sound

evolve to change, especially over time

flare (verb) to fan out or expand

gills pair of breathing organs found in fish and some other water-dwelling animals

gland structure in animals that produces special substances, such as sweat or oil or milk

hatch to come forth from an egg or other protective covering during development

hibernate to pass the winter in a sleeping or resting state

impish playfully naughty

larva (plural: larvae) wingless, often wormlike stage of many insects

lung organ that helps some animals breathe air

majestic grand or splendid

meal coarsely ground substance

migration movement from one country or place to another

mineral substance that is not animal or plant and is an important nutrient for living things

nectar sweet liquid produced by plants and used by bees in making honey

nocturnal active at night

nuisance annoying or troublesome person, thing, or event

nutrient substance that a living thing needs in order to stay healthy and grow

pied (adjective) having blotches of two or more colors

plate in the Earth sciences, a large segment of the Earth's crust (outer layer) that is constantly in motion

pollen very fine dusty substance that comes from flowers; it is important in the reproduction of plants

prey animal eaten by another animal

savage extremely violent

scale one of the small stiff flat plates that form an outer covering on the body of some animals, especially fishes and reptiles

scorpion animal of the arachnid class (which includes spiders) that has a long body and a narrow sectioned tail with a poisonous stinger at the tip

snout long projecting nose, like that of a pig; also, the long front part of the head of some animals, such as alligators

squid sea mollusk that has a long thin body with eight short arms and two usually longer tentacles

sturdy physically strong and healthy

suction holding onto something by sucking

superstition unproven belief usually based on a mistaken idea of how something is caused

tentacle long armlike structure on certain animals, usually found sticking out near the head or mouth and used especially for feeling or grasping

thorax the middle of the three main divisions of the body of an insect

tropical having to do with the Earth's warmest and most humid (moist) climates

unique very unusual or one-of-a-kind

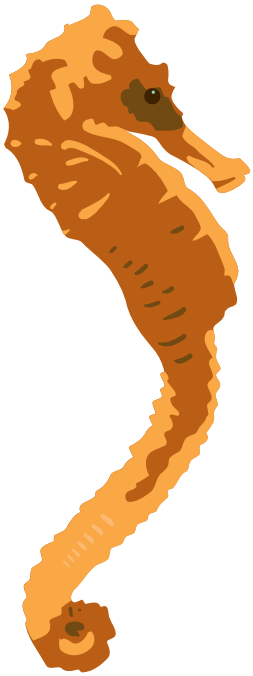
vegetarian person or animal that does not eat meat

venom poison that comes from animals

vibrate to move rapidly back and forth or from side to side

warm-blooded having a body temperature that stays mostly unchanged and is not affected by the surrounding environment

waterproof not affected by water



I N D E X

albatrosses (birds) *page* **17**

alligators and crocodiles *page* **77**

amphibians (animals) *page* **91**
LEARN MORE *look under* frogs

anacondas (snakes) *page* **81**

anglerfish (fish)
deep-sea life photograph *page* **54**
fish *page* **35**

anoles, *also called* false chameleons (lizards)
chameleons *page* **87**

antennae, *also called* antennas
ants *page* **59**

anthills
ants *page* **59**

ants *page* **59**
Did you know? *page* **6**

aphids (animals)
ants *page* **59**

aquatic animals: *look under* alligators and crocodiles; ducks; fish; geese; penguins; swans

arachnids (animals)
spiders *page* **72**

army ants (animals)
Did you know? *page* **58**

arthropods (animals)
spiders *page* **72**

bald eagles (birds)
eagles *page* **14,** photograph *page* **15**

barn owls (birds)
owls photograph *page* **12**

bee bread
bees *page* **61**

beehives
bees *page* **61**

bees (insects) *page* **61**

bioluminescence (light)
deep-sea life *page* **54**

birds (animals) *page* **7**
LEARN MORE *look under* albatrosses; ducks; eagles; geese; gulls; kingfishers; kiwis; ostriches; owls; parrots and cockatoos; peacocks; penguins; swans

butterflies and moths (insects) *page* **63**
Did you know? *page* **61**
spiders photograph *page* **73**

caecilians (animals)
amphibians *page* **91**

caimans (reptiles)
alligators and crocodiles *page* **77**

camouflage
chameleons *page* **87**

carp (fish) *page* **37**

chameleons (lizards) *page* **87**
lizards *page* **85**

cobras (snakes): *look under* king cobras

cockatoos (birds): *look under* parrots and cockatoos

cockroaches (insects) *page* **65**

cold-blooded animals
amphibians *page* **91**
LEARN MORE *look under* reptiles

color
chameleons *page* **87**

coral (ocean animals) *page* **45**

crab spiders
spiders *page* **72**

crickets (insects) *page* **67**
insects *page* **57**
LEARN MORE *look under* grasshoppers

crocodiles (reptiles): *look under* alligators and crocodiles

cygnets (birds)
swans *page* **24,** photograph *page* **24,** photograph *page* **25**

dabbling ducks (birds)
ducks *page* **21**

deep-sea life *page* **54**

diving ducks (birds)
ducks *page* **21**

down (feathers)
geese *page* **22**
LEARN MORE *look under* feathers

draco lizards
lizards *page* **85**

dragonflies (insects)
insects *page* **57,** illustration *page* **57**

drones (insects)
bees *page* **61**

ducks *page* **21**

eagles (birds) *page* **14**

eggs
Did you know? *page* **33**
ostriches photograph *page* **31**

emperor penguins (birds)
penguins photograph *page* **27**

eyes
owls *page* **13**

false chameleons (lizards): *look under* anoles

feathers
birds *page* **7**
Did you know? *page* **20**
LEARN MORE *look under* down

fish *page* **35**
amphibians *page* **91**
LEARN MORE *look under* carp; deep-sea life; piranhas; salmon; sharks

frogs (animals) *page* **93**
amphibians *page* **91,** illustration *page* **90**
Did you know? *page* **56**

fungi
ants *page* **59**

geckos (reptiles)
lizards photograph *page* **85**

geese, *also called* goose *page* **22**

Gila monsters (reptiles)
lizards *page* **85**

glass lizards (reptiles)
Did you know? *page* **85**

golden eagles (birds)
eagles *page* **14,** photograph *page* **14**

goldfish
Did you know? *page* **36**

Goliath frogs (animals)
Did you know? *page* **93**

goose: *look under* geese

grasshoppers (insects) *page* **69**
insects *page* **57**
LEARN MORE *look under* crickets

great white sharks
sharks *page* **42**

gulls (birds) *page* **19**

hammerhead sharks
sharks *page* **42,** photograph *page* **42**

honey
bees *page* **61**

honeycombs
bees photograph *page* **60**

insecticide
mosquitoes *page* **71**

insects *page* **57**
LEARN MORE *look under* ants; bees; butterflies and moths; cockroaches; crickets; grasshoppers; mosquitoes; *and related animals:* spiders

jellyfish (ocean animals) *page* **53**

jumping spiders
spiders *page* **72,** photograph *page* **72**

king cobras (snakes) *page* **82**

kingfishers (birds) *page* **9**

kiwis (birds) *page* **33**
LEARN MORE *look under* ostriches

Komodo dragons (lizards)
lizards *page* **85,** photograph *page* **85**

kookaburras (birds)
kingfishers *page* **9,** photograph *page* **8**

land turtles (animals): *look under* tortoises

leather carp (fish)
carp *page* **37**

leatherback turtles (turtles)
reptiles *page* **75**

lizards *page* **85**
reptiles *page* **75**
LEARN MORE *look under* chameleons

locusts (insects)
insects *page* **57**

lungfish
Did you know? *page* **34**

macaws (birds)
parrots and cockatoos *page* **11,** photograph *page* **11**

malaria (disease)
Did you know? *page* **71**

marine animals: *look under* albatrosses; coral; deep-sea life; fish; gulls; jellyfish; mollusks; octopuses; penguins; salmon; sharks; sponges

mollusks (animals) *page* **49**

monarch butterflies (insects)
Did you know? *page* **63**

mosquitoes (insects) *page* **71**

moths (insects): *look under* butterflies and moths

mudskippers (fish)
Did you know? *page* **34**

mussels (animals)
mollusks photograph *page* **48**

octopuses (ocean animals) *page* **51**

Oriental cockroaches (insects)
cockroaches *page* **65**

ostriches (birds) *page* **31**
LEARN MORE *look under* kiwis

owls (birds) *page* **13**

painted turtles (animals)
turtles photograph *page* **88**

parrots and cockatoos (birds) *page* **11**

peacocks (birds) *page* **28**

penguins (birds) *page* **27**

piranhas (fish) *page* **41**

pirate spiders
spiders *page* **72**

polliwogs (animals): *look under* tadpoles

pond skaters (insects)
insects *page* **57**

pygmy parrots (birds)
parrots and cockatoos *page* **11**

pythons (animals)
snakes photograph *page* **78**

rabbitfish
fish *page* **35**

reptiles (animals) *page* **74**
LEARN MORE *look under* alligators and crocodiles; lizards; snakes; turtles

salamanders (animals)
amphibians *page* **91**

salmon (fish) *page* **39**

salties (animals)
Did you know? *page* **77**

sea horses (fish)
fish *page* **35**

sea snakes (animals)
snakes photograph *page* **79**

sea turtles (animals)
turtles *page* **88**

sharks *page* **42**

shells
mollusks *page* **49**
turtles *page* **88**

skinks (reptiles)
lizards photograph *page* **85**

snails (animals)
mollusks photograph *page* **49**

snakes (animals) *page* **78**
LEARN MORE *look under* anacondas; king cobras

snow geese (birds)
geese *page* **22,** photograph *page* **22**

spiders *page* **72**

sponges (animals) *page* **47**

swans *page* **24**

tadpoles, *also called* polliwogs (animals)
frogs *page* **93,** photograph *page* **93**
tadpole becoming frog illustration *page* **90**

tentacles
jellyfish *page* **53**
octopuses *page* **51**

toads (animals)
amphibians *page* **91**
frogs *page* **93**

tortoises, *also called* land turtles (reptiles)
turtles *page* **88**

tree frogs (animals)
amphibians *page* **91**
frogs photograph *page* **92**

tube worms
deep-sea life photograph *page* **55**

turtles (animals) *page* **88**

viceroy butterflies (insects)
Did you know? *page* **63**

whale sharks (fish)
fish *page* **35**
sharks *page* **42,** photograph *page* **43**

worker bees
bees *page* **61**

Meet fascinating creatures that fly, crawl, and swim in BIRDS, INSECTS, REPTILES, AND AQUATIC LIFE


Volume 1: The Earth and Earth Sciences


Volume 2: Physical Sciences and Technology


Volume 3: The Arts


Volume 4: People in History


Volume 5: Folklore and Religions


Volume 6: Europe


Volume 7: Asia, Australia, and New Zealand


Volume 8: Africa


Volume 9: The Americas


Volume 10: Plants


Volume 11: Birds, Insects, Reptiles, and Aquatic Life


Volume 12: Mammals


Volume 13: Reference Guide and Index

ENCYCLOPÆDIA
Britannica

My First Britannica



Mammals

12

My First Britannica

Mammals

12



Chicago London New Delhi Paris Seoul Sydney Taipei Tokyo

© 2008 by Encyclopædia Britannica, Inc.

International Standard Book Number: 978-1-59339-476-9 (set)

No part of this work may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, recording, or by any information storage and retrieval system, without permission in writing from the publisher.

My First Britannica:
Volume 12: Mammals 2008

Britannica.com may be accessed on the Internet at http://www.britannica.com.

Encyclopædia Britannica, Britannica, and the Thistle logo are registered trademarks of Encyclopædia Britannica, Inc.

Mammals

TABLE OF CONTENTS

INTRODUCTION 5

Mammals: Earth's Dominating Animals 6

PRIMATES—Apes, Monkeys, and Their Relatives

Apes: Intelligent Creatures...Like Us! 8
Gorillas: Fierce but Shy Apes 10
Gibbons: The Swinging Singers 12
Monkeys: Cute Clowns and Big Bullies 14
Macaques: Smart Monkeys! 16
Lemurs: Monkeys' Primitive Cousins 18

CARNIVORES—Meat Eaters

Cats: The Tiger in Your House 20
Tigers: The Striped Big Cats 22
Lions: Meet the King and Queen of Beasts 24
Ocelots: Spotted American Cats 26
Dogs: The Loyal Companions 28
Wolves: Noble Hunters, Strong Families 30
Coyotes: Howling at the Moon 32
Raccoons: Masked Bandits 34
Mongooses: Snakes' Feared Rivals 36
Pandas: Cuddly Exotic Bears 38

UNGULATES—Hoofed Mammals

Horses: Strong and Graceful Animal Friends 40
Donkeys: Beasts of Burden 42
Tapirs: Shy Cousins of the Horse and Rhino 44
Cattle: Most Valuable Creatures on Earth 46
Buffalo: Water-Loving Beasts 48
Bison: Majestic American Beasts 50
Yaks: Shaggy Beasts of Tibet 52
Gazelles: The Bouncers 54
Sheep: Follow the Leader 56
Wild Goats: Surefooted Mountain Climbers 58
Camels: Packed and Ready to Go 60
Llamas: Bounty of the Andes 62
Pigs: Smarties with Dirty Faces 64
Hippopotamuses: Kings of the River 66

RODENTS—Mammals with Ever-Growing Teeth

Muskrats: The Town Builders 68
Porcupines: Touch Me Nots 70

MARINE MAMMALS—Warm-Blooded in Water

Manatees: Mermaids of Yore? 72
Walruses: The Whale Horses 74
Whales: The Biggest Animals of All 76

MARSUPIALS AND MONOTREMES—Mainly Australian Mammals

Kangaroos: Australia's Awesome Leapers 78
Koalas: The Bears That Aren't Really Bears 80
Opossums: Playing Dead to Stay Alive 82
Platypuses: Egg-Laying Mammals 84

MIXED MAMMALS—In a Class by Themselves (or Nearly So)

Armadillos: The Armored Animals 86
Bats: Fliers by Night 88
Elephants: The Largest Animals on Land 90
Rabbits and Hares: Long Ears and Strong Legs 92

GLOSSARY 94

INDEX 95



Tiger
© Randy Wells/Corbis

Cover photos (top): tiger, © Randy Wells/Corbis; (center): eastern cottontail rabbit, © D. Robert & Lorri Franz/Corbis; (bottom): walrus, © Corbis

Mammals

INTRODUCTION

What kind of bears aren't really bears?
Why are donkeys called "beasts of burden"?
What's inside a camel's hump? Where would you find a platypus?

In Volume 12, ***Mammals,*** you'll discover answers to these questions and many more. Through pictures, articles, and fun facts, you'll encounter amazing animals and learn how their habitats have changed over time.

To help you on your journey, we've provided the following guideposts in *Mammals*:

- **Subject Tabs—**The colored box in the upper corner of each right-hand page will quickly tell you the article subject.
- **Search Lights—**Try these mini-quizzes before and after you read the article and see how much—*and how quickly*—you can learn. You can even make this a game with a reading partner. (Answers are upside down at the bottom of one of the pages.)
- **Did You Know?—**Check out these fun facts about the article subject. With these surprising "factoids," you can entertain your friends, impress your teachers, and amaze your parents.
- **Picture Captions—**Read the captions that go with the photos. They provide useful information about the article subject.
- **Vocabulary—**New or difficult words are in **bold type**. You'll find them explained in the Glossary at the back of this volume. And there's a complete listing of all Glossary terms in the set in the ***Reference Guide and Index***, Volume 13.
- **Learn More!—**Follow these pointers to related articles throughout the set.

And don't forget: If you're not sure where to start, where you saw something before, or where to go next, the Index at the back of this volume and the ***Reference Guide and Index*** (Volume 13) will point the way.

Have a great trip!

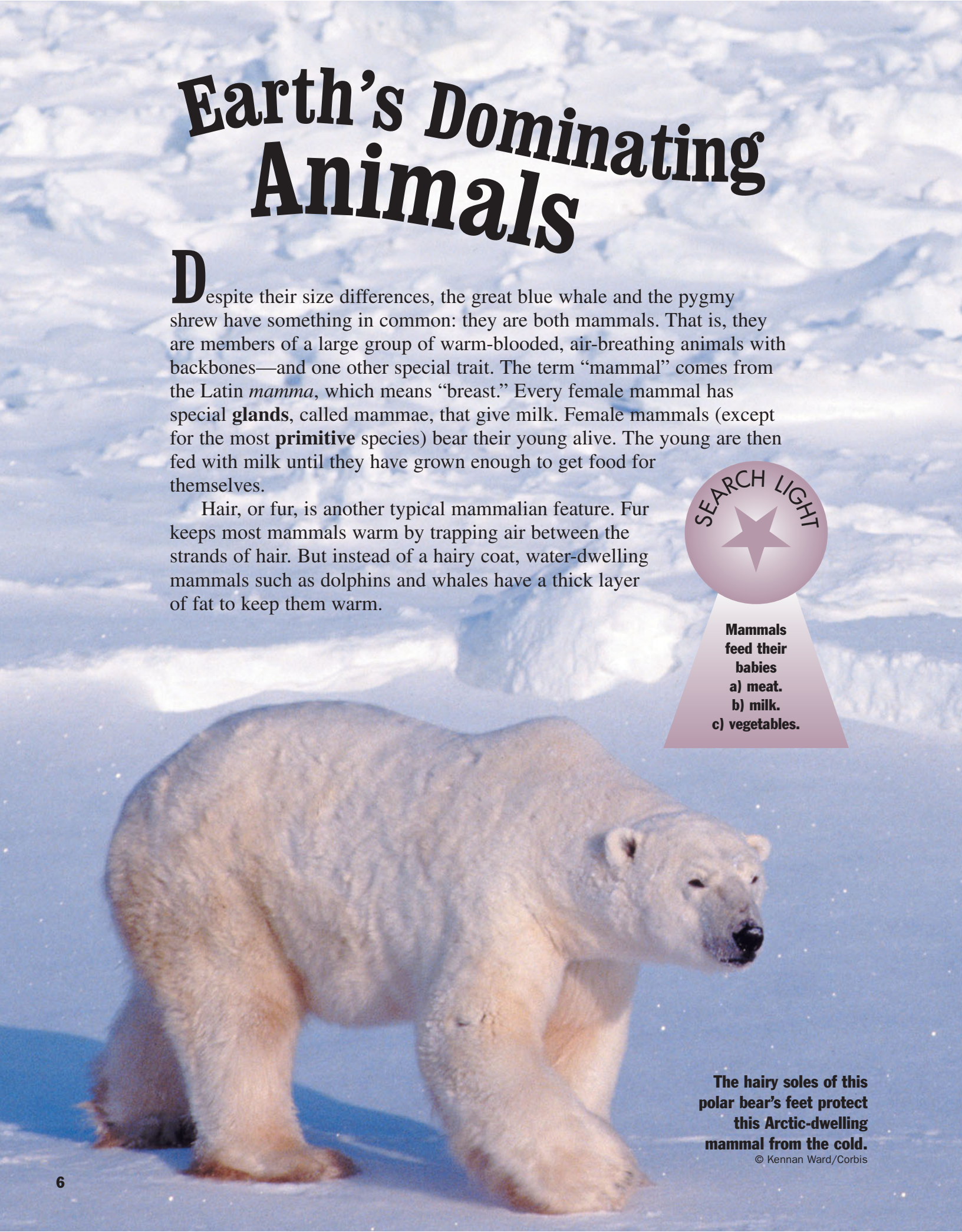
Earth's Dominating Animals

Despite their size differences, the great blue whale and the pygmy shrew have something in common: they are both mammals. That is, they are members of a large group of warm-blooded, air-breathing animals with backbones—and one other special trait. The term "mammal" comes from the Latin *mamma*, which means "breast." Every female mammal has special **glands**, called mammae, that give milk. Female mammals (except for the most **primitive** species) bear their young alive. The young are then fed with milk until they have grown enough to get food for themselves.

Hair, or fur, is another typical mammalian feature. Fur keeps most mammals warm by trapping air between the strands of hair. But instead of a hairy coat, water-dwelling mammals such as dolphins and whales have a thick layer of fat to keep them warm.

SEARCH LIGHT

Mammals feed their babies
a) meat.
b) milk.
c) vegetables.

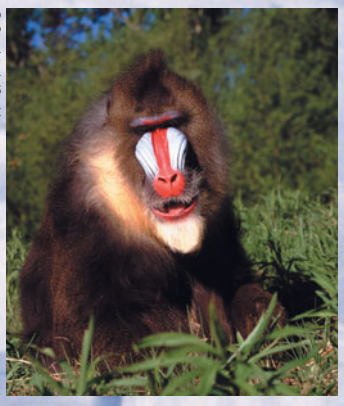


The hairy soles of this polar bear's feet protect this Arctic-dwelling mammal from the cold.
© Kennan Ward/Corbis

Mammals have existed for more than 200 million years. According to fossil evidence, they evolved from a mammal-like **reptile** group. These reptile ancestors were small active carnivores, or meat eaters.

Two unusual groups of mammals are the marsupials and the monotremes. Marsupials have a pouch on their bellies where they carry and nurse their babies. Kangaroos, wallabies, and opossums are examples of marsupials. At one time there was even a marsupial wolf. Monotremes are egg-laying mammals. The duckbilled platypus and its cousin the echidna are the only two living monotremes.

© Stocktrek/Corbis



For the past 65 million years, mammals have been the **dominant** animals on Earth. This is partly because of their intelligence. Whales, seals, and dogs are among the most intelligent mammals, but monkeys, apes, and humans are the most intelligent of all.

© Craig Tuttle/Corbis



(Top) This mandrill, a colorful monkey native to Africa, is among the group of most intelligent mammals; (bottom) these dolphins are part of a group of water-dwelling mammals.

LEARN MORE! READ THESE ARTICLES…
KANGAROOS (VOLUME 12)
PLATYPUSES (VOLUME 12)
REPTILES (VOLUME 11)

DID YOU KNOW?
The ancestors of whales and dolphins are thought to have lived on land.

Answer: b) milk.



DID YOU KNOW?

One of the special behaviors that humans and great apes share is the ability to recognize themselves in mirrors. The only other animals known to do this are the bottle-nosed dolphins.

Intelligent Creatures ...Like Us!

Apes are the most humanlike of all animals. Like people, apes do their work during the day and sleep at night. They also live in families and communities like we do. And like humans, apes sometimes fight each other. Great apes, like humans, can learn to use tools.

In the wild, some of the apes known as "chimpanzees" use twigs and leaves as tools. They cleverly poke a twig inside the nests of ants and termites. Then they pull up the twig and eat the insects that cling to it. They make leaf cups to scoop up water. They also use leaves and twigs to clean themselves.

There are two types of apes: great apes and lesser apes. The great apes include orangutans, gorillas, chimpanzees, and bonobos. The lesser apes include gibbons and siamangs. Apes live mostly in the tropical forests of Africa and Asia. The orangutan, whose name means "person of the forest," is found today only on the islands of Borneo and Sumatra.



Family of chimpanzees.
© Paul A. Souders/Corbis

Gibbons and orangutans live in trees. Chimpanzees and bonobos live in trees and on the ground. Gorillas spend most of their time on the ground but sometimes sleep in trees. Most apes like to eat shoots, fruits, leaves, seeds, and grass. But while most apes will eat insects, little birds, birds' eggs, rodents, and other young animals, gorillas don't eat meat at all.

Chimpanzees and gorillas are intelligent animals. Scientists have even taught some of them to solve problems and use sign language.

Can you guess what the most noticeable physical difference between an ape and a monkey is? Apes don't have tails! And they don't have claws either. They have flat nails like we do.

SEARCH LIGHT

Why do you think that the ability to learn to make and use tools may indicate intelligence? (Hint: What do tools help you do?)

LEARN MORE! READ THESE ARTICLES…
CONGO (VOLUME 8) • JANE GOODALL (VOLUME 4) • MONKEYS (VOLUME 12)

Orangutans, such as these from Sumatra, are among the group called the "great apes." Great apes are considerably more intelligent than the "lesser apes" (gibbons).
© Tom Brakefield/Corbis

Answer: Tools help animals—including people—control and change their environment. Many animals have adapted to their surroundings in amazing ways. But very few besides apes and humans are able to make their surroundings adapt to them.



DID YOU KNOW?

Koko is a gorilla that has learned some basic American Sign Language. Not everyone agrees that she is actually communicating, but most agree that she has a large sign-language vocabulary.

Fierce but Shy Apes

Although gorillas look **ferocious**, they are really very quiet and shy. They live in family groups in the thickest parts of jungles, where they are not likely to be disturbed. At night, the father gorilla sleeps on the ground while the mother and the baby gorillas sleep in big nests of sticks and leaves. Sometimes they sleep in the lower branches of trees, where they are safe from **prowling** animals.

If you were to visit a gorilla's home, the male head of the group would take steps to protect his family. The first step would be to beat his chest, grunt, hoot, and roar in order to scare you away. Rather than fighting you, the gorilla would hope that you left on your own.



Mountain gorilla family in Rwanda.
© Yann Arthus-Bertrand/Corbis

A gorilla's feet, hands, and wrinkled face are bare and black. Its arms are so long they almost touch the ground, even when it is standing up. A gorilla's fur may be short or long, depending on where it lives. The short-haired gorilla lives in the hot, damp jungles of western Africa. The long-haired gorilla lives in the cooler high mountains of central Africa. There are not many gorillas of either kind left in the wild.

Gorillas and chimpanzees are the closest living animal "relatives" to humans. Along with the bonobos and the orangutans, these animals make up the "great apes." Like the other great apes, gorillas are very clever and can solve problems. They have good memories, and some can even learn sign language. You never know, someday you may sit down and have a chat with our cousin the gorilla!

SEARCH LIGHT

Why do you think people would make the mistake of thinking that gorillas are naturally fierce? (Hint: Look at the face of the gorilla in the large photo.)

LEARN MORE! READ THESE ARTICLES…
APES (VOLUME 12) • MONKEYS (VOLUME 12) • UGANDA (VOLUME 8)

A male mountain gorilla like this one may weigh as much as 400 pounds. Females are smaller at up to about 200 pounds.
© Kennan Ward/Corbis

Answer: When we see someone with a heavy brow, we usually suppose that person is frowning and angry. People who aren't used to seeing gorillas often think that the gorillas' expressions mean they have the same feelings as people.



DID YOU KNOW?

Although the gibbon's thumb helps it swing through the trees, it's a problem in other ways. The thumb is so far from the other fingers that the gibbon can't use it to control tools as a chimpanzee can.

The Swinging Singers

A gibbon is in the family of apes, but it is a "lesser ape." That's because it's smaller and less intelligent than such great apes as the chimpanzee and gorilla.

Gibbons are found in the tropical rainforests of Southeast Asia. There the gibbon uses its long arms to swing from branch to branch in the jungle's thick **canopy**. Its long, thin hands and feet help make the gibbon a very good **aerialist**. The gibbon's thumb starts from the wrist, and not the palm of its hand. This means the thumb acts like a hook on branches. The gibbon's feet also have a long split between the big toe and the other toes. This split provides a firm foothold on branches.

SEARCH LIGHT

Why is it a useful thing for gibbons to sing?

Because they are well suited for tree climbing, gibbons spend most of their time traveling along branches. And they don't have to leave the trees for dinner. They eat fruit, leaves, vegetables, and insects, all of which are found in the canopy.



White-handed gibbon, also called Malayan lar.
© Tom McHugh/Photo Researchers

Gibbons live in small family groups of a male, a female, and their young. The male and female "sing" in the morning and evening, and the males sometimes give solo performances. Gibbons are **territorial**, and singing lets everyone know that they are at home. The moment the family home is threatened, gibbons will hoot and leap and swing excitedly.

Gibbons are a great attraction at zoos because they're such fun to watch. Unfortunately, in the natural world they are in danger of disappearing altogether.

LEARN MORE! READ THESE ARTICLES…
APES (VOLUME 12) • ASIA (VOLUME 7) • RAINFORESTS (VOLUME 1)

The gray gibbon lives on the island of Borneo in Southeast Asia.
© Uwe Walz/Corbis

Answer: When gibbons sing, it lets other gibbons know where they are.



DID YOU KNOW?

A tail that can wrap around and hold things is called "prehensile." Having prehensile tails not only has made monkeys great climbers but has let them pick up things when their hands are busy—such as an extra banana for later!

SEARCH LIGHT

Most monkeys live in
a) the Himalayas.
b) hot deserts.
c) tropical rainforests.

Cute Clowns and Big Bullies

Visitors to a zoo are always attracted by the **antics** of monkeys. Many animals have tails. But none use them in as many ways as monkeys do. And no monkey uses its tail as cleverly as the spider monkey.



© Kennan Ward/Corbis



© Kevin Schafer/Corbis

(Top) Family of baboons in Tanzania, Africa; (bottom) Central American spider monkey sitting on a tree branch.

The furry spider monkey is the champion **acrobat** of the monkey world. Its long arms help it swing through trees. Its tail is skinny, long, and very strong. It can reach almost all the way around a thick tree trunk. The tail holds onto the tree like a hand, though it doesn't have fingers.

Monkeys can be as small as kittens. The spider monkey is small, but the tiny playful marmoset is smaller—sometimes no larger than a mouse. Howler monkeys are pretty big, about as big as a medium-sized dog. And their howl is so loud that they can be heard for miles. These monkeys **roam** through the trees in groups to look for food. Baboons are among the largest monkeys. They have doglike snouts and large sharp teeth. They like to fight each other to see which is the strongest. The winner becomes the leader of its pack.

Most monkeys feed mainly on fruits, flowers, and seeds. Some include insects and eggs in their diet. Baboons sometimes eat small mammals. Baboons live in the dry grasslands of Africa. And some macaques live in the Himalayas. But most monkeys live in warm places with lots of trees, such as tropical rainforests.

Monkeys often share their habitat with their close relatives the apes. And though apes are brainier, monkeys got a bonus too: they have tails and apes don't.

LEARN MORE! READ THESE ARTICLES…
MACAQUES (VOLUME 12) • A NIGERIAN FOLKTALE: THE MONKEY COURT (VOLUME 5)
RAINFORESTS (VOLUME 1)

Patas monkeys like this one live in bands in the grass and scrub regions of Central America.
© Kennan Ward/Corbis

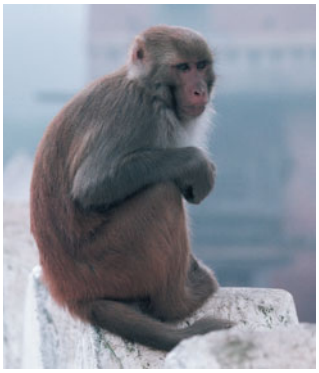
Answer: c) tropical rainforests.


SEARCH LIGHT
Why are macaques named after things like crabs (crab-eating macaque) and lion tails (lion-tailed macaque)? (Hint: How do people sometimes get their nicknames?)

Smart Monkeys!

The monkeys called "macaques" are known to be very intelligent. They're also known to be bad-tempered sometimes.

Macaques are found mainly in Asia. They have arms and legs of about the same length. Their fur is usually a shade of brown or black. Their **muzzles** are doglike. The tails of each kind of macaque are different. Some are long, some are of medium length, some are short, and some are missing altogether!



Rhesus monkey, a familiar macaque.
© Craig Lovell/Corbis

Macaques also come in different sizes. The crab-eating macaque is the smallest and the Tibetan macaque the largest. Males are larger and heavier than females. Crab-eating macaques are long-tailed monkeys with whiskery brown faces. They fish for crabs, lobsters, and shrimps. These macaques have been used in **research** to develop medicines that prevent the spread of **polio**. Lion-tailed macaques have black fur, with long gray hair around the neck and a puff of hair at the end of the tail. Their numbers are going down, and they are found only in a small part of southern India.

Have you ever heard the saying "See no evil, hear no evil, speak no evil"? It comes from the Japanese Buddhist religion, and the picture of three monkeys that usually illustrates the saying is of Japanese macaques. These are large, muscular, shaggy-haired monkeys with pink faces and short furry tails.

One of the best-known macaques is the rhesus monkey. These macaques have been used again and again in medical experiments. The Rh factor, which is one of the traits that doctors use to identify different blood types, is named after the *rh*esus monkey.

LEARN MORE! READ THESE ARTICLES…
BUDDHISM (VOLUME 5) • MONKEYS (VOLUME 12)
A NIGERIAN FOLKTALE: THE MONKEY COURT (VOLUME 5)

DID YOU KNOW?

Although rhesus monkeys are still often used in medical experiments, many people are asking scientists to stop using animals this way. As a result, many scientists now plan experiments so that fewer animals are used.

These Japanese macaques groom each other and play in Nagano. Macaques are known for their intelligence as well as their tempers.
© Michael S. Yamashita/Corbis

Answer: Macaques are commonly named for features that single them out. So the crab-eating macaque was named for its diet. The lion-tailed macaque got its name because its tail looks like that of a lion.



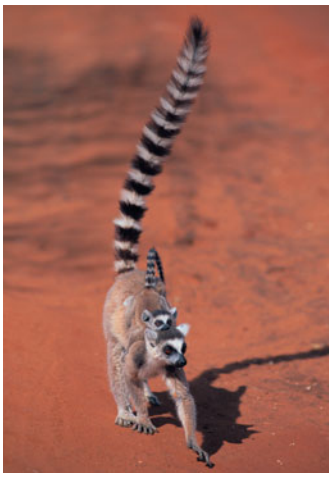
© Wolfgang Kaehler/Corbis

DID YOU KNOW?

The word "lemur" comes from the Latin word meaning "ghost." Perhaps this is because they move about silently at night and have large mysterious eyes.

Monkeys' Primitive Cousins

Lemurs have lived on Earth for a very long time, but they are found only in two places: Madagascar and the Comoro Islands, off the eastern coast of Africa. Millions of years ago, the island of Madagascar broke away from the continent of Africa. On the continent the monkeys were smarter than the lemurs, and the lemurs all died out. But no monkeys ever reached Madagascar, so the lemurs did well there without any competition.



Mother and baby ring-tailed lemurs.
© Kevin Schafer/Corbis

The best-known **species** of lemur, the ring-tailed lemur, has a long striped tail, with rings of black and white. Like most lemurs, it lives in trees but looks for food on the ground. When walking on the ground, the ring-tailed lemur waves its tail back and forth, high in the air over its back. But lemurs don't hang from trees by their tails, as some monkeys do. Instead lemurs' tails help them keep their balance and sail through the air from tree to tree, like the ring-tailed lemur in the large photo.

Lemurs are mild, shy animals, but they can be very curious if there's food around. They have a better sense of smell than monkeys do, and they use it to find fruits, leaves, insects, and small birds to eat. Most of this activity takes place at night, since lemurs like to sleep during the day.

Lemurs usually have only one baby at a time. The baby clings to its mother's underside and travels with her through the treetops. After a while, the baby lemur rides on its mother's back.

SEARCH LIGHT

Which of the following statements about lemurs are true?
- They live throughout Africa.
- Lemurs live side by side with monkeys.
- Lemurs hang from their tails like monkeys do.

LEARN MORE! READ THESE ARTICLES…
CHAMELEONS (VOLUME 11) • MADAGASCAR (VOLUME 8)
MONKEYS (VOLUME 12)

Answer: None of these statements are true.



DID YOU KNOW?

If you've ever been licked by a cat, then you know cats have rough tongues. They all do. This is because their tongues are covered with little sharp-edged pockets. The pockets help them lick up water and groom their fur.

The Tiger in Your House

If a cat lives with you, you have a member of a proud, sometimes fierce family as a pet. A tiger is a cat. So are lions, leopards, and cheetahs. Jaguars, lynx, and pumas are cats too.

All cats have five toes on their front paws and four on their back paws. They have long sharp claws. They use their claws for climbing trees, catching food, and protecting themselves against other animals. All cats but the cheetah can move their claws in and out.

SEARCH LIGHT

What's one thing that house cats have in common with lions? How are they different?



Pet cat being cuddled.
© Jose Luis Pelaez, Inc./Corbis

All cats purr, making a low, continuous, rattling hum. The purr is a relaxing, self-comforting sound that can signal a friendly mood. Many cats also meow, though "big cats" (such as lions and tigers) roar. Most cats don't like to go in water, but they can all swim if they have to. Cats can hear even faraway things. And they can see at night when it's very dark. They are also among the fastest animals. As a matter of fact, the cheetah can run faster than any other animal, but only for a short distance.

Though **domestic** cats are usually fed by their owners, cats naturally get their food by hunting. They'll eat anything from mice to zebras, depending on how big a cat they are. Some will eat fish, clams, and snails. When house cats play with string and small toys, they're displaying their ancient family hunting **instinct**.

Cats have existed on the Earth for a very long time. The people of Egypt were the first to keep cats as pets. They gave them milk in gold saucers and made statues of cats. When cats died, they were often buried in special graveyards or even made into mummies!

LEARN MORE! READ THESE ARTICLES…
EGYPT (VOLUME 8) • OCELOTS (VOLUME 12) • TIGERS (VOLUME 12)

The domestic cat (house cat) is one of the most popular house pets. In ancient Thailand, cats lived in kings' castles.
© Craig Lovell/Corbis

Answer: Both lions and house cats eat meat. They also both purr, have five toes on their front feet, and are very quick. But cats can live in your house. Lions are too big and too wild to be a pet.

SEARCH LIGHT

Most people think of tigers as hot-weather animals. But the smaller photograph shows how well tigers have adapted to the cold. What things show that tigers can live well in the snow?



Of the five kinds of tigers that remain, the Bengal tiger is the best known of these big cats. Here a mother Bengal tiger rests with her cubs.
© Tom Brakefield/Corbis

The Striped Big Cats

The tiger is the largest of the big cats. Unlike other big cats, tigers have stripes all over their bodies. The size and color of the stripes are different depending on the kind of tiger and where it is found.

The background color can range from a light yellow on the belly to a deep yellow or orange on the back. Dark stripes cover the tiger's head, body, and legs. There are also black rings on its tail. On a house cat these stripes would be called "tabby" marks.

The coloring of the tiger acts as **camouflage**, making it hard for its **prey** to see it crouching in the grass. Tigers prey on many wild animals. But they will also kill cattle, horses, sheep, and goats. If it gets very hungry, a tiger can even kill an ox. Tigers usually stay away from large animals such as elephants, buffalo, and bears. They also try to stay away from people. When they do attack people, it is usually either to save themselves or because there is a **shortage** of other food. Sometimes an injured tiger will attack a person.



Siberian tiger walks through the snow.
© W. Perry Conway/Corbis

Tigers are found only in Asia. There used to be eight different kinds of tigers, but only five remain. The best known is the Bengal tiger, found mainly in India. The rare Siberian tiger is larger and has longer, softer fur. The Bengal and Siberian tigers are the ones most often seen in zoos. The other kinds of tigers are the South China, Indo-Chinese, and Sumatran. There are no more Caspian, Javan, or Bali tigers left in the world. These tigers are extinct.

DID YOU KNOW?

Tigers can purr just like house cats. The difference is that house cats can keep up a constant purr, while tigers purr only when they breathe out.

LEARN MORE! READ THESE ARTICLES…
CATS (VOLUME 12) • A KOREAN FOLKTALE: THE TIGER IN THE TRAP (VOLUME 5)
LIONS (VOLUME 12)

Answer: First, this Siberian tiger has a thick coat of fur, great for cold weather. You may also have noticed the tiger's large feet, ideal for walking on snow. Large feet act as snowshoes and keep the tiger from sinking too far into the snow.

Meet the King and Queen of Beasts

Unlike all other big cats, lions live in groups, called "prides." Prides of lions can be found in grasslands, desert areas, and rocky hills. But except for African animal parks, there are not many places left in the world where lions still run free. Today the only wild lions outside Africa are a few hundred protected in the Gir Forest National Park of northwestern India.

Each pride is made up of lionesses (female lions) of different ages, all of which are related, plus their cubs and one or two adult male lions. A pride may have as few as 4 or as many as 37 members. But about 15 is the usual size.



Male lion.
© Randy Wells/Corbis

During the day lions lie in the shade or climb trees and rest on the branches. But lions become very active at night. Like other cats, they can see well in dim light and like to hunt in the dark. Lions hunt grazing animals, such as zebras, antelope, buffalo, and gazelles.

Most lions will not attack a human or a large animal such as a giraffe or a hippopotamus. Those that live near a village may carry away donkeys, goats, or even small cows. Imagine how strong a lion's teeth and neck have to be to lift a cow over a fence!

Male lions are usually identified by their big fur collars called "manes" and by the dark **tuft** of hair on their tails. Females are the same sandy color as males, but they are a little smaller. Lion cubs have dark spots when they are born.

You may think lions only roar, but they also growl, grunt, and cough. Sometimes they even purr like giant pussycats.

SEARCH LIGHT

The male lion in the smaller photo has a big shaggy mane. Why do you think male lions have manes? (Hint: Male lions guard and protect the pride's territory.)

LEARN MORE! READ THESE ARTICLES…
CATS (VOLUME 12) • NAMIBIA (VOLUME 8) • TIGERS (VOLUME 12)

DID YOU KNOW?
A lion's tongue is so rough that it could lick the skin right off your body.



Female lions such as these do most of the hunting. The males usually roar to "scare up" the prey while the females lie in wait.
© Tom Brakefield/Corbis

Answer: A male lion has to look fierce and strong to scare off other animals. The mane makes him look bigger and scarier.

DID YOU KNOW?

Unlike their cousins the housecats, ocelots don't mind a swim now and then. They're quite good at it!



© Tom Brakefield/Corbis

Spotted American Cats

When we think of cats, we usually think of small housecats or big cats like lions and tigers. But there are many kinds of cats of all sizes that still live in the wild. One such cat is the ocelot. The ocelot is about twice the size of a housecat.



Ocelot of Costa Rica, in Central America.
© Kevin Schafer/Corbis

The ocelot is found in the Western Hemisphere, from Texas in the southwestern United States down to Argentina in South America. It lives in several different habitats, including tropical forests, grasslands, and brush.

The ocelot's fur is short, smooth, and yellowish gray. There are small black spots on its head, two black stripes on each cheek, and four or five black stripes along its neck. This coat is good **camouflage** for the ocelot. It makes the animal hard to see in the leafy shade, for example. But its patterned fur is also attractive to humans. People hunt the ocelot for its fur, and so the number of ocelots in the wild has shrunk. In the United States, it's illegal to hunt ocelots or to sell their fur.

In the wild, ocelots generally like to live alone. They sleep during the day, usually in a tree or in other heavy plant cover. At night they hunt for rodents, birds, reptiles, and fish. However, they will also kill pets and other small **domestic** animals left outdoors.

Ocelot kittens start hunting with their mothers when they are about three months old. When they are a year old, they leave the mother and start living on their own.

Some people try to keep ocelots as pets, since they are easily tamed when they're kittens. But when they grow up, the adult ocelots can sometimes be bad-tempered.



Look at the small photo. Why do you think it's hard to know just how many ocelots there are in some areas? (Hint: What do the spots on the ocelot's fur do for it?)

LEARN MORE! READ THESE ARTICLES…
CATS (VOLUME 12) • CENTRAL AMERICA (VOLUME 9)
TIGERS (VOLUME 12)

Answer: Ocelots sleep during the day in trees and other areas with dense leaf cover. An ocelot's spotted coat helps it blend into a leafy background and makes it difficult to see, day or night.



SEARCH LIGHT

About how much taller is the tallest dog that the article mentions than the shortest one mentioned?

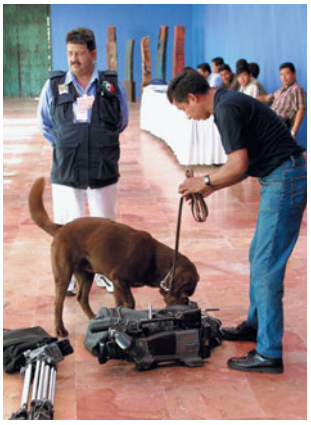
Dogs, some of the most popular animals in the world, come in many shapes and sizes. They were among the first animals to be domesticated, or tamed, by humans.
© Tim Davis/Corbis

The Loyal Companions

DID YOU KNOW?
The ancient Egyptian god known as Anubis had a man's body and the head of a jackal—a member of the same family as dogs and wolves.

For thousands of years dogs have held a special place in people's hearts. They are known as "man's best friend." This is because they can be so brave, loving, and loyal. Dogs are used to living in groups called "packs" and obeying a pack leader. Now humans are their pack leaders. Dogs depend on people for food—mostly meat—and perform services in return.

Since prehistoric times dogs have worked for people. They have tracked game animals and retrieved them on land and water, guarded houses, and pulled sleds. They have delivered messages, herded sheep, and even rescued people trapped in snow. They sniff out illegal drugs and explosives, help police make arrests, and guide visually impaired people. Fast-running dogs are used in races.



Security guard with police dog examining bags at a convention in Mexico.
© AFP/Corbis

Dogs have many abilities and traits that make them useful. Sharp teeth are only one of these. Most dogs can smell fainter odors and hear higher notes than any person. And although dogs don't see many colors, they are very good at noticing movement.

Dogs come in many shapes, sizes, and **temperaments**. A big Irish wolfhound stands about 32 inches high at the withers, or top of the shoulders. The chihuahua, however, stands about only 5 inches tall. Herding dogs such as collies tend to be intelligent. Terriers, which were bred to catch rodents, were originally quite fierce. But many different breeds of dogs now make playful family pets.

Dogs have been **domesticated** for much of human history. When Pompeii—the ancient Italian city that was buried under a volcano in AD 79—was dug out, a dog was found lying across a child. Apparently it was trying to protect the youngster.

LEARN MORE! READ THESE ARTICLES…
AESOP'S FABLES: ANIMAL STORIES THAT TEACH (VOLUME 5)
CATS (VOLUME 12) • WOLVES (VOLUME 12)

Answer: On average, the difference between the Irish wolfhound and the chihuahua is 27 inches.



The gray wolf is also known as the "timber wolf." In spite of its name, the gray wolf may be brown, reddish, black, or whitish on its back.
© Tom Brakefield/Corbis

SEARCH LIGHT

Fill in the blank: The alpha male and female are the pack _____.

Noble Hunters, Strong Families

Wolves are very intelligent animals. They are also quite social, living and hunting in family packs. They have a strict ranking system, with a **dominant** female and male—the alpha pair—leading the pack. Only the alpha pair mate and have puppies, though the whole pack helps raise the young. Four to seven pups are born at a time.

Packs have 7 to 30 members, depending on how much **prey** is available. Each pack patrols a home territory of 40 to more than 400 square miles. They define their territory with scent markings and with growls, barks, and their legendary howls.



Adult gray wolves and cub.
© Tom Brakefield/Corbis

Even though they're not terribly fast, wolves are excellent hunters. They tackle much larger animals and can even bring down huge moose and bison. Usually they hunt caribou and elk, but they might even eat mice if that's all they can find.

Wolves hunt by using their keen senses and group cooperation. They work by tiring out their prey, sometimes chasing it all night. At the end they encircle their prey, waiting for the chance to attack unexpectedly. As soon as the animal has been brought down, the pack will feed. The highest-ranking members eat first and get all the tastiest bits.

Wolves belong to the canine family. Their relatives include jackals, coyotes, dingoes, New Guinea singing dogs, wild dogs of Africa, and the **domestic** dogs people keep as pets.

Scientists believe that wolves may be the original canine from which the others descended. However, only three **species** of wolves remain today. There are gray wolves in Europe, Asia, Canada, Alaska, and Yellowstone Park (U.S.). A few hundred Ethiopian wolves live in a small part of Africa. Red wolves now survive mostly in **captivity**, but they used to roam the southeastern United States.

DID YOU KNOW?

Wolves have often proved helpful wherever they live. They help control the numbers of rodents and deer. And by leaving dead prey remains behind, wolves provide meals for many other animals.

LEARN MORE! READ THESE ARTICLES…
BISON (VOLUME 12) • CANADA: LAND OF LONG WINTERS (VOLUME 9)
DOGS (VOLUME 12)

Answer: The alpha male and female are the pack leaders.

Howling at the Moon

A lone coyote howling at the Moon may be a familiar sight for anyone who's watched cowboy movies. It's true that the coyote is famous for its night concerts. Sometimes it utters short yaps. Other times it makes long howls. This is how coyotes talk, but to people coyotes sound sad.

The coyote is sometimes called the "little wolf" or "brush wolf." This is because it is related to the wolf. Both are members of the dog family. But the coyote is smaller than the wolf.

The coyote's fur is long and rough. It is grayish brown in color, although there is sometimes a patch of white at the throat and belly. The **muzzle** is narrow and has a darker color. A coyote's legs may be reddish and its tail bushy and black-tipped.

SEARCH LIGHT

Coyotes are part of what family?
a) cat
b) dog
c) Jones

The coyote is most active after dark. It hunts for its food alone or in a group called a "pack." It generally feeds on **rodents** and **hares**. A coyote can follow and chase animals for long distances. Sometimes the coyote likes to eat vegetables, fruit, and insects.



Coyote roaming the forest.
© Royalty-Free/Corbis

To find a mate, a coyote may travel for miles. The coyote pair, the male and the female, sometimes stay together for life. Both parents look after the pups. The young live with their parents for as long as three years. They help to look after and protect their brothers and sisters born after them.

Coyotes are found mostly in North America. Sometimes they have been hunted and killed to protect farm animals. But they can still be found in many areas where people live.

LEARN MORE! READ THESE ARTICLES…
GRAND CANYON (VOLUME 9) • RABBITS AND HARES (VOLUME 12)
WOLVES (VOLUME 12)

Coyotes are well known for the various sounds they make. At times it appears that they're howling at the Moon.
© Jeff Vanuga/Corbis



DID YOU KNOW?

Most people think of the Wild West when they think of coyotes. But coyotes have been showing up all over the United States. Some have even been spotted in New York City.

Answer: b) dog


SEARCH LIGHT
Why do you suppose raccoons are sometimes called "bandits"?

Masked Bandits

The raccoon is a smart and curious animal, easily recognized by the black mask across its eyes and the black bands ringing its bushy tail. These bands give the raccoon its nickname, "ringtail."

Many people know raccoons as animals that dig through trash during the night at campsites and in city garbage cans. They're **nocturnal** animals, sleeping in the daytime, and they eat many different kinds of foods. Raccoons often search in shallow water for food such as frogs and crayfish, and this once caused people to believe that raccoons washed their food.

DID YOU KNOW?
The name "raccoon" comes from an American Indian word for the animal. Other animal names taken from Native American languages include caribou, opossum, skunk, and woodchuck.

Raccoons' bodies usually measure 20 to 26 inches long, and their tails are about 10 inches long. They weigh about 22 pounds, though a large male may weigh more than twice that amount. A raccoon's **forefeet** look like slender human hands, and the creature can handle objects quickly and easily.



A raccoon at a pond.
© D. Robert & Lorri Franz/Corbis

Raccoons range from northern Alberta, in Canada, through most of the United States and into South America. They like wooded areas near water, but many also live in cities. They swim and climb, and they often live together high in hollow trees, in openings in rocks, in tree stumps, or in other animals' burrows. In cities they are often found living in the attics of houses.

In spring a female raccoon usually has three or four babies. When they are 10 or 11 weeks old, the mother starts taking them on short outings. The young stay with their mother for about a year.

Raccoons are considered pests in some areas, and in the eastern United States they are the primary carrier of the disease **rabies**.

LEARN MORE! READ THESE ARTICLES…
NORTH AMERICA (VOLUME 9) • PANDAS (VOLUME 12) • PORCUPINES (VOLUME 12)

Raccoons that are used to being around people may seem so friendly and cute that you want to pick them up. Don't! They're still wild animals with sharp teeth, and they may carry diseases.
© Joe McDonald/Corbis

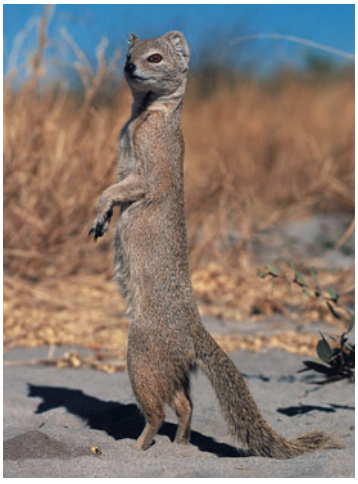


Answer: They are called bandits because they look like they are wearing masks and because they steal food from garbage cans.

Snakes' Feared Rivals

Curled up in its soft burrow, the shaggy-haired mongoose looks gentle and harmless. But when it's hungry, a mongoose is a very dangerous creature. Some people call the mongoose "furred lightning" because it can move faster than a snake can strike. This makes the mongoose the most famous snake killer in the world.

There are over 40 species of mongoose living in Asia, Africa, and Europe. India is home to both the mongoose and the cobra, a highly poisonous snake. When a mongoose meets a cobra, the mongoose uses its speed and sharp teeth to grab the snake behind the head. Then it hits the cobra against the ground until the snake is dead.



Yellow mongoose, also called meerkat.
© Martin Harvey—Gallo Images/Corbis

Because of their snake-fighting ways, mongooses are very welcome in places where there are many poisonous snakes. Sometimes people in these places keep mongooses as pets. But mongooses aren't allowed in most countries of the world, not even to be kept in zoos. It is dangerous to bring even a few mongooses into a country where they do not naturally live.

Some countries have made the mistake of **importing** mongooses to help kill snakes and rats. The problem is that once the mongooses have killed and eaten most of the snakes and rats, they still need food. So the mongooses hunt the other small animals that they can catch, and they can catch almost anything. No bird, rabbit, squirrel, or chipmunk is safe from the "terror of the fields." Few animals are quick enough to escape a hungry mongoose.

LEARN MORE! READ THESE ARTICLES…
INDIA (VOLUME 7) • KING COBRAS (VOLUME 11)
THUNDER AND LIGHTNING (VOLUME 1)

SEARCH LIGHT

Can you tell from the large picture how a mongoose keeps from getting bitten by snakes? (Hint: The snake's tail is still on the ground.)

DID YOU KNOW?

The children's story "Rikki-Tikki-Tavi" by Rudyard Kipling is about a mongoose that saves a human family from a cobra.



This yellow mongoose in Botswana has just won its battle with a snake.
© Gallo Images/Corbis

Answer: The mongoose grabs the snake just behind the head so that the snake can't reach it with its fangs.

Cuddly Exotic Bears

When you think of pandas, you probably picture a big cuddly black-and-white bear. But there are actually two kinds of pandas: the giant panda and the lesser panda. The giant panda is the familiar black-and-white animal, which is found mostly in the forests of central China. The lesser panda looks rather like a raccoon.

The giant panda grows to about 5 feet long and 220 pounds. Its favorite food is bamboo, and it eats almost nothing else. It needs to consume large quantities of bamboo to get the nourishment that its body needs, so it spends about 10 to 12 hours a day eating. **Captive** pandas, like those found in zoos, have a broader diet. In addition to bamboo, they may eat cereals, milk, and garden vegetables.



Lesser panda.
© Keren Su/Corbis

The lesser panda is smaller and has rich reddish brown fur on its back and black fur on its belly. It has a bushy ringed tail that makes it look a little like a raccoon. The lesser panda is sometimes called a "cat bear" or "red bear cat." It's also found in China, as well as in the South Asian countries of Myanmar, Nepal, and India. Like its giant cousin, the lesser panda also eats bamboo. But it also eats grasses, fruits, other plant material, and, sometimes, small animals.

Giant pandas are endangered animals. Their natural habitat keeps shrinking each year. But many countries are trying to help China preserve its bamboo forests so that pandas have a place to live. People are also working to increase the number of pandas by breeding them in zoos.

LEARN MORE! READ THESE ARTICLES…
BAMBOO (VOLUME 10) • CHINA (VOLUME 7) • KOALAS (VOLUME 12)

There are probably only about 1,000 giant pandas left in the wild. Another 100 or so live in zoos.
© Keren Su/Corbis



SEARCH LIGHT

In the wild, giant pandas get most of their food from bamboo plants. What will happen if people in China keep cutting down the bamboo forests?

DID YOU KNOW?

Many people call the panda a panda bear, but for a long time scientists weren't sure if it really *was* a bear. Today, in spite of some non-bear traits, the panda is usually classified in the bear family.

Answer: If people continue to cut down the bamboo forests, then giant pandas will starve and die out. They simply couldn't adjust to a life without bamboo.

Strong and Graceful Animal Friends

The horse has been a friend to human beings for thousands of years. Long ago horses were used to carry soldiers onto the battlefield. They have also pulled carriages, carts, and heavy farm machinery. Today people ride horses and use them for hunting, playing the game of **polo**, and racing. Horses even perform in circuses.



A herd of galloping horses in New Zealand.
© Kit Houghton/Corbis

The reason horses have been used in so many ways is that they are large and strong. A typical horse weighs more than 1,000 pounds! It may stand more than 5 feet tall at the shoulder. From its nose to its tail, it's about 9 feet long.

The legs of a horse are strong even though they look very slender. When a horse is moving, the back legs give it the power to move forward, and the front legs give it support.

A horse's foot is really just one large toe, and the hoof is like a thick toenail. The part of the hoof that can be seen when the horse's feet are on the ground is called the "wall." Horseshoes are fitted on the underpart of the wall to protect it from cracking.

A horse's eyes are larger than those of any other land animal. But horses have a problem with sight. A horse sees things first with one eye and then with the other. So even small **stationary** objects appear to leap. This frightens the horse. To keep the horse calm, the owner fits pads called blinders, or blinkers, on the outer sides of the eyes. This prevents the horse from seeing things that might frighten it.

SEARCH LIGHT

Fill in the blank: The outside part of a horse's hoof is called the "_____."

LEARN MORE! READ THESE ARTICLES…
CAMELS (VOLUME 12) • TAPIRS (VOLUME 12)
TRANSPORTATION (VOLUME 2)

DID YOU KNOW?

Ruins of some of the world's earliest civilizations have included pictures and sculptures of horses. This proves that people have been working with horses for thousands of years.



Many people still enjoy horseback riding. This woman is riding seated in what's called a "stock saddle." American ranchers and cowboys developed this comfortable seat. The more formal "English saddle" is used with many show horses.

© Royalty-Free/Corbis

Answer: The outside part of a horse's hoof is called the "wall."

Beasts of Burden

SEARCH LIGHT

What's one way that donkeys are like horses? What's one way that they're different?

Donkeys were among the first animals to be tamed by humans. The first donkeys probably came from Asia. People ride donkeys and use them to carry heavy loads, or **burdens**. Because they are surefooted, donkeys are useful on rough or hilly ground.

Donkeys play an important part in the lives of people in the mountains of Ethiopia and other parts of northeastern Africa. They are also important to the people in the high plains of Tibet and in parts of South America.

Donkeys today come in different sizes. From the ground to the shoulder, the American donkey is generally about 66 inches tall, while the Sicilian donkey is only about 32 inches tall. The donkey's long ears are its most noticeable feature. In color, donkeys are usually white, gray, or black or shades in between. Most have a dark stripe from the mane to the tail. The mane of the donkey is short and tends to stick out.



Donkey carries load through the streets of Colombia, South America.
© Jeremy Horner/Corbis

Donkeys can survive on almost any kind of plant matter, but usually they eat hay or grass. They are gentle and patient and become fond of their masters if they are treated kindly. These are a few of the reasons why some people tend to prefer donkeys to horses or mules.

The donkey is related to the horse. Sometimes people **crossbreed** a donkey and a horse. When the father is a donkey and the mother is a horse, the baby is called a mule. Donkeys are sometimes called "burros," which is the Spanish word for the animal.

LEARN MORE! READ THESE ARTICLES…
CAMELS (VOLUME 12) • HORSES (VOLUME 12) • TRANSPORTATION (VOLUME 2)



This donkey shows how important these animals can be to their owners. Donkeys are gentle and patient and become fond of their masters if they are treated kindly.
© Galen Rowell/Corbis

DID YOU KNOW?

Donkeys can be famously stubborn. If they don't want to move, then no amount of pushing or pulling will budge them.

Answer: Donkeys and horses look very much alike, with similar faces, legs, bodies, tails, and manes. Horses, however, are generally much taller than donkeys. And donkeys are generally considered better pack animals and are more patient than horses.

SEARCH LIGHT

What are three reasons that tapirs are becoming endangered?



This Malayan tapir is related to the horse, but it looks more like a pig. To add to the confusion, its baby is called a "calf," like a cow's baby.

© Kevin Schafer/Corbis

DID YOU KNOW?

It takes about 13 months for a tapir baby to be born. That might seem like a lot to us humans, who take only 9 months. But it's nothing to the elephant, which carries its baby for 24 months.

Shy Cousins of the Horse and Rhino

The tapir is a strange-looking animal. It has a stumpy tail and a soft flexible snout like a short elephant trunk. Some tapirs are brown or gray. Others have a black head and legs, with a dirty-white back and belly. Its feet have hooves, just like a horse.

In fact, tapirs are related to horses, and to rhinos too. You wouldn't know it to look at them, since tapirs don't look much like either animal. But when it's feeding, the tapir uses its nose to move things aside and graze on plants, like a horse does.



South American tapir of Ecuador.
© Michael & Patricia Fogden/Corbis

The shy, **solitary** tapir is found in Myanmar, Malaysia, Thailand, and Sumatra. It also lives in the forests of Central and South America. The tapirs in Central America are the largest, about as big as a donkey.

Tapirs usually live deep in the forest near swamps and rivers. They're good swimmers and often escape from enemies into the water. In South America the tapir's main enemy is the jaguar. In Asia it has to beware of tigers.

But the tapir's greatest enemy, no matter where it lives, is people. Tapirs are endangered, which means their numbers in the wild are decreasing. This is because people cut down forests for wood and clear land to grow crops, destroying the home of the tapir and of many other animals as well. And besides the threat from tigers and jaguars, tapirs also face human hunters who kill them for food and sport.

With luck, people will soon pay more attention to preserving this unusual animal in the wild.

LEARN MORE! READ THESE ARTICLES…
CENTRAL AMERICA (VOLUME 9) • HORSES (VOLUME 12) • THAILAND (VOLUME 7)

Answer: They are hunted by jaguars and tigers.
They are hunted by people.
People cut down their forest homes.

Most Valuable Creatures on Earth

In Iran they were sacrificed to the gods. In India they are treated as **sacred**. In the ancient world they were used as money. Almost everywhere they have been used as a source of milk, butter, cheese, and meat. Cattle have, for thousands of years, been humanity's most valuable animals.

The word "cattle" once meant all kinds of domestic animals. The word comes from the Latin word *capitale*, which means "wealth" or "property." The word "cattle" is used now only for certain **bovines**, the animal group that includes oxen, bison, and buffalo.

SEARCH LIGHT

Fill in the blanks: A _____ is a male bovine, and a _____ is a female.



© Hans Georg Roth/Corbis



© Royalty-Free/Corbis

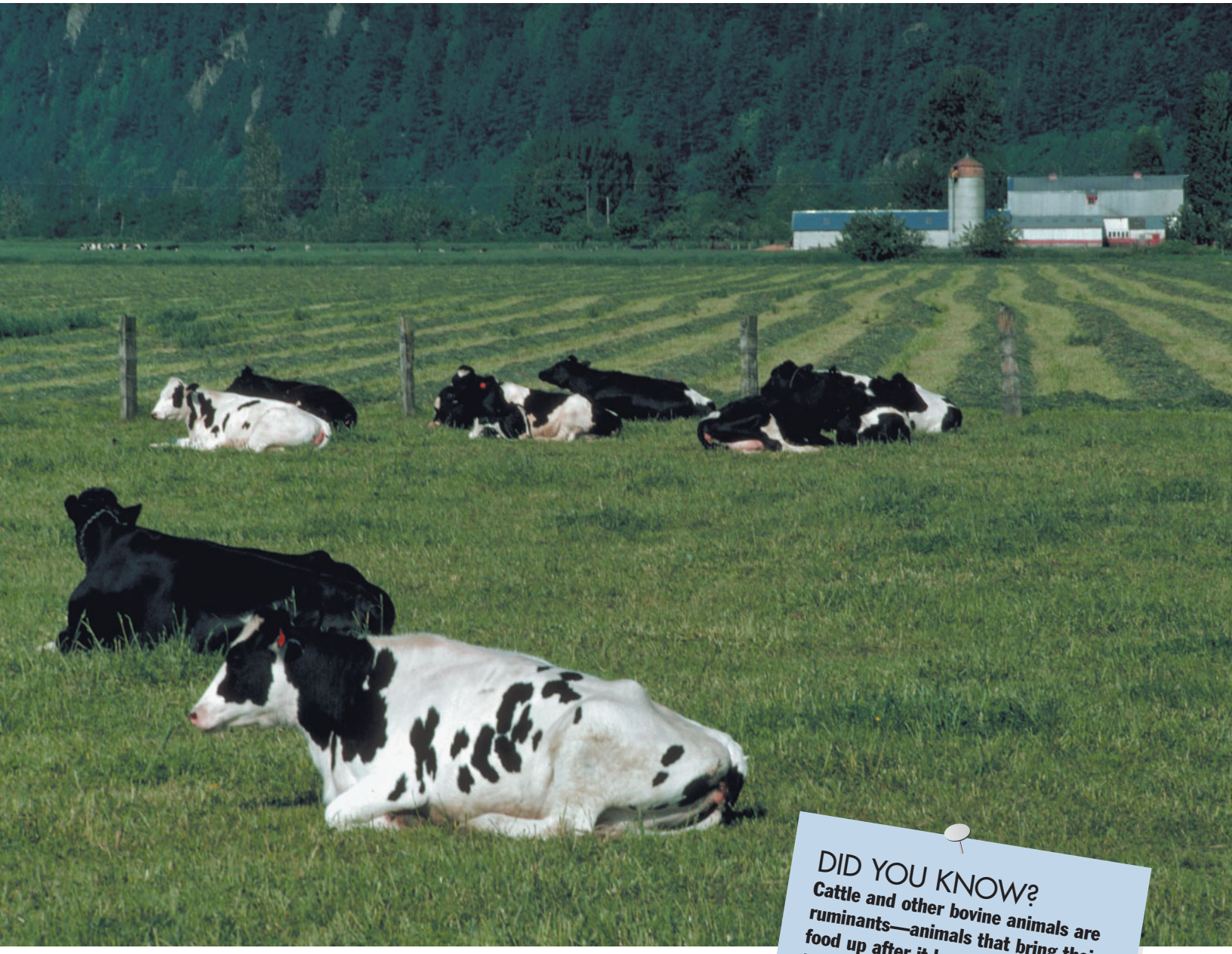
(Top) Cows at a livestock market. (Bottom) Longhorn resting under a tree.

A bull is a male bovine, and a cow is a female—though often we say "cow" for both. A calf is the young of either sex. A bovine between 1 and 2 years old is called a "yearling." The life span of cattle would be about 20 years, but nearly all are sent to slaughter much earlier.

Today's domestic cattle of Africa, Asia, and Indonesia are very much like the cattle that lived in those areas 2,000 years ago. In Europe and America, however, cattle ranchers have produced new types. Cattle today are classified as dairy, beef, or **dual**-purpose types. Dual-purpose means that they are used for both dairy and beef.

One popular cow is the Brown Swiss breed. It is classified as a dairy cow in the United States and as a dual-purpose type in other countries. It may be one of the oldest breeds of cattle. A grown Brown Swiss cow weighs about 1,500 pounds. Other popular breeds include the Guernsey, the Jersey, and the Holstein.

LEARN MORE! READ THESE ARTICLES…
BISON (VOLUME 12) • ENERGY (VOLUME 2) • LOUIS PASTEUR (VOLUME 4)



Cattle have served many purposes to human beings over the years. Holstein cows such as these can be a source of dairy products.
© Gunter Marx Photography/Corbis

DID YOU KNOW?

Cattle and other bovine animals are ruminants—animals that bring their food up after it has been swallowed, to be rechewed and reswallowed. This process is known as "chewing the cud."

Answer: A bull is a male bovine, and a cow is a female.



SEARCH LIGHT

The Cape buffalo are large animals with large horns. They were once hunted to the point of being endangered. Why do you think people were hunting them?

In China, as in other parts of the world, water buffalo like this one help plow the field.
© Vince Streano/Corbis

Water-Loving Beasts

DID YOU KNOW?
Mozzarella cheese used to be made from water buffalo milk. True mozzarella still is.

The American animal that most people call a buffalo is actually a bison. True buffalo live in warm places in Asia or Africa. The best known among them is the Indian buffalo. It's also called a water buffalo. That's because these animals love to lie in the water or in mud. It helps them to stay cool and keep the flies away. Buffalo eat mostly grass.

Asian water buffalo have been raised and used by people for many, many years. They carry loads and pull carts. Some help farmers to plow fields, especially in India and East Asia. But that's not all. Some people in Asia eat buffalo meat. They use its skin for making leather goods. Buttons and bangles and many other things are made from the buffalo's horns. And buffalo milk is rich and full of cream.

The water buffalo of Asia are heavily built and look like oxen. Some may be taller than five feet at the shoulder. The smallest buffalo are the anoa of Indonesia and the tamarau of the Philippines. They are just about three feet high.



Mud-caked buffalo in Kenya.
© Yann Arthus-Bertrand/Corbis

All buffalo have horns, but not all buffalo horns are the same. Some curve backward. Some curve inward. The Asian water buffalo and the African Cape buffalo have the biggest horns. The horns of the anoa are short and nearly straight.

Sadly, there are few Cape buffalo now. Because they were considered dangerous to humans, they have been overhunted.

LEARN MORE! READ THESE ARTICLES…
AFRICA (VOLUME 8) • ASIA (VOLUME 7) • BISON (VOLUME 12)

Answer: Cape buffalo were overhunted for two main reasons. First, hunters enjoyed having the Cape buffalo—like other large animals—as a trophy, mainly for its large horns. Second, people were afraid of the Cape buffalo and thought it was dangerous. So, like wolves and snakes in other countries, the buffalo were often killed on sight.

Majestic American Beasts

The bison, or American buffalo, is the largest land animal in North America. A bull bison stands 6 1/2 feet tall at the shoulder and weighs almost a ton. Bison once roamed the **vast** plains in herds of many thousands of animals. The shaggy bison were looking for fresh fields of tasty grass.



Bison grazing in Wyoming's Yellowstone National Park.
© Darrell Gulin/Corbis

In order to live on the cold Great Plains, the American Indians needed rich food, warm clothing, and strong shelter. The herds of bison gave them all of these things. Bison meat was their daily food. They got warm clothes and blankets from the thick skin. They also used the skin to make **moccasins** and tents. They used the horns to make containers and the bones to make tools.

The Plains Indians killed just enough bison for their needs. The European settlers were different. With their guns they could kill bison in larger numbers than the Indians had with their arrows and spears. Some of the settlers used the bison they killed. But other people killed for sport or just to keep animals from being used by the Indians.

So there came a time when very few bison were left. Animal lovers tried to make others see how important it was to let the bison live. The governments of Canada and the United States finally put all the bison they could find into national parks and other safe places.

There probably will never be millions of bison again, but there are thousands today. There is also a European bison called the "wisent." The wisent is even larger than the American bison—and it is even more scarce.



The U.S. Army once killed bison to make the Plains Indians surrender. Why would killing the bison accomplish this? (Hint: What did the Indians get from the bison besides food?)

LEARN MORE! READ THESE ARTICLES…
AMERICAN INDIANS (VOLUME 4) • BUFFALO (VOLUME 12)
NORTH AMERICA (VOLUME 9)

Much like the stampeding herd pictured here, the American bison once roamed the North American plains in great numbers.
© Layne Kennedy/Corbis



DID YOU KNOW?

The bison was once so plentiful that it even ended up on a U.S. coin, the "buffalo nickel." On the other side was the head of a Plains Indian.

Answer: The Plains Indians followed the great bison herds as they moved throughout the year. They got their food, tents, clothing, and tools from the animals. When the army killed the bison, they were killing everything the Plains Indians used for survival.

Shaggy Beasts of Tibet

A yak is a heavy, strong ox with shaggy black hair and humped shoulders. Yaks and other oxen are part of the animal family that includes cattle, buffalo, antelopes, and goats. They live on the high Himalayan mountain **plateaus** of Tibet (part of China), Nepal, and Bhutan. Yaks graze on grass and need a lot of water, often eating snow in winter.



Nepalese boy leads yak.
© Nik Wheeler/Corbis

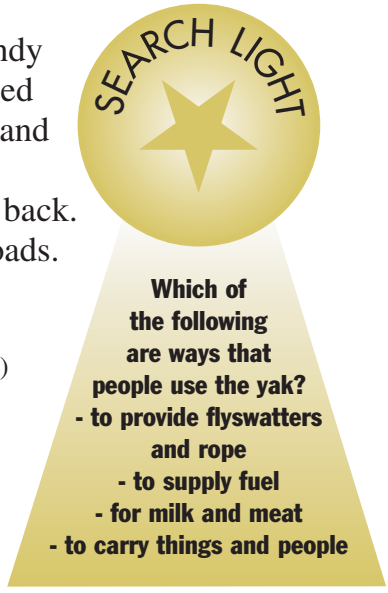
Some yaks live in the wild. But their numbers have decreased so much that soon none may be left. Bulls (male yaks) in the wild can grow as tall as six feet and may weigh twice as much as a horse. Cows (female yaks) are usually smaller and weigh less. Wild yaks live in large herds of cows, young bulls, and calves. Older bulls stay together in smaller groups.

People have also **domesticated** yaks, and these animals are plentiful. Domestic yaks are often patched black and white, and they are smaller than wild yaks. They also have longer hair than wild yaks.

In the lives of Himalayan mountain people, the domestic yak is extremely useful. People eat its meat and drink its milk. They make leather from its hide and twist its long hair into ropes and cords. Even the tail is not wasted—it is used as a fly swatter!

Because trees don't grow on the higher areas of the windy plateaus, there's very little wood available. So the yak's dried **dung** is an important fuel source to make fires for warmth and cooking. The yak is also useful for transport. Tibetans and Nepalese travel in the plateaus and mountains on the yak's back. They also use this valuable animal to carry or pull heavy loads.

LEARN MORE! READ THESE ARTICLES…
BUFFALO (VOLUME 12) • CATTLE (VOLUME 12) • NEPAL (VOLUME 7)





Like the camel and the donkey in other cultures, the Himalayan yak is an extremely important beast of burden.
© Keren Su/Corbis

DID YOU KNOW?

The yak also contributes to some religious ceremonies. Butter made from yak milk provides fuel for lamps used on shrines and in certain Tibetan Buddhist celebrations.

Answer: All of these things are ways people have found to make use of the yak.



Tanzania's Serengeti Plain is rich in wildlife. These male Grant's gazelles live in Serengeti National Park.
© Kevin Schafer/Corbis

DID YOU KNOW?
Gazelles have remarkable horns. Male gazelles sometimes lock horns and fight fiercely over territory.

The Bouncers

Gazelles are a graceful fast-moving kind of antelope—part of the family that includes cattle and sheep. Gazelles live on the open plains and **semidesert** regions of Africa. They're usually found in herds of 5 to 20 animals. Sometimes hundreds of gazelles move together, forming one large herd.

Gazelles are herbivores. That means they eat mainly herbs, bushes, and rough desert grasses. Some gazelles need more water than many plains animals. These gazelles often eat early in the morning or at night, when leaves contain more water than they do in the heat of the day.



Thomson's gazelle in Tanzania.
© Tom Brakefield/Corbis

SEARCH LIGHT

What are the two reasons for the decline in the numbers of wild gazelles?

Gazelles do one very unusual thing. As they travel in the herd, some of them bounce on all four legs. They keep their legs stiff, and as they hop, all four legs leave and touch the ground at the same time. It's not clear why they sometimes move this way. Perhaps they're just playing and having a good time. But there may be a more important reason for doing this. As they bounce in the air, the gazelles can see enemies moving toward the herd. The rest of the herd can then be warned of danger, and all can run to a safe place. And gazelles are swift runners.

Gazelle meat is a good source of food for people in areas where gazelles are found. The gazelle is also food for **predators** on the plains. But the population of some kinds of gazelles is shrinking because they are often overhunted for their meat. Their **habitat** is also disappearing. Desert areas are becoming drier with fewer trees, so these areas are becoming less suitable for gazelles.

LEARN MORE! READ THESE ARTICLES…
CATTLE (VOLUME 12) • DESERTS (VOLUME 1) • NAIROBI, KENYA (VOLUME 8)

Answer: The numbers of gazelles in the wild have declined because they are being hunted too much for their meat and because their natural habitat is disappearing.



DID YOU KNOW?

Some breeds of horned sheep may grow more than one pair of horns. For example, Jacob sheep, a British breed that is also raised in the United States, may grow as many as three pairs of horns.

Follow the Leader

Like Mary's little lamb, sheep like to follow a leader, usually an old ram (male sheep). They live together in groups called "flocks." If the shepherd or farmer who takes care of the sheep can get the leader going in the right direction, the rest will follow. Sometimes well-trained and specially raised dogs called "sheepdogs" help herd the sheep and keep them from getting lost.



© Galen Rowell/Corbis



© Ariel Skelley/Corbis

(Top) Dall's sheep, a variety found in Alaska; (bottom) a boy holds a fleecy lamb (young sheep).

Domestic sheep are very useful animals. Their thick, soft fleece, or wool, is used for making clothes and blankets. Some sheep are raised for their meat. In many countries people drink sheep's milk and also make it into cheese.

A sheep's wool is cut off with **shears**, much as your hair is trimmed with scissors. Sheep are sheared only once a year, at a time when they won't be too cold without their wool. Sheep do something else that people do: they take baths. They are herded into tanks of water with chemicals in it. This mixture of chemicals and water is called a "sheep-dip," and it is used to protect the sheep from **parasites**. Sheep also have to have shots from a **veterinarian**.

Did you know that sheep are easily scared? Even a sheet of paper blowing in the wind will frighten them. Thunderstorms also frighten them.

There are wild sheep in many parts of the world. They look a lot like goats, but there are some ways to tell the two apart. Sheep don't have beards, for example, but many goats do. Also, sheep's horns curl around the sides of their heads, but goats' horns arch toward the backs of their heads.

SEARCH LIGHT

Which of the following is *not* a feature that sheep and goats share?
a) giving milk
b) growing a beard
c) producing wool

LEARN MORE! READ THESE ARTICLES…
AUSTRALIA (VOLUME 7) • CATTLE (VOLUME 12) • WILD GOATS (VOLUME 12)

Sheep are raised all over the world. This shepherd in Chile leads his sheep down a mountain road.
© Galen Rowell/Corbis

Answer: b) growing a beard

Surefooted Mountain Climbers

People raise goats for their milk, hair, and meat. Such goats are **domesticated**. But several types of goats live in the wild, such as the ibex, the markhor, the tahr, and the goral. Domesticated goats may have descended from these wild varieties.

The ibex is a sturdy wild goat living in the mountains of Europe, Asia, and northeastern Africa. Though ibex live in herds, old males usually live alone. The European ibex has brownish gray fur. The male has a beard and large horns that are curved backward and are shaped like half circles.



The animals called mountain goats in the western United States are not really goats. They are more closely related to antelopes.
© W. Wayne Lockwood, M.D./Corbis

The markhor is a large goat once found throughout the mountains of southern and central Asia. Now only small numbers are found, and in only a few places. The markhor is about as tall as a donkey. Unlike the ibex, its horns are long and wound like a **corkscrew**. Its coat is reddish brown in summer and long, gray, and silky in winter.

The surefooted tahr lives in herds and is usually found on steep wooded mountainsides. It can be as tall as the markhor, though it often is much smaller. Three species of tahr are found from India to Arabia. The smallest is the Arabian tahr, with its short gray-brown coat. Tahr horns are short, flat, and backward-curving.

The goral is found from the Himalayas to eastern Siberia. Its horns also curve backward. And like the ibex and tahr, it has a coarse coat that is brownish gray in color. It is smaller than these other two goats, however.

LEARN MORE! READ THESE ARTICLES…
ASIA (VOLUME 7) • MOUNTAINS (VOLUME 1) • SHEEP (VOLUME 12)

SEARCH LIGHT

Which of the following wild goats does not have backward-curving horns?
a) ibex
b) goral
c) markhor
d) tahr



Ibex have dwindled in number in recent years. These male ibex stand in front of a glacier in their native Austria.
© K.M. Westermann/Corbis

DID YOU KNOW?

Some wild goats can climb trees and can perch on very narrow ledges.

Answer: c) markhor

Packed and Ready to Go

Did you know that a camel's hump is like a lunch box? After a good feed, a camel changes the extra food and water into fat and keeps it safe in its hump. A camel can then go for days without food or water, living on that fat. That is why people use them for crossing deserts. Camels don't have to stop all the time for a drink or a bite to eat.

When camels do get hungry, they're definitely not hard to feed. Camels eat all kinds of grass and plants, even those that are dry and thorny. In fact, a hungry camel will gobble up tents, straw baskets, and even leather belts and will drink 25 gallons of water in just a few minutes!

The dromedary, or Arabian camel, has one hump. You'll find the dromedary in North Africa, the Middle East, and India. The Bactrian camel, which lives mostly in Central Asian countries, has two humps. Both camels can carry people and heavy loads and are excellent for making long journeys. But camels can be quite ill-tempered. They bellow, bite, or kick hard if you tease them. They even spit when they're unhappy!

Camels are useful in other ways too. Their hair is used to make tents, blankets, rugs, ropes, and clothes. Camel skin is used to make footwear and bags. Cheese and other foods are made from camel milk.

Here's an **oddity**: camels have a double set of eyelashes. These help to keep the camel's eyes safe from sand during desert storms. During sandstorms the camel just closes its nose while long hair protects its eyes...and its ears too.

SEARCH LIGHT

True or false? Camels store extra food in their humps.

LEARN MORE! READ THESE ARTICLES…
DESERTS (VOLUME 1) • EGYPT (VOLUME 8) • LLAMAS (VOLUME 12)



© Hans Georg Roth/Corbis



Bactrian camel.
© Corbis



Dromedary, or Arabian camel.
© Jose Fuste Raga/Corbis



DID YOU KNOW?

If a mother camel has to go on a journey when her baby is very young, the baby is put inside a carrier on a "nurse" camel beside the mother. If the mother can't see the baby, she'll run away, perhaps thinking her baby is lost and she needs to find it!

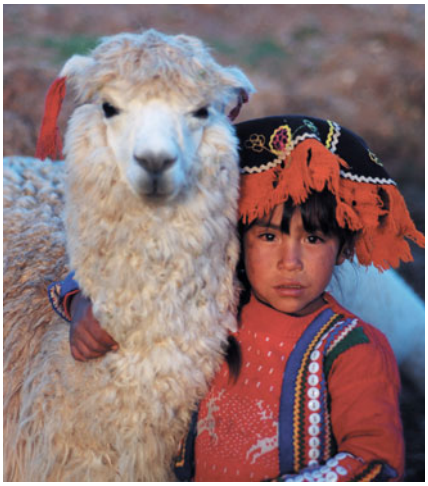
Answer: TRUE.

Bounty of the Andes

The llama is closely related to the alpaca, the guanaco, and the vicuña. Altogether these animals are called "lamoids." They are part of the camel family, but lamoids do not have humps like camels.



© Caroline Penn/Corbis



© Julie Houck/Corbis

(Top) Herding llamas in the highlands of Peru; (bottom) Quechua Indian girl with llama.

Llamas are the largest lamoids. They are about 4 feet tall, can weigh 250 pounds, and have long legs and a long neck. Their coat is usually white, but some llamas are black, brown, or white with black markings.

Today most llamas are **domestic** animals. They are kept by South American Indians in the mountains of Bolivia, Peru, Ecuador, Chile, and Argentina. The llama has many uses. It is a source of food and milk. It also provides wool that can be used to make knitted clothing and woven fabrics. Llama hair is also used to weave rugs and rope. Llama **dung** can be dried and used as fuel.

The llama is also an important transport animal. It's strong, and it can go a long time without water. Also, the llama eats many kinds of plants. These traits make the llama perfectly suited for traveling the plateaus and mountains of the Andes, where there is very little water or vegetation. The llamas can carry a 100-pound load and travel up to 20 miles a day!

A llama is usually gentle, but it will hiss or spit or even kick if it is ill-treated. And a llama can be stubborn. It will refuse to work if it feels too much is being asked of it.

LEARN MORE! READ THESE ARTICLES…
ANDES (VOLUME 9) • WEAVING (VOLUME 2) • YAKS (VOLUME 12)

DID YOU KNOW?

Llamas like to live in groups and will even live with sheep if there are no other llamas around. Shepherds often use llamas as "watchdogs," because llamas will fight off any animal that threatens their herd.

SEARCH LIGHT

Which of the following do people get from llamas?
- **meat**
- **milk**
- **wool**
- **fuel**
- **transportation**



This llama, one of Peru's great treasures, stands in front of a man-made Peruvian treasure, the ruins of Machu Picchu.
© Blaine Harrington III/Corbis

Answer: Llamas provide people with all of these things.

Smarties with Dirty Faces

Did you know that in tests of intelligence, pigs have proved to be among the smartest of all domestic animals—even more intelligent than dogs?

The world's largest population of **domestic** pigs is in China. The second largest population of domestic pigs is in the United States, and the third largest is found in Brazil.

Besides domestic pigs, there are several species of wild pigs found in Europe, Asia, and Africa. The **pygmy** hog is the smallest of the wild pigs. It is found in Nepal and northern India. It is now in danger of becoming extinct. The warty pig and the bearded pig live in parts of Southeast Asia, Malaysia, and the Philippines.

© Eye Ubiquitous/Corbis



© Julie Habel/Corbis



(Top) Pigs enjoying a mud bath; (bottom) getting friendly with a piglet.

Wild pigs eat a wide variety of foods, including leaves, roots, fruit, and reptiles. Food for domestic pigs includes corn and other grains, and some kinds of garbage too. A pig's snout ends in a flat rounded disk. Pigs use their snouts to search for food. Both male and female wild pigs have **tusks** on their snouts, which they use for defense.

A female pig is old enough to have piglets when she is about a year old. Before she gives birth to her first litter, the female pig is known as a "gilt." After the first **litter**, she is known as a "sow." Sows can have as many as 20 piglets in a litter, but a litter of 10 or 11 is the average. A male pig is called a "boar." A young **weaned** pig of either sex is called a "shoat."

LEARN MORE! READ THESE ARTICLES…
CHINA (VOLUME 7) • TAPIRS (VOLUME 12)
WILD GOATS (VOLUME 12)

DID YOU KNOW?

People think pigs are dirty animals because they so often see pigs wallowing in mud. But pigs cover themselves with mud to stay cool. Given a choice, pigs prefer air-conditioning to mud baths.

SEARCH LIGHT

Find and correct the error in the following sentence: Pigs have proved to be among the least smart of all domestic animals.



Female pigs can have as many as 20 piglets in a litter. China holds the record for having the largest population of domestic pigs. The United States is second.

© Royalty-Free/Corbis

Answer: Pigs have proved to be among the smartest of all domestic animals.

Kings of the River

Underneath the water in the rivers of Africa, a giant animal moves along the muddy bottom and eats water plants. It's named after a horse, looks something like a pig, and is larger than a crocodile. It's the king of the river, the hippopotamus. Its name is a combination of two Greek words that join to mean "river horse."

An African folktale describes how God created the hippopotamus and told it to cut grass for the other animals. When the hippo discovered how hot Africa was, it asked God if it could stay in the water during the day and cut grass at night when it was cool. God agreed. However, he was worried that the hippo might eat the river's fish. The hippo, however, ate only plants. At night, hippos still go ashore and wander in herds, eating grass.

© Galen Rowell/Corbis



© Royalty-Free/Corbis



(Top) A herd of hippos in Botswana; (bottom) fully submerged hippopotamus.

Hippos have barrel-shaped bodies, short legs, and four toes on each foot. Adult hippos weigh more than 6,000 pounds. The biggest may reach 15 feet in length and stand 5 feet tall at the shoulder. Although the hippo looks clumsy on land, it is well equipped for a life in the water. It swims easily, and when it stays underwater, little flaps of skin close its **nostrils**.

When a hippo is mostly **submerged**, the only things you can see are its rounded eyes, tiny ears, and raised nostrils. Sometimes a hippo lifts its head out of the water and roars. When that happens, you will see an enormous red mouth and very long teeth.

Because of the hippo's great size, its only enemies are lions and humans.

LEARN MORE! READ THESE ARTICLES…
AFRICA (VOLUME 8) • ALLIGATORS AND CROCODILES (VOLUME 11)
HORSES (VOLUME 12)



SEARCH LIGHT

Find and correct the error in the following sentence: When a hippo goes underwater, it constantly blows water out of its nostrils.

DID YOU KNOW?

Baby hippos are born in the water and can swim before they can walk.

A hippopotamus stands along the shore of Lake Manyara in Tanzania.

© Wolfgang Kaehler/Corbis

Answer: When a hippo goes underwater, little flaps of skin close its nostrils.

DID YOU KNOW?

Muskrats have been known to hold their breath underwater for 20 minutes or more.



Muskrats look like a cross between a rat and a beaver. They live in water, where they build a home of mud and plants that rises above the water's surface.

© Scott Nielsen/Bruce Coleman

The Town Builders

Muskrats are ratlike rodents that look a little like small beavers and live in water. The animal gets its name from the two musk **glands** under its tail. The glands give off a heavy, musky smell. Muskrats were originally found only in North America. People took them to Europe and Asia about 100 years ago, and they soon made themselves at home in those regions as well.

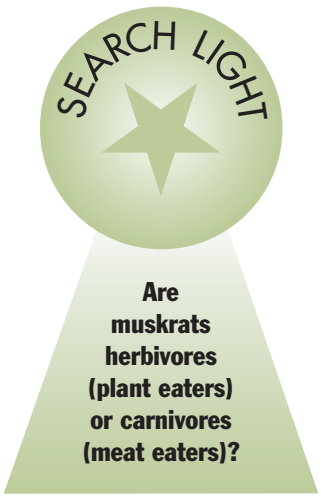
Muskrats build their houses in water, as a part of a "town." Mounds of mud, cattails, and other plants are heaped up into a dome-shaped structure. This rises above the surface of the water. The animals dig tunnels from under the water up into the mound. They then hollow out a room at the top, a few inches above the waterline.

Muskrats also dig narrow **channels** through the surrounding plant growth. The channels connect to each other and to other mounds. Muskrats can sometimes be seen swimming along these channels. They feed on different kinds of **sedges**, reeds, and roots of water plants, as well as **mussels**, crayfish, salamanders, and fish.

Muskrats have small eyes and ears and a long scaly flat tail. They use the tail as a **rudder** for steering or changing direction while swimming. The hind feet are partially webbed and are used as paddles.

Muskrat fur is waterproof and keeps the animals warm. Muskrats continue to be trapped because of the quality of that fur. And because of that, there are far fewer muskrats today than there were in the past.

LEARN MORE! READ THESE ARTICLES…
MOLLUSKS (VOLUME 11) • NORTH AMERICA (VOLUME 9)
PLATYPUSES (VOLUME 12)



Answer: Actually, muskrats eat both plants and meat, which makes them omnivores (animals that eat all foods).

Touch Me Nots

The porcupine's name comes from words meaning "pig" and "spines." This small rodent's body is covered with dark fur and the sharp quills, or spines, that give it its name. Some porcupine quills are attached in bunches, and others are attached singly. But all quills are used to protect against enemies.



Baby New World porcupine.
© D. Robert & Lorri Franz/Corbis

Porcupines can't actually shoot their quills through the air. When it's threatened, a porcupine puffs out its quills. The quills easily come loose if touched and stick in an enemy's skin. They can cause painful wounds and may kill if they make their way into vital organs or cause infection.

There are 25 **species** of porcupines, divided into Old World and New World porcupines.

Old World porcupines include the **crested** porcupines of Africa, Asia, and Europe. Long-tailed porcupines are also found in Asia. Brush-tailed porcupines are found in Asia and Africa.

The best-known New World species is the forest-dwelling North American porcupine. Other species found in the tropical forests from Mexico to South America use their long tails to grab onto branches. Porcupines shelter in tree branches and roots, hollow logs, burrows, and caves. Old World species like to stay on the ground more than New World porcupines do.

Porcupines are most active at night. They eat almost any tree part they can reach, including the bark. North American porcupines prefer a tender layer beneath the bark. In trying to get at it, they may chew away the bark in a ring, which kills the tree. Porcupines sometimes gnaw antlers and wooden tools such as ax handles and canoe paddles for the salt and oil they contain.

LEARN MORE! READ THESE ARTICLES…
ARMADILLOS (VOLUME 12) • MUSKRATS (VOLUME 12)
SOUTH AMERICA (VOLUME 9)

SEARCH LIGHT

Why do you think an ax handle would have salt in it that a porcupine would want?

DID YOU KNOW?

Baby porcupines have very soft quills when they're born, kind of like cooked spaghetti. The quills stiffen quickly after the baby is born.



Old World porcupines like this one have quills embedded in clusters. New World porcupines have quills interspersed with hair, underfur, and bristles.
© Vittoriano Rastelli/Corbis

Answer: People sweat through their hands when they work. An ax handle would soak up the sweat as well as the salt in the sweat.



DID YOU KNOW?

The manatee has an unlikely close relative on land: the elephant. It's thought that the manatee's early ancestor was a plant-eating wading animal.

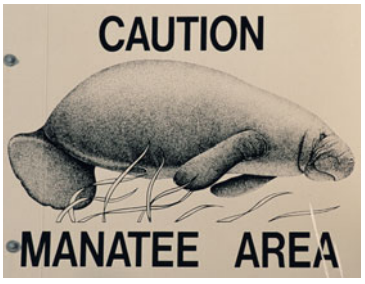
The slow-moving manatee lives in warm shallow coastal waters. Because manatees can't see very well, they are often injured by motorboats in their feeding areas.

© Douglas Faulkner/Corbis

Mermaids of Yore?

Stories about mermaids tell of creatures that have the head and body of a human and the tail of a fish. These stories may have come from people who saw manatees swimming and didn't know what they were.

A manatee is a large stoutly built animal with a **tapered** body that ends in a flat rounded tail. Adults grow to about 10 feet long and 800-1,200 pounds. The manatee has a thick tough skin and is nearly hairless. It uses its flippers for turning, holding food, walking on the bottom of rivers, and holding its young.



Boater's warning sign.
© Catherine Karnow/Corbis

Manatees, especially mothers and their calves, talk to each other through chirps, grunts, and squeaks. The other members of a group communicate by touching **muzzle** to muzzle. Manatees may live alone or in groups of 15 to 20.

They live in shallow waters along the coasts of oceans or in rivers that are rich in the plant life they eat. The Caribbean manatee lives from the coasts of the southeastern United States to those of northern South America. The Amazonian manatee, as you might guess, lives in the Amazon River and other nearby freshwater. And the African manatee is found in the coastal waters and slow-moving rivers of tropical West Africa.

Manatees have small eyes and can't see very well. They don't move very fast either. Since manatees can't **tolerate** cool temperatures, they live in warm waters—places where lots of people like to live as well. Many manatees have been killed or injured when people drive their motorboats into the manatees' feeding areas. The manatees can't see the boats and don't move fast enough to get out of their way.

SEARCH LIGHT

Mother manatees and their calves communicate through
a) chirps, grunts, and squeaks.
b) snaps, crackles, and pops.
c) dings, rattles, and creaks.

LEARN MORE! READ THESE ARTICLES…
ELEPHANTS (VOLUME 12)
MYTHS AND LEGENDS, FOLKTALES AND FABLES (VOLUME 5)
WHALES (VOLUME 12)

Answer: a) chirps, grunts, and squeaks.


SEARCH LIGHT
Fill in the blank: All walruses have _____ growing from the sides of their mouths that help them fight, cut holes in the ice, and drag themselves out of the water.
DID YOU KNOW?
The scientific name for the walrus, *Odobenus rosmarus*, translates into English as "tooth-walking sea horse."

The Whale Horses

In the cold Arctic seas of Europe, Asia, and North America, there lives a large creature called the "walrus." Its name is an English version of the **Scandinavian** word *hvalros*, meaning "whale horse."

The walrus has a stocky body topped by a rounded head. It has small eyes like those of a pig and a short broad mouth. Its mouth is covered with stiff whiskers. Every year, the walrus grows a new set of whiskers. An adult walrus can grow to twice the length of a Ping-Pong table.



Group of walruses gathered on rocks.
© Wolfgang Kaehler/Corbis

All walruses have long **tusks** growing on each side of the mouth. The tusks are very handy. The walrus uses them to fight, cut holes in ice, and pull itself out of water. Walruses spend nearly their whole life at sea. However, they often climb onto ice or rocky islands to rest and to have babies.

The walrus has flippers. In the water the flippers help the animal swim. On land the walrus uses them to walk. The walrus also uses its flippers to hold prey such as fish, but clams are its favorite food. Sometimes the animal feeds on young seals, though this happens only when it fails to find other food.

Walruses are social animals and live in groups of more than 100 members. There are two types of walruses, named for the two major oceans where they live: the Pacific walrus and the Atlantic walrus. The Pacific walrus is heavier and has longer tusks than the Atlantic walrus.

In the late 20th century, efforts were made to protect walruses. This helped increase the population of the Pacific walrus.

LEARN MORE! READ THESE ARTICLES…
MAMMALS (VOLUME 12) • NORTH AMERICA (VOLUME 9) • PACIFIC OCEAN (VOLUME 1)

Walruses are known for their long tusks. They use their flippers to help them walk on land.
© W. Perry Conway/Corbis



Answer: All walruses have tusks growing from the sides of their mouths that help them fight, cut holes in the ice, and drag themselves out of the water.

The Biggest Animals of All

Whales live in the water. They look like fish. They swim like fish. But they aren't fish at all. Whales are "aquatic mammals." "Aquatic" means they live in water. Mammals are warm-blooded creatures that give birth to live young and feed them with milk.

Whales can't stay under the water all the time as fish do. They have to come up for air from time to time. They breathe through blowholes at the top of their heads. When their warm breath hits the colder air outside, it makes a cloud of mist called a "spout." You can spot a whale by its spout.

Fish can't make sounds. But whales can make two kinds of sounds. The first sounds like a bark, or a whistle, or sometimes a scream. Whales make these sounds to speak to each other. Some whales also make very loud, low sounds that other whales can hear from many miles away. This sound can be heard only underwater.

The biggest whale of all is the blue whale. It can be more than 100 feet long and weigh more than 100 tons. That's more than ten buses put together! Even a baby blue whale is huge.



© Amos Nachoum/Corbis



© Sea World of California/Corbis

(Top) Killer whale; (bottom) beluga whales.

Finding food is a simple matter for blue whales. They just swim along with their huge mouths open, and thousands of tiny sea creatures flow in. But blue whales have no teeth. Instead, they have strings of hardened skin, like our fingernails, that hang from the roof of the mouth. This hardened skin is called "**baleen**" and is used as a strainer to let out the water while holding back the captured sea creatures.

SEARCH LIGHT

Why do you suppose that some whales' sounds can be heard only underwater? (Hint: Who's listening?)

LEARN MORE! READ THESE ARTICLES…
FISH (VOLUME 11) • MAMMALS (VOLUME 12) • PENGUINS (VOLUME 11)



This humpback whale sails above the water as it grabs a breath of air. This act is called "breaching."
© Brandon D. Cole/Corbis

DID YOU KNOW?

Some whales leave the water and park themselves on a beach. They may stay there so long that they die. Strangely, other whales often join the "beached" whale—possibly to keep the first one company, according to some researchers.

Answer: Whales "talk" to other whales, so it makes sense that their sounds would be heard where the whales spend most of their time—under the water.

Australia's Awesome Leapers

The kangaroo and its relatives are marsupials. The mother animals among most marsupials have a pouch, or pocket, attached to their bellies. The pouch is part of their furry skin. It's where the babies stay while they are nursing. Most marsupials are found in Australia and on nearby islands.

DID YOU KNOW?
Joeys aren't born inside their mother's pouch. They have to climb there first. Quite a feat, considering they're born blind, furless, and very, very tiny.

When a kangaroo is born, it's about as long as your little finger. While it's growing, it stays safe and well fed in its mother's pouch. A baby kangaroo is called a "joey."



Kangaroos visiting a golf tournament.
© AFP/Corbis

As you can see from the large photo, when the joey is big enough, it can poke its head out of the pouch. It can then eat leaves that are close enough to reach without climbing out. As it grows still bigger, it slips out of the pouch to nibble grass. Then it climbs back into the pouch at night or whenever it is tired of hopping. If there is danger while the joey is out of the pouch, the mother kangaroo picks up her baby, stuffs it into the pouch, and hops away.

Except for the small rat kangaroo and tree kangaroo, kangaroos have extremely strong back legs. The strong legs help it make the giant leaps it is known for. Its long tail helps it keep its balance while in the air. Kangaroos are herbivores, which means they eat only plants.

Kangaroos are usually gentle and timid. But if they are cornered, they'll stamp their hind feet and growl. They can grab an enemy with their front paws and kick it with their powerful back feet.

LEARN MORE! READ THESE ARTICLES…
AUSTRALIA (VOLUME 7)
AN AUSTRALIAN TALE: HOW KANGAROO GOT HIS TAIL (VOLUME 5)
KOALAS (VOLUME 12)

© Michael S. Yamashita/Corbis



SEARCH LIGHT

Find and correct the error in the following sentence: Kangaroos use their tails to fight.

Answer: Kangaroos use their back feet to fight.



SEARCH LIGHT

Fill in the blank: Koalas are marsupials, which means they nurse and carry their babies in a _____ on their bellies.

The Bears That Aren't Really Bears

This roly-poly little animal has shiny black eyes that look like wet licorice candy. Its funny black nose is pressed against its face between bushy gray ears. If you found this animal in your bedroom, you might think it was a toy teddy bear.

But this is a real animal (though it isn't a real bear) called the koala. It is found only in Australia. The koala drinks dew and eats nothing but leaves of the eucalyptus tree, as shown in the large photo. It is famously slow-moving and gentle, and it sleeps up to 16 hours a day. Even when they're being **aggressive**, koalas rarely use their energy to fight. Instead, they'll make loud croaking sounds known as "bellowing."

DID YOU KNOW?

Koalas are often slow-moving and quiet. Some people believe that their eucalyptus diet has a calming effect on them. The truth is, however, that their digestion rate is slowed down because the leaves take a lot of energy to digest.

Koalas are related to kangaroos. Both are marsupials. Marsupial mothers carry and nurse their young in a pouch on their bellies. It's like a built-in baby basket.



Mother koala carrying baby on her back.
© David and Eric Hosking/Corbis

When they're born, koala babies are blind, hairless, and smaller than your little finger. Usually only one baby is born at a time, but sometimes there are twins. After about six months in the pouch, the koala baby is ready to explore the world—but not on its own feet. At first, it climbs up on its mother's back. It rides on her back for the next six months, until it's almost as big as she is.

Mothers and babies communicate with gentle squeaks, clicks, and hums. A grunt indicates irritation or impatience. After a year the young koala leaves its mother to make its own home. Koalas are very **territorial**, and the young are not encouraged to hang around once they can take care of themselves.

LEARN MORE! READ THESE ARTICLES…
AUSTRALIA (VOLUME 7) • EUCALYPTUS (VOLUME 10) • PANDAS (VOLUME 12)

© Wes Thompson/Corbis

Answer: Koalas are marsupials, which means they nurse and carry their babies in a pouch on their bellies.


SEARCH LIGHT
How many babies can a mother opossum carry in her pouch at one time?
DID YOU KNOW?
People often picture opossums hanging from tree branches by their tails. Although they wrap them around branches to help keep their balance, opossums don't actually hang by their tails.

Playing Dead to Stay Alive

Have you ever been out at night and come across a gray creature about the size of a housecat, with a long, pointy white face and beady little eyes? If so, you've probably met an opossum.

Opossums are marsupials, which are mammals that carry their young in pouches on their bellies. Like kittens and puppies, baby opossums are born blind. So the first thing they do is snuggle inside their mother's built-in belly pouch. About 13 baby opossums can fit and feed inside the pouch at one time. They stay in there and go everywhere with the mother.



An opossum "playing possum."
© Joe McDonald/Corbis

While they're in the pouch, the tiny opossums grow until they are the size of little mice. Then, after five weeks, they crawl out and ride piggyback on the mother's back. They hold on to her thick silvery-black fur with special grabbing thumbs.

Loaded with babies on her back, as the large photo shows, the mother opossum scampers through the woods and scurries up trees. She scrambles through bushes looking for fruits and berries. She climbs trees to find insects, birds' eggs, and little creatures to eat. When one of the babies gets tired, it just tumbles back into the pouch for a rest.

Opossums—or "possums," as they're sometimes called—have another strange behavior. Most **predatory** animals like to eat live food and will lose interest in animals that are already dead. So the opossum sometimes escapes its enemies by pretending to be dead. It will freeze like a statue and then topple over to the ground. When the predator loses interest and leaves, the opossum calmly gets up and walks away. This clever trick has become known as "playing possum."

LEARN MORE! READ THESE ARTICLES…
A CHEROKEE STORY: WHY POSSUM'S TAIL IS BARE (VOLUME 5)
KOALAS (VOLUME 12) • NORTH AMERICA (VOLUME 9)

© W. Perry Conway/Corbis

Answer: A female opossum can carry about 13 babies in her pouch at one time.

Egg-Laying Mammals

If someone asked you to describe a mammal, you might say a mammal is a warm-blooded animal with hair or fur. You'd add that mammals give birth to live babies instead of laying eggs and that they feed their young with milk.

Well, the platypus feeds its babies milk. And the platypus is warm-blooded and has brown fur. But the platypus breaks a big mammal rule—it lays eggs. Platypuses and Australian spiny anteaters are the only members of an egg-laying mammal group called "monotremes."

Platypuses are found in the lakes and streams of Tasmania and eastern and southern Australia. They spend their lives feeding along the bottoms of rivers, streams, and lakes and resting in burrows dug into banks.

A platypus has a big appetite. The amount of food it eats every day is almost equal to its own weight. A platypus meal may consist of insects, shellfish, fishes, frogs, **mollusks**, tadpoles, or earthworms.

The platypus often looks for food underwater. But in the water, the platypus's eyes and ears are closed. Since it can't see or hear underwater, the platypus depends entirely on its snout to find its food. But what a snout! The platypus snout looks like a duck's bill, which is why the platypus is sometimes called the "duckbill."

The platypus also has webbed feet like a duck and a tail like a beaver. When you look at it, the platypus doesn't seem to be a single animal but rather appears to be several different animals put together.

DID YOU KNOW?

The official name of the spiny anteater, the only other monotreme besides the platypus, is "echidna."

SEARCH LIGHT

Which of the following statements about the platypus are true?
- It has fur.
- It is warm-blooded.
- It gives birth to live babies.

LEARN MORE! READ THESE ARTICLES…
AUSTRALIA (VOLUME 7) • BIRDS (VOLUME 11) • RIVERS (VOLUME 1)



The platypus, so awkward and peculiar on the ground, is perfectly adapted for underwater hunting.
© Joe McDonald/Corbis

Answer: All the answers are true except for "gives birth to live babies."



DID YOU KNOW?

The common nine-banded armadillo is used in studies of the disease leprosy. Armadillos are some of the only animals besides humans that get the disease. And the organism that causes leprosy can't be grown in laboratories.

The Armored Animals

Can you imagine an animal covered in armor from head to toe, like a **medieval** knight? Meet the armadillo. The word "armadillo" means "little armored one" in Spanish.

Armadillos are round creatures with short legs and are about the size of a small dog. They have strong curved claws, and yes, their bodies are covered with armor. Their armor is made of hard plates or scales connected by bands that stretch. If they didn't stretch, the armadillo would have a hard time moving about.



Armadillo of the Andes Mountains in South America.
© Galen Rowell/Corbis

This armor helps protect the armadillo from its enemies. But its main job is to keep the armadillo from getting cut and scratched by the thorns and cactus that live where it lives.

Central and South America are home to many kinds of armadillos. There you'll find the pichi armadillo, Burmeister's armadillo, and the pink fairy armadillo. You'll also find the giant armadillo, which is nearly five feet long. One **species**, the nine-banded armadillo, is found in Texas and several other U.S. states.

Armadillos can't see very well and are almost toothless. They hunt mostly at night and eat insects and worms, soft roots and fruits, and dead animals that they sometimes find.

When enemies turn up, the armadillo usually runs away into the tough underbrush where its **predators** can't follow. Sometimes the armadillo will jump straight into the air to scare its enemies. As a last resort it will roll itself up into a hard ball.

You may not believe it, but armadillos are also very good swimmers. They stay afloat by swallowing a lot of air. It turns out that under all that armor armadillos are full of surprises!

SEARCH LIGHT

Fill in the blanks: The word "armadillo" is Spanish for "_____ _____ _____."

LEARN MORE! READ THESE ARTICLES…
PARAGUAY (VOLUME 9) • PORCUPINES (VOLUME 12)
SOUTH AMERICA (VOLUME 9)

The long-nosed armadillo is one of South America's many varieties.
© Martin Harvey–Gallo Images/Corbis

Answer: The word "armadillo" is Spanish for "little armored one."



DID YOU KNOW?

There's a bridge in Austin, Texas, that provides a roosting place for Mexican bats. More than a million bats at a time make this bridge their home.

Fliers by Night

Bats are mammals, and like all mammals they have fur, give birth to live babies, and feed their babies milk. But bats are also the only **mammals** that truly fly.

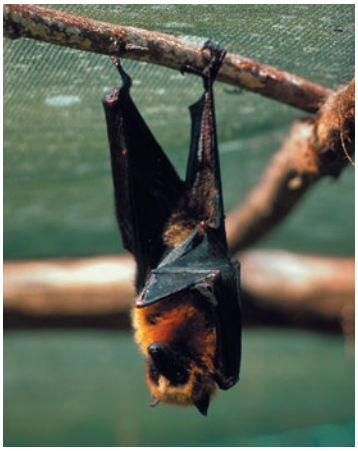
Bats live all over the world, but they prefer warm climates. They like to live in huge groups, or colonies, sometimes with 1,000 bats or more in a colony. Bats sleep in caves, the hollows of trees, and empty buildings.

SEARCH LIGHT

True or false? Bats are solitary animals.



© Joe McDonald/Corbis



© Wolfgang Kaehler/Corbis

(Top) Leaf-nosed bat; (bottom) fruit bat.

There are many kinds of bats, in many sizes. The flying fox bat, when it stretches its wings, is wider than you are tall. But the tiny Philippine bamboo bat's wings are barely six inches from tip to tip.

Most bats eat insects. The Mexican bats of Texas can eat up millions and millions of insects every year! Other bats eat fruits, honey, and **pollen**. But whatever they eat, all bats look for their food at night.

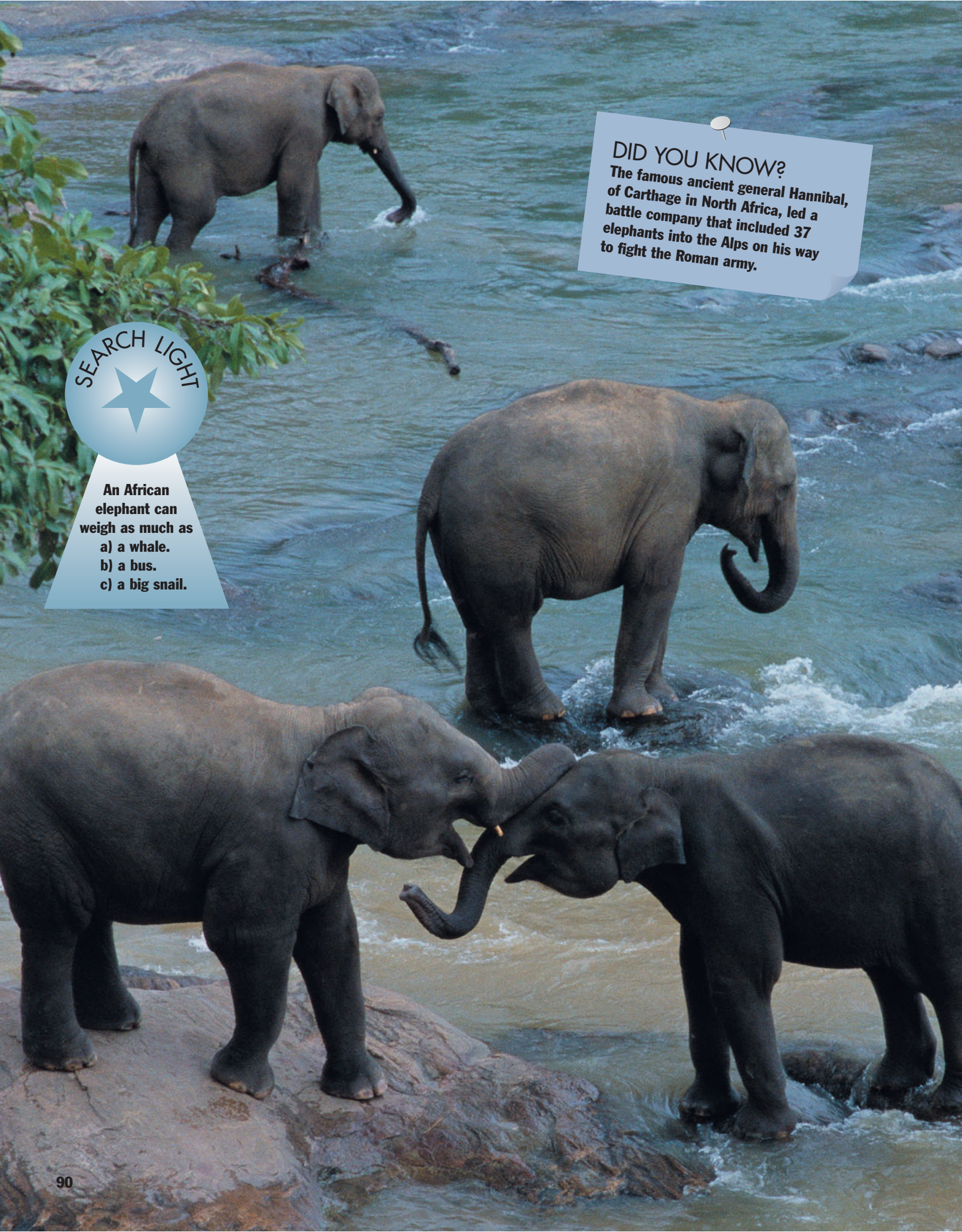
You may have heard the term "blind as a bat." Bats actually see very clearly, but they don't rely on their eyes. When a bat flies, it makes a sound that we can't hear. That sound bounces off objects in the bat's path, creating an echo its large ears can hear. Those echoes tell the bat what's ahead of it and help it locate food or enemies.

Some people fear bats, but in fact they are very helpful. Not only do they eat insects that pester us, but bats also help **pollinate** many flowers and plants. Without bats many plants, such as some kinds of cactus, wouldn't be alive.

LEARN MORE! READ THESE ARTICLES…
BIRDS (VOLUME 11) • CAVES (VOLUME 1) • ECHOES (VOLUME 1)

© W. Perry Conway/Corbis

Answer: FALSE. Bats live in huge groups, or colonies.



DID YOU KNOW?

The famous ancient general Hannibal, of Carthage in North Africa, led a battle company that included 37 elephants into the Alps on his way to fight the Roman army.

SEARCH LIGHT

An African elephant can weigh as much as
a) a whale.
b) a bus.
c) a big snail.

The Largest Animals on Land

Can you tell an African elephant from an Indian elephant?

First check out the ears: African elephants have much larger ears than Indian elephants. African elephants are larger and stronger and have thicker skin than their Indian cousins. In fact, African elephants are the largest animals on land. They can grow to more than 11 feet tall and 12,000 pounds!



© Lindsay Hebberd/Corbis



© Jeff Vanuga/Corbis

(Top) In Kerala state in India, elephants are respected and honored. During festivals like this, they are dressed in gold faceplates that look like armor. (Bottom) Adult and young African elephants.

Indian elephants, found in South and Southeast Asia, are smaller, gentler, and easier to train. Most elephants in zoos and circuses are Indian. Elephants and people have long worked together. Usually, one man trains one elephant. In India, the trainer is called a *mahout.* In Burma, he is the *oozie*. Both African and Indian elephants have been used in wartime.

Both kinds of elephants eat fruits, nuts, grass, and vegetables, but trees are their favorite food. To get at the tree leaves they like, elephants break off branches with their trunks or sometimes just knock the whole tree down. Elephants also breathe, smell, and trumpet through their trunks. When they're hot, elephants take baths to cool off. They swim underwater and stick their trunks up in the air and breathe through them. Elephants also take showers with their trunks by sucking up water and spraying it on themselves.

Male elephants have huge tusks for digging, carrying things, and sometimes fighting. But their tusks also cause elephants problems. Hunters have killed so many elephants for the ivory in their tusks that there are not many left.

LEARN MORE! READ THESE ARTICLES…
CAMELS (VOLUME 12) • KENYA (VOLUME 8) • THAILAND (VOLUME 7)

Indian elephants in Sri Lanka.
© Lindsay Hebberd/Corbis

Answer: b) a bus.



DID YOU KNOW?

Rabbits that live in hot parts of the world usually have bigger ears than those that live in cold areas. Larger ears help animals stay cool, while smaller ears help animals keep from getting too cold.

Long Ears and Strong Legs

If you see an animal outside that hops and has long ears, it could be a rabbit or a hare. You can tell them apart because hares have longer ears and longer legs than rabbits. Some American rabbits are called "cottontails" because their tails are small puffs of fur that are white on the bottom.



Cute and cuddly pet rabbit.
© Kelly-Mooney Photography/Corbis

European rabbits are the ancestors of all **domestic** rabbits worldwide. Rabbits live together in underground **burrows** called "warrens." Inside the warren a mother rabbit carefully shreds leaves and collects grass to line a nest for her babies. Then she pulls bits of fur from her thick coat to make a warm and snug bed. Baby rabbits haven't any fur at first, so the mother must keep them warm.

The nest is usually deep enough in the warren to keep the babies safe. But when a rabbit sees a **predator** looking for the nest, the rabbit will thump its back legs to warn other rabbits. Rabbit mothers aren't gentle when their babies are in danger from dogs, foxes, snakes, owls, or hawks. They bite and kick hard with their feet!

Hares don't build warrens. Their homes are shallow holes that they dig in the grass, under trees, or in brush heaps. Some hares in cold climates have a white coat during the winter and a brown one in the summer.

Both rabbits and hares love to eat green plants such as clover as well as the bark, buds, and berries of trees and shrubs. They search for food from sundown to dawn and then hide during the day. And if you've heard the story about the rabbit jumping into a thorny bush to stay safe—it's true. Rabbits make twisting paths through thorny underbrush, where their enemies can't follow.



LEARN MORE! READ THESE ARTICLES…
COTTON (VOLUME 10) • KANGAROOS (VOLUME 12)
A MAYAN STORY: RABBIT THROWS AWAY HIS SANDAL (VOLUME 5)

The black-tailed jackrabbit is actually a hare. It's easily recognized by its long ears tipped with black coloring.
© Darrell Gulin/Corbis

Answer: Cottontail rabbits have a tail that is white on the bottom.

GLOSSARY

acrobat performer who does tricks and physical programs that require strength, balance, and body control, often above the ground

aerialist performer who does tricks and feats above the ground or in the air

aggressive openly hostile or tending to approach with great force or energy

antics playful or funny actions

baleen a hardened substance from 2 to 12 feet long found in two rows along the upper jaws of certain whales

bovine animal group that includes cattle, oxen, bison, and buffalo

burden weight or load to carry

burrow deep hole or tunnel made in the ground by an animal for shelter

camouflage colors and patterns that allow a person, animal, or thing to blend in with its surroundings

canopy overhead covering

captive (noun: captivity) taken and held in a cage or as a prisoner

channel narrow passageway between two areas of water

corkscrew device with a handle and a spiral-twist metal piece, used for removing certain bottle stoppers

crest (adjective: crested) standing clump of fur or feathers, usually on an animal's head

crossbreed to produce offspring from parents of two varieties or species

domestic (verb: domesticate) tame

dominant having influence or control over another person, place, or thing

dual two

dung animal waste

ferocious fierce and wild

forefoot one of the front feet of an animal with four or more feet

gland structure in animals that produces special substances, such as sweat or saliva or milk

habitat the physical environment in which a living thing dwells

hare rabbit-like animal

import to bring from a foreign place

instinct natural tendency of a living thing to respond in a particular way to a situation

litter group of newborn animals born to the same mother at the same time

mammal class of warm-blooded animals that feed their young with milk from special mammary glands, have an internal backbone, and are more or less covered with hair

medieval period in European history from the 5th to about the 14th century AD

moccasin soft leather shoe first worn by Native American Indians

mollusk any member of a group of animals that have no backbone and are usually enclosed in a shell (for example, snails, clams, or squids)

mussel kind of mollusk (shellfish)

muzzle animal's snout (jaw and nose)

nocturnal active at night

nostril one of the outer openings of the nose

oddity unusual thing or quality

parasite creature that lives on another, which it usually injures

plateau wide land area with a fairly level surface raised sharply above the land on at least one side

polio serious disease that may kill or permanently weaken or paralyze its victims

pollen (verb: pollinate) very fine dusty substance that comes from flowers; it is important in reproduction of other plants

polo team sport played by hitting a wooden ball with mallets through goalposts while on horseback

predator (adjective: predatory) animal that lives by eating other animals

prey animal eaten by another animal

primitive ancient, or belonging to a very early stage of development

prowl creep about in a sneaky way, often while hunting

pygmy something very small for its kind

rabies serious disease of animals that is usually passed on through the bite of a sick (rabid) animal; its effects include extreme salivation, strange behavior, and usually death

reptile major animal group that includes snakes, lizards, and other animals that usually have scales or bony plates

research careful search and study

roam to travel or wander freely through a wide area

rodent major animal group that includes mice, squirrels, and other small gnawing animals

rudder flat piece attached to the back of a boat or ship and used for steering

sacred holy

Scandinavia peninsula in northern Europe that includes the countries of Denmark, Norway, and Sweden

sedge plant group found in marshes and related to grasses and rushes

semidesert area that is much like a desert but has more rainfall

shears cutting device similar to scissors but usually larger

shortage a situation of need, or an amount that is missing or isn't enough

solitary alone

species group of living things that have certain characteristics in common and share a name

stationary unmoving

submerge to put under water

tapered little by little becoming smaller toward one end

temperament personality or usual mood

territorial protective of a territory or home area

tolerate to put up with; also, to be able to survive

tuft short mound of fur

tusk long tooth that overhangs when the mouth is closed and serves for digging food or as a weapon

vast huge or spacious

veterinarian doctor who takes care of animals

weaned capable of and used to eating food rather than nursing



© Wes Thompson/Corbis

I N D E X

American buffalo (animals): *look under* bison

animals
Did you know? *page* **92**

anoa (animals)
buffalo *page* **49**

apes *page* **9**
LEARN MORE *look under* gibbons; gorillas

aquatic animals: *look under* hippopotamuses; muskrats; platypuses

Arabian camels (animals): *look under* dromedaries

armadillos (animals) *page* **87**

baboons (animals)
monkeys *page* **15,** photograph *page* **15**

bats (animals) *page* **89**

bears (animals): *look under* pandas; polar bears

beluga whales
whales photograph *page* **76**

Bengal tigers
tigers *page* **23,** photograph *page* **22**

bison, *also called* American buffalo *page* **50**

blue whales (animals)
whales *page* **76**

bonobos (animals)
apes *page* **9**

bovine animals
cattle *page* **46**

buffalo *page* **49**

bulls
cattle *page* **46**

burros (animals): *look under* donkeys

camels *page* **60**
LEARN MORE *look under* llamas

camouflage
ocelots *page* **27**
tigers *page* **23**

Cape buffalo (animals)
buffalo *page* **49**

cat bears: *look under* lesser pandas

cats *page* **21**
Did you know? *page* **23**
LEARN MORE *look under other cats:* lions; ocelots; tigers

cattle *page* **46**
LEARN MORE *look under* bison; buffalo; yaks

chewing the cud
cattle *page* **47**

chimpanzees (animals)
apes *page* **9,** photograph *page* **9**
gorillas *page* **11**

claws
cats *page* **21**

cows
cattle *page* **46,** photograph *page* **46**

coyotes (animals) *page* **32**
LEARN MORE *look under* dogs; wolves

dogs *page* **29**
sheep *page* **57**
LEARN MORE *look under* coyotes; wolves

dolphins (animals)
Did you know? *page* **7,** *page* **8,** photograph *page* **7**

domestic cats: *look under* cats

domesticated animals: *look under* buffalo; camels; cats; cattle; dogs; donkeys; elephants; horses; llamas; pigs; sheep; yaks

donkeys, *also called* burros (animals) *page* **42**
LEARN MORE *look under* horses

dromedaries, *also called* Arabian camels (camels)
camels *page* **60,** photograph *page* **61**

duckbilled platypuses (animals): *look under* platypuses

echidnas (animals): *look under* spiny anteaters

echoes
bats *page* **89**

eggs
platypuses *page* **84**

elephants *page* **91**
Did you know? *page* **44,** *page* **72**

endangered animals: *look under* giant pandas; gibbons; markhors; tapirs; wisents; yaks

European bison (animals): *look under* wisents

eyes
horses *page* **40**

farming: *look under farm animals* buffalo; cattle; llamas; pigs; sheep; yaks

fruit bats (animals)
bats photograph *page* **89**

gazelles (animals) *page* **55**

giant pandas (animals)
pandas *page* **38,** photograph *page* **38**

gibbons (apes) *page* **13**
apes *page* **9**

gorals (mammals)
wild goats *page* **58**

gorillas *page* **11**
apes *page* **9**

gray wolves, *also called* timber wolves
wolves *page* **31,** photograph *page* **30,** photograph *page* **31**

great apes
apes *page* **9**
LEARN MORE *look under* gorillas

hares: *look under* rabbits and hares

hippopotamuses (animals) *page* **66**

horses *page* **40**
LEARN MORE *look under* donkeys; tapirs

house cats: *look under* cats

howler monkeys (animals)
monkeys *page* **15**

humpback whales
whales photograph *page* **76**

ibex (animals)
wild goats *page* **58,** photograph *page* **59**

Indian buffalo: *look under* water buffalo

jackals (animals)
Did you know? *page* **29**

jackrabbits
rabbits and hares photograph *page* **92**

kangaroos (animals) *page* **78**

killer whales
whales photograph *page* **76**

koalas (animals) *page* **81**

lemurs (animals) *page* **19**

lesser apes
apes *page* **9**
LEARN MORE *look under* gibbons

lesser pandas, *also called* cat bears, *or* red bear cats (animals)
pandas *page* **38,** photograph *page* **38**

lions *page* **24**
LEARN MORE *look under* cats; ocelots; tigers

llamas (animals) *page* **62**
LEARN MORE *look under* camels

longhorn cattle (animals)
cattle photograph *page* **46**

macaques (animals) *page* **17**

mammals (animals) **12**

manatees (animals) *page* **73**

mandrills (monkeys)
mammals photograph *page* **7**

marine animals: *look under* dolphins; manatees; walruses; whales

markhors (animals)
wild goats *page* **58**

marmosets (animals)
monkeys *page* **15**

marsupials (animals)
mammals *page* **7**
LEARN MORE *look under* kangaroos; koalas; opossums

meerkats (animals): *look under* yellow mongooses

mermaids (legendary beings)
manatees *page* **73**

milk (food)
mammals *page* **6**

mongooses (animals) *page* **36**

monkeys *page* **15**
lemurs *page* **19**
mandrills photograph *page* **7**
LEARN MORE *look under* macaques

monotremes (mammals)
mammals *page* **7**
platypuses *page* **84**

mountain goats
wild goats photograph *page* **58**

mountain gorillas (animals)
gorillas photograph *page* **10**

mozzarella (cheese)
Did you know? *page* **49**

mules (animals)
donkeys *page* **42**

muskrats (animals) *page* **69**

ocelots (animals) *page* **27**
LEARN MORE *look under* cats; lions; tigers

opossums, *also called* possums (animals) *page* **83**

orangutans (apes)
apes *page* **9,** photograph *page* **8**

pandas (animals) *page* **38**

pigs *page* **64**

plains buffalo: *look under* bison

platypuses (animals) *page* **84**

polar bears
mammals photograph *page* **6**

pollination
bats *page* **89**

porcupines *page* **70**

possums (animals): *look under* opossums

primates (animals): *look under* apes; lemurs; monkeys

purring
cats *page* **21**
Did you know? *page* **23**

rabbits and hares *page* **93**

raccoons, *also called* ringtails (animals) *page* **35**

red bear cats: *look under* lesser pandas

rhesus monkeys (animals)
macaques *page* **17,** photograph *page* **17**

ringtails (animals): *look under* raccoons

rodents (animals): *look under* muskrats; porcupines

ruminants (animals)
cattle *page* **47**

sheep *page* **57**
LEARN MORE *look under* wild goats

Siberian tigers
tigers *page* **23,** photograph *page* **23**

spiny anteaters, *also called* echidnas (animals)
platypuses *page* **84**

tahrs (animals)
wild goats *page* **58**

tails
Did you know? *page* **14**

tamarau (animals)
buffalo *page* **49**

tapirs (animals) *page* **45**

tigers *page* **23**
LEARN MORE *look under* cats; lions; ocelots

timber wolves: *look under* gray wolves

tusks
elephants *page* **91**
walruses *page* **75,** photograph *page* **74**

ungulates (animals with hooves): *look under* camels; cattle; donkeys; gazelles; hippopotamuses; horses; llamas; pigs; sheep; tapirs; wild goats

walruses (animals) *page* **75**

warrens (burrows)
rabbits and hares *page* **93**

water buffalo, *also called* Indian buffalo (animals)
buffalo *page* **49,** photograph *page* **48**

whales *page* **76**
Did you know? *page* **7**

wild goats *page* **58**
sheep *page* **57**

wisents, *also called* European bison (animals)
bison *page* **50**

wolves *page* **31**
LEARN MORE *look under* coyotes; dogs

wool
sheep *page* **57**

yaks (animals) *page* **52**

yellow mongooses, *also called* meerkats (animals)
mongooses photograph *page* **36,** photograph *page* **37**

Get to know the furry and warm-blooded in MAMMALS

 Volume 1: **The Earth and Earth Sciences**

 Volume 2: **Physical Sciences and Technology**

 Volume 3: **The Arts**

 Volume 4: **People in History**

 Volume 5: **Folklore and Religions**

 Volume 6: **Europe**

 Volume 7: **Asia, Australia, and New Zealand**

 Volume 8: **Africa**

 Volume 9: **The Americas**

 Volume 10: **Plants**

 Volume 11: **Birds, Insects, Reptiles, and Aquatic Life**

 Volume 12: **Mammals**

 Volume 13: **Reference Guide and Index**

ENCYCLOPÆDIA
Britannica®

My First Britannica



Reference Guide and Index

13

My First Britannica

Reference Guide and Index

13



Chicago London New Delhi Paris Seoul Sydney Taipei Tokyo

PROJECT TEAM
Judith West, *Editorial Project Manager*
Christopher Eaton, *Editor and Educational Consultant*
Kathryn Harper, *U.K. Editorial Consultant*
Marilyn L. Barton, *Senior Production Coordinator*

Editors
Theodore Pappas
Anthony L. Green
Mary Rose McCudden
Andrea R. Field
Michael J. Anderson
Colin Murphy
Locke Petersheim
Indu Ramchandani (Encyclopædia Britannica India)
Bhavana Nair (India)
Rashi Jain (India)

Design and Media Specialists
Nancy Donohue Canfield, *Design*
Megan Newton-Abrams, *Design*
Karen Koblik, *Photos*
Joseph Taylor, *Illustrations*
Amy Ning, *Illustrations*
Jerry A. Kraus, *Illustrations*
Michael Nutter, *Maps*

Copy Editors
Barbara Whitney
Laura R. Gabler
Dennis Skord

Lisa Braucher, *Data Editor*
Paul Cranmer, *Indexer*

ENCYCLOPÆDIA BRITANNICA PROJECT SUPPORT TEAM

EDITORIAL
Linda Berris
Robert Curley
Brian Duignan
Kathleen Kuiper
Kenneth Pletcher
Jeffrey Wallenfeldt
Anita Wolff
Charles Cegielski
Mark Domke
Michael Frassetto
James Hennelly
Sherman Hollar
Michael R. Hynes
Sandra Langeneckert
Gene O. Larson
Michael I. Levy
Robert Lewis
Tom Michael
Janet Moredock

DESIGN
Steven N. Kapusta
Carol A. Gaines
Cate Nichols

ART
Kathy Nakamura
Kristine A. Strom
Nadia C. Venegas

ILLUSTRATION
David Alexovich
Christine McCabe
Thomas Spanos

MEDIA ASSET MANAGEMENT
Jeannine Deubel
Kimberly L. Cleary
Kurt Heintz
Quanah Humphreys

COPY
Sylvia Wallace
Jennifer F. Gierat
Glenn Jenne
Mary Kasprzak
Thad King
Larry Kowalski
Joan Lackowski
Dawn McHugh
Julian Ronning
Chrystal Schmit
Sarah Waterman

INFORMATION MANAGEMENT / INDEXING
Carmen-Maria Hetrea
Edward Paul Moragne
Marco Sampaolo
Sheila Vasich
Mansur G. Abdullah
Keith DeWeese
Catherine Keich
Stephen Seddon

EDITORIAL TECHNOLOGIES
Steven Bosco
Gavin Chiu
Bruce Walters
Mark Wiechec

COMPOSITION TECHNOLOGY
Mel Stagner

MANUFACTURING
Dennis Flaherty
Kim Gerber

INTERNATIONAL BUSINESS
Leah Mansoor
Isabella Saccà

ENCYCLOPÆDIA BRITANNICA, INC.

Jacob E. Safra,
Chairman of the Board

Jorge Aguilar-Cauz,
President

Michael Ross,
Senior Vice President, Corporate Development

Dale H. Hoiberg,
Senior Vice President and Editor

Marsha Mackenzie,
Managing Editor and Director of Production

© 2008 by Encyclopædia Britannica, Inc.

International Standard Book Number: 978-1-59339-476-9 (set)

No part of this work may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, recording, or by any information storage and retrieval system, without permission in writing from the publisher.

My First Britannica:
Volume 13: Reference Guide and Index 2008

Britannica.com may be accessed on the Internet at http://www.britannica.com.

Encyclopædia Britannica, Britannica, and the Thistle logo are registered trademarks of Encyclopædia Britannica, Inc.

Reference Guide and Index

TABLE OF CONTENTS

INTRODUCTION 4

Mini-Atlas

Africa 6
North America 8
South America 10
Asia 12
Europe 14
Australia 16
Antarctica 18

Glossary 20

How to Use the Index 40
Index 42

My First Britannica is designed to be entertaining and informative. Presenting a broad spectrum of life on Earth and of the universe beyond, the set provides children with basic information about subjects they are interested in. The subjects have been specially chosen to convey a cross-cultural, international perspective. In addition, **My First Britannica** gives parents, teachers, and mentors an up-to-date reference with answers to the questions children are likely to ask.

My First Britannica consists of 12 main volumes, each organized around a broad subject area that in turn has connections to the subjects of other volumes:

Science and Technology

The Earth and Earth Sciences, Volume 1
Physical Sciences and Technology, Volume 2


© NASA


© Giacomo Pirozzi/Panos Pictures

People and Culture

The Arts, Volume 3
People in History, Volume 4
Folklore and Religions, Volume 5

Places

Europe, Volume 6
Asia, Australia, and New Zealand, Volume 7
Africa, Volume 8
The Americas, Volume 9


© Christophe Loviny/Corbis


© Ariel Skelley/Corbis

Nature

Plants, Volume 10
Birds, Insects, Reptiles, and Aquatic Life, Volume 11
Mammals, Volume 12

At a glance...



© Eric and David Hosking/Corbis

MY FIRST BRITANNICA is designed to hold children's attention with a highly visual presentation while building their study skills. The volumes may be read from cover to cover or used to find a specific fact. The Table of Contents at the beginning of each volume shows how the subject matter is organized and helps children browse through the volume or find information quickly.

Each volume of **MY FIRST BRITANNICA** is divided into two-page articles, or single spreads. The text of each article is written in an age-appropriate, engaging style that will capture the child's imagination while presenting him or her with just the right amount of information.

Included in each spread is a single vivid image or multiple images illustrating the subject and drawing the child in. These images consist of brilliant photographs, original illustrations, informative maps, and portraits of famous people.

Learn More! references at the end of each article point to related information in the same or other volumes. These references help children navigate through the set and understand the connections between subjects. For example, Australia is covered in Volume 7, and topics related to Australia can be found in that volume as well as other volumes:

- Coral, Volume 11
- Great Barrier Reef, Volume 7
- Kath Walker, Volume 3

Still others can be located by using the index to the set:

- An Australian Tale: How Kangaroo Got His Tail, Volume 5
- Cathy Freeman, Volume 4
- Koalas, Volume 12

Exploring interrelated topics from volume to volume will help children build their critical reasoning, comprehension, and vocabulary skills.

In this volume, the **Reference Guide and Index**, you will find a variety of useful reference tools, including a richly illustrated mini-atlas, a comprehensive glossary, and a cumulative index to the entire set. There is a helpful guide to using the index on pages 40-41, which shows children how the index is organized and how to find a specific subject. The index should be used along with the Table of Contents in each volume to locate a subject that is covered in more than one volume.

Although **MY FIRST BRITANNICA** covers a broad range of topics, it is not meant to be comprehensive. It is a fascinating resource, however, that children will want to read in its entirety and not just reach for when they want to look up a specific topic. As such, **MY FIRST BRITANNICA** will provide hours of pleasurable browsing for children and prepare them for more serious research in the future.

what this set covers



My First Britannica Mini-Atlas

Africa

AREA 11,717,000 sq mi (30,347,000 sq km)
Percentage of Earth's land area: 20%

POPULATION 896,402,700 (2006 est.)

LARGEST COUNTRY BY AREA
Sudan 966,800 sq mi (2,504,000 sq km)

LARGEST COUNTRY BY POPULATION
Nigeria 134,375,000 (2006 est.)

▲ HIGHEST POINT
Kilimanjaro, Tanzania 19,340 ft (5,895 m)

▼ LOWEST POINT
Lake Assal, Djibouti –515 ft (–157 m)

LONGEST RIVER
Nile River 4,132 mi (6,650 km)

LARGEST LAKE
Lake Victoria 26,828 sq mi (69,485 sq km)

X COLDEST RECORDED TEMPERATURE
February 11, 1935, Ifrane, Morocco –11° F (–24°C)

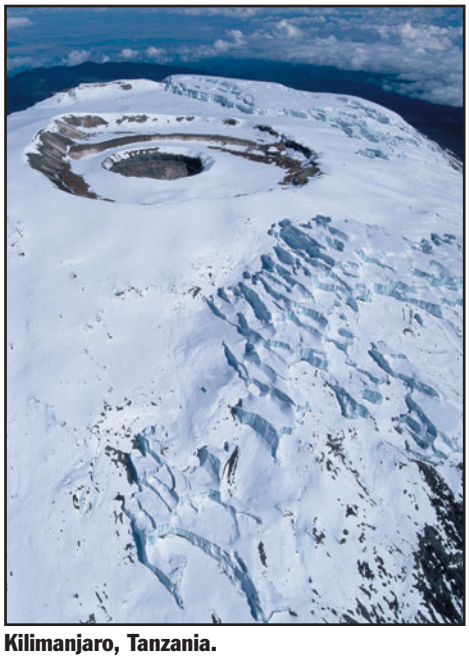
X HOTTEST RECORDED TEMPERATURE
September 13, 1922, Al-Aziziyah, Libya 136° F (58°C)



Lake Assal, Djibouti.
© AFP/Corbis



The Cape of Good Hope is at the southern tip of Africa.
© Nik Wheeler/Corbis



Kilimanjaro, Tanzania.
© Yann Arthus-Bertrand/Corbis



The Nile River at the Aswan High Dam, Egypt.
© Lloyd Cluff/Corbis

Africa



© 2003 Encyclopædia Britannica, Inc.



Death Valley, California, U.S.
© Royalty-Free/Corbis



Mount McKinley, Alaska, U.S.
© Jeff Vanuga/Corbis

North America

AREA 9,362,000 sq mi (24,247,039 sq km)
Percentage of Earth's land area: 16%

POPULATION 515,945,700 (2006 est.)

LARGEST COUNTRY BY AREA
Canada 3,855,100 sq mi (9,984,700 sq km)

LARGEST COUNTRY BY POPULATION
United States 299,330,000 (2006 est.)

▲ HIGHEST POINT
Mount McKinley, Alaska, U.S. 20,320 ft (6,194 m)

▼ LOWEST POINT
Death Valley, California, U.S. –282 ft (–86 m)

LONGEST RIVER
Mississippi-Missouri River, U.S. 3,710 mi (5,971 km)

LARGEST LAKE
Lake Superior, U.S./Canada 31,700 sq mi (82,100 sq km)

X COLDEST RECORDED TEMPERATURE
February 3, 1947, Snag, Yukon Terr., Canada –81° F (–63°C)

X HOTTEST RECORDED TEMPERATURE
July 10, 1933, Death Valley, California, U.S. 134° F (57°C)



Lowell Lake, Yukon Territory, Canada.
© Charlie Munsey/Corbis



Mississippi River at Iowa, U.S.
© David Muench/Corbis

North America



Amazon River, Brazil.
© Richard List/Corbis



An icy Mount Aconcagua, Argentina.
© S.P. Gillette/Corbis

South America

AREA 6,895,000 sq mi (17,858,000 sq km)
Percentage of Earth's land area: 12%

POPULATION 373,993,500 (2006 est.)

LARGEST COUNTRY BY AREA
Brazil 3,287,300 sq mi (8,514,000 sq km)

LARGEST COUNTRY BY POPULATION
Brazil 186,771,000 (2006 est.)

▲ HIGHEST POINT
Mount Aconcagua, Argentina 22,831 ft (6,959 m)

▼ LOWEST POINT
Valdez Peninsula, Argentina –131 ft (–40 m)

LONGEST RIVER
Amazon River 4,000 mi (6,400 km)

LARGEST LAKE
Lake Maracaibo, Venezuela 5,130 sq mi (13,280 sq km)

X COLDEST RECORDED TEMPERATURE
June 1, 1907, Sarmiento, Argentina –27° F (–33°C)

X HOTTEST RECORDED TEMPERATURE
December 11, 1905, Rivadavia, Argentina 120° F (49°C)



Lake Maracaibo, Venezuela.
© Yann Arthus-Bertrand/Corbis

South America



© 2003 Encyclopædia Britannica, Inc.


ARCTIC OCEAN
Arctic Circle
KARA SEA
LAPTEV SEA
EAST SIBERIAN SEA
TAYMYR PENINSULA
VERKHOYANSK MTS.
CHERSKIY MOUNTAINS
-90 °F
CENTRAL SIBERIAN PLATEAU
WEST SIBERIAN PLAIN
URAL MOUNTAINS
RUSSIA
Moscow
Novosibirsk
Lake Baikal
Lake Balqash
ALTAI MTS.
MONGOLIA
MONGOLIAN PLATEAU
Ulaanbaatar
MANCHURIAN PLAIN
NORTH KOREA
P'yongyang
Seoul
SOUTH KOREA
SEA OF OKHOTSK
BLACK SEA
CAUCASUS MTS.
CASPIAN SEA
Istanbul
Ankara
TURKEY
GEORGIA
Tbilisi
ARMENIA
Yerevan
Baku
AZERBAIJAN
KAZAKHSTAN
Astana
ARAL SEA
UZBEKISTAN
TURAN PLAIN
TURKMENISTAN
Ashgabat
KARAKUM DESERT
Tashkent
Bishkek
KYRGYZSTAN
TIEN SHAN
GOBI DESERT
GREAT WALL OF CHINA
Beijing
NORTH CHINA PLAIN
ORDOS DESERT
Koko Nor
Huang He
EAST CHINA SEA
Shanghai
Lake Tai
Lake Poyang
Dongting Lake
Taipei
TAIWAN
MEDITERRANEAN SEA
Beirut
LEBANON
SYRIA
Damascus
Jerusalem
Amman
ISRAEL
JORDAN
DEAD SEA
-1,312 ft
129 °F
IRAQ
Baghdad
Tehran
IRAN
ZAGROS MOUNTAINS
Tigris
Euphrates
Amu Darya
Syr Darya
TAJIKISTAN
Dushanbe
PAMIRS
HINDU KUSH MTS.
KARAKORAM RANGE
TAKLA MAKAN DESERT
KUNLUN MTS.
CHINA
AFGHANISTAN
Kabul
K2
28,251 ft
Islamabad
Indus
PLATEAU OF TIBET
HIMALAYAS
Chongqing
Yangtze
Mekong
Guangzhou
HONG KONG
MACAO
AL NAFŪD DESERT
SAUDI ARABIA
Riyadh
KUWAIT
Kuwait
BAHRAIN
Manama
Doha
QATAR
Persian Gulf
UNITED ARAB EMIRATES
Mecca
ARABIAN DESERT
Abu Dhabi
Gulf of Oman
Masqat
ARABIAN PENINSULA
OMAN
Sanaa
YEMEN
RED SEA
Gulf of Aden
PAKISTAN
Karachi
Delhi
New Delhi
THAR DESERT
NEPAL
Kathmandu
Mt. Everest
29,035 ft
BHUTAN
Thimphu
INDIA
Brahmaputra
Ganges
Dhaka
BANGLADESH
MYANMAR
Kolkata (Calcutta)
Bay of Bengal
Hanoi
HAINAN ISLAND
LAOS
Vientiane
ANNAMESE CORDILLERA
VIETNAM
Manila
PHILIP
SOUTH CHINA SEA
Irrawaddy
Salween
Yangon
THAILAND
Bangkok
CAMBODIA
Phnom Penh
Ho Chi Minh City
SATPURA RANGE
DECCAN PLATEAU
Mumbai (Bombay)
WESTERN GHATS
EASTERN GHATS
Chennai (Madras)
Anai Peak
8,842 ft
SRI LANKA
Colombo
ANDAMAN ISLANDS (INDIA)
NICOBAR ISLANDS (INDIA)
MALAY PENINSULA
BRUNEI
Bandar Seri Begawan
MALAYSIA
Kuala Lumpur
Singapore
SINGAPORE
BORNEO
INDONESIA
SUMATRA
JAVA SEA
GREATER SUNDA ISLA
Jakarta
JAVA
SOCOTRA ISLAND (YEMEN)
ARABIAN SEA
INDIAN OCEAN
Male
MALDIVES
ASIA
0 350 700 mi
0 500 1000 km

Asia



Asia

AREA 17,226,000 sq mi (44,614,000 sq km)
Percentage of Earth's land area: 30%

POPULATION 3,930,081,000 (2005 est.)

LARGEST COUNTRY BY AREA
Russia (Siberia) 5,065,400 sq mi (13,119,600 sq km)

LARGEST COUNTRY BY POPULATION
China 1,311,381,000 (2006 est.)

▲ HIGHEST POINT
Mount Everest 29,035 ft (8,850 m)

▼ LOWEST POINT
Dead Sea –1,312 ft (–400 m)

LONGEST RIVER
Yangtze River, China 3,900 mi (6,300 km)

LARGEST LAKE
Caspian Sea (Asia/Europe) 143,000 sq mi (371,000 sq km)

X COLDEST RECORDED TEMPERATURE
February 6, 1933, Oymyakon, Russia –90° F (–68°C)

X HOTTEST RECORDED TEMPERATURE
June 21, 1942, Tirat Zevi, Israel 129° F (54°C)



Mount Everest, Nepal and China.
© David Keaton/Corbis



Yangtze River flowing on the Plateau of Tibet, China.
© How-Man Wong/Corbis

Europe

AREA 4,000,000 sq mi (10,400,000 sq km)
Percentage of Earth's land area: 7%

POPULATION 691,832,000 (2005 est.)

LARGEST COUNTRY BY AREA
Russia (European) 1,527,400 sq mi (3,955,900 sq km)

LARGEST COUNTRY BY POPULATION
Russia (European) 104,808,000 (2005 est.)

HIGHEST POINT
Mount Elbrus, Russia 18,510 ft (5,642 m) [off map]

LOWEST POINT
Caspian Sea –94 ft (–28.5 m) [off map]

LONGEST RIVER
Volga River, Russia 2,193 mi (3,530 km)

LARGEST LAKE
Caspian Sea (Europe/Asia) 143,000 sq mi (371,000 sq km) [off map]

COLDEST RECORDED TEMPERATURE
January (exact date unknown), Ust-Shchugor, Russia –67° F (–55°C) [off map]

X HOTTEST RECORDED TEMPERATURE
August 4, 1881, Sevilla, Spain 120° F (49°C)





Mont Blanc, France, Europe's second highest point.
© Ludovic Maisant/Corbis



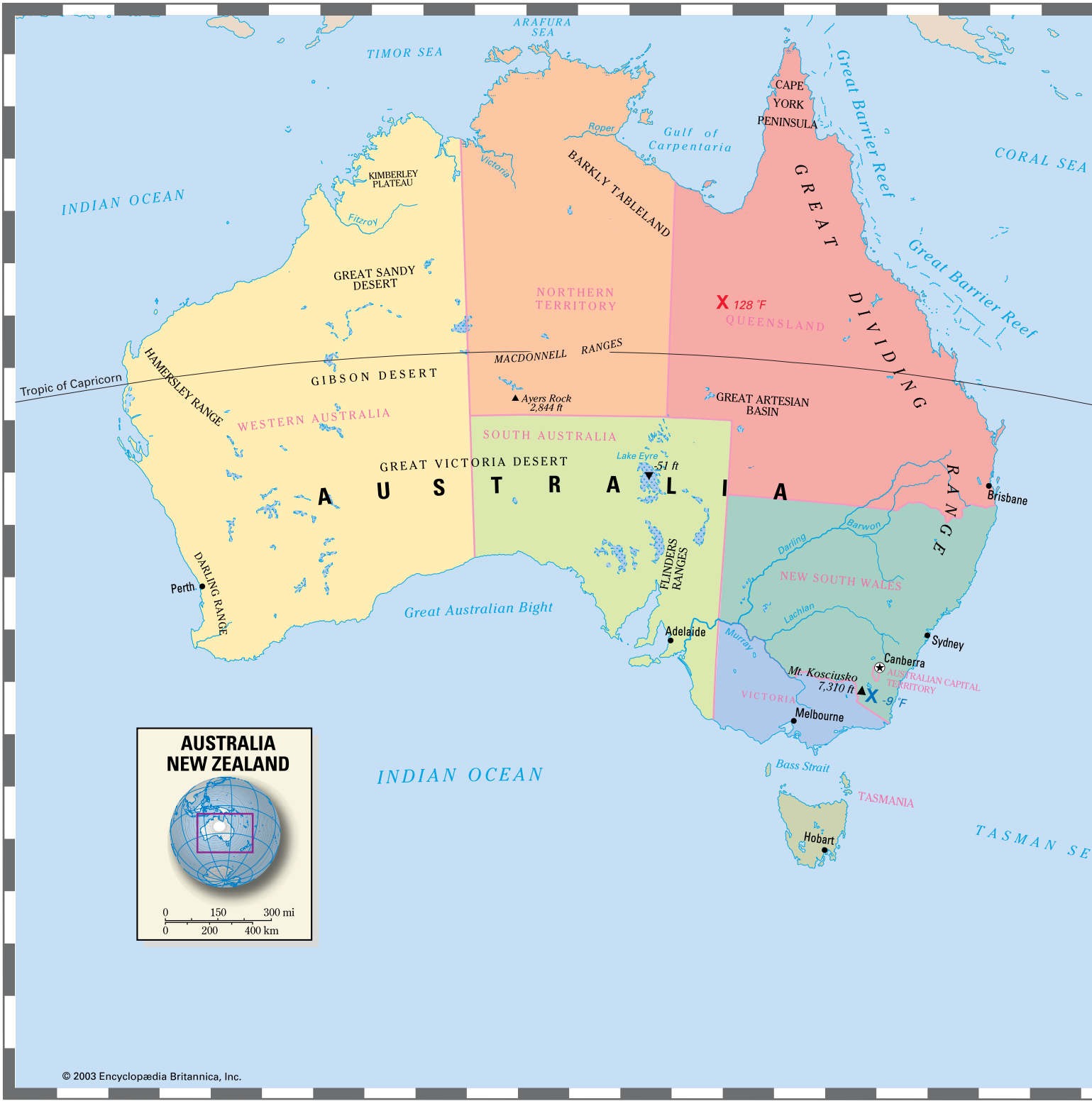
Volga River, Russia.
© Buddy Mays/Corbis



Sevilla, Spain.
© Nik Wheeler/Corbis

Europe

© 2007 Encyclopædia Britannica, Inc.



© 2003 Encyclopædia Britannica, Inc.

Australia



Lake Eyre, South Australia.
© Ted Spiegel/Corbis

Australia (including New Zealand)

AREA 3,074,000 sq mi (7,962,000 sq km)
Percentage of Earth's land area: 5%

POPULATION 24,821,000 (2006 est.)

LARGEST COUNTRY BY AREA
Australia 2,970,000 sq mi (7,692,000 sq km)

LARGEST COUNTRY BY POPULATION
Australia 20,680,000 (2006 est.)

▲ HIGHEST POINT
Australia: Mount Kosciusko, New South Wales
7,310 ft (2,228 m)
New Zealand: Mount Cook 12,316 ft (3,754 m)

▼ LOWEST POINT
Lake Eyre, South Australia –51 ft (–15 m)

LONGEST RIVER
Darling River 1,702 mi (2,739 km)

LARGEST LAKE
Lake Eyre, South Australia 3,700 sq mi (9,600 sq km)

X COLDEST RECORDED TEMPERATURE
June 29, 1994, Charlotte Pass, New South Wales –9° F (–23°C)

X HOTTEST RECORDED TEMPERATURE
January 16, 1889, Cloncurry, Queensland 128° F (53°C)



Darling River, New South Wales.
© Michael & Patricia Fogden/Corbis



Snowy peaks on the Antarctic coast.
© George D. Lepp/Corbis



Water-filled crater in Antarctica.
© Peter Johnson/Corbis



Biologist walks through mountains of Cape Crozier, Antarctica.
© Galen Rowell/Corbis

Antarctica

AREA 5,500,000 sq mi (14,245,000 sq km)
Percentage of Earth's land area: 9%

POPULATION No permanent population

▲ **HIGHEST POINT**
Vinson Massif 16,066 ft (4,897 m)

▼ **LOWEST POINT**
Bentley Subglacial Trench –8,327 ft (–2,538 m)

X **COLDEST RECORDED TEMPERATURE**
July 21, 1983, Vostock Station –129° F (–89°C)

X **HOTTEST RECORDED TEMPERATURE**
January 5, 1974, Lake Vanda 59° F (15°C)



Crater of Mount Erebus, Ross Island, Antarctica.
© Galen Rowell/Corbis

Antarctica


ARGENTINA
CHILE
Cape Horn
FALKLAND ISLANDS
SCOTIA SEA
SOUTH GEORGIA
ATLANTIC OCEAN
Drake Passage
SOUTH SHETLAND ISLANDS
SOUTH ORKNEY ISLANDS
SOUTH SANDWICH ISLANDS
GRAHAM LAND
Larsen Ice Shelf
ANTARCTIC PENINSULA
PALMER LAND
WEDDELL SEA
Antarctic Circle
ALEXANDER ISLAND
Mount Jackson 13,747 ft
BELLINGSHAUSEN SEA
Riiser-Larsen Ice Shelf
Fimbul Ice Shelf
BERKNER ISLAND
Ronne Ice Shelf
ELLSWORTH LAND
COATS LAND
Filchner Ice Shelf
Vinson Massif 16,066 ft
AMUNDSEN SEA
ELLSWORTH MTS.
TRANSANTARCTIC MOUNTAINS
WEST ANTARCTICA
QUEEN MAUD LAND
Bentley Subglacial Trench -8,327 ft
POLAR PLATEAU
South Pole
Valkyrie Dome
MARIE BYRD LAND
ENDERBY LAND
Lambert Glacier
ROOSEVELT ISLAND
Ross Ice Shelf
ROSS SEA
Skelton Glacier
EAST ANTARCTICA
AMERICAN HIGHLAND
Amery Ice Shelf
Mackenzie Bay
ROSS ISLAND
Mt. Erebus 12,450 ft
59 °F
-129 °F
TRANSANTARCTIC MOUNTAINS
West Ice Shelf
Talos Dome
WILKES LAND
Shackleton Ice Shelf
PACIFIC OCEAN
Minimum extent of sea ice
INDIAN OCEAN
ANTARCTICA
0 300 600 mi
0 400 800 km
© 2003 Encyclopædia Britannica, Inc.

GLOSSARY

My First Britannica **Glossary**

abandon to leave without planning to return

abbey place where a community of monks or nuns live and work; also, the church serving that community

abdomen in insects, the end portion of the body that is behind the head and thorax (middle section)

abominable horrible or disgusting

Aboriginal having to do with the original people to live in an area; especially, the original peoples of Australia

absorb soak up

abstract (adjective) in the arts, creatively communicating feelings or ideas about a subject rather than creating a realistic image

abundance great quantity; plenty

abyssal having to do with an area of the ocean that is thousands of feet below the surface of the water

acid a chemical substance, often producing a burning effect when it interacts with another material

acrobat performer who does tricks and physical programs that require strength, balance, and body control, often above the ground

acrylic type of paint

adaptation in biology, a change in an organism or its parts that allows the organism to survive better in its environment

administrative having to do with managing or supervising the functions of a business, organization, or government

aerialist performer who does tricks and feats above the ground or in the air

affordable reasonable in price

agent something that produces an effect

aggressive openly hostile or tending to approach with great force or energy

agriculture farming

alas unfortunately or sadly

algae (singular: **alga**) group of organisms that are similar to plants and live mostly in the water

alpine mountainous

altar raised place on which sacrifices are offered or religious ceremonies are performed

altitude the distance of an object above a specific level (such as sea level) on a planet or other heavenly body

ambassador person who officially represents his or her own government in a foreign country

amphitheater building with seats rising in curved rows around an open space where games and plays take place

ancestry all the family members who lived before a particular individual

antenna (plural: **antennas**) 1) in biology, a slender organ on the head of some insects and crustaceans (such as shrimps and lobsters) that allows them to sense their environment; 2) in technology, a dish, rod, or wire for sending or receiving radio waves or other energy

antics playful or funny actions

Arab member of a people originating in the Arabian Peninsula and now inhabiting much of the Middle East and North Africa

arc a curved line

archaeology (adjective: **archaeological**) the science that deals with past human life as shown by fossils, tools, and other material left by ancient peoples

archbishop high-ranking churchman in some Christian churches who supervises church government in a very large area

architecture the art of designing and building structures, especially buildings that can be lived and worked in

archives place where public records or historical documents are kept

arena enclosed area used for public entertainment

aristocratic having to do with the upper social classes

artificial made by human beings rather than occurring in nature

aspect part, feature, or quality of something

asteroid small, often rocklike heavenly body orbiting the Sun

astronomy (adjective: **astronomical**) the science of the heavenly bodies and of their sizes, motions, and composition

atmosphere the envelope of gases that surrounds a planet

autobiography life story written by the person it is about

autonomous independent and self-governing

axis imaginary pole going through the center of the Earth or other heavenly body

bacterium (plural: **bacteria**) tiny one-celled organism too small to see with the unaided eye

baleen a hardened substance from 2 to 12 feet long found in two rows along the upper jaws of certain whales

banish to force or drive away

barrier object or structure that blocks the ability to reach another object or place

basilica Roman Catholic church that has special ceremonial privileges

basin in geography, the area of land drained by a river and its branches

bask to lie or relax in a warm place

bay part of a coastline that curves in toward land

bazaar marketplace where many kinds of goods are sold; especially, such a marketplace in Asia or Africa

Berber member or descendant of a people who originally inhabited North Africa, before the Arab conquest in the 7th century AD

betray to lie to or go back on one's word

biologist person who studies living organisms and life processes

blockbuster huge, successful event

bog wet spongy ground

bond connection or friendship

botanical (noun: **botany**) having to do with plant life

boulevard wide avenue often having grass strips with trees along its center or sides

bovine animal group that includes cattle, oxen, bison, and buffalo

boycott the refusal to deal with a person, group, or country, usually in order to show disapproval or to force a change in behavior

Braille a system of writing for the blind in which letters are represented by raised dots

bray to make a sound like the loud harsh call of a donkey

breadth width

brew to prepare by steeping (soaking) or boiling in hot water

broadcast to send out a program or message to a public group, usually by radio, television, or the Internet

buff an off-white color

burden weight or load to carry

burrow deep hole or tunnel made in the ground by an animal for shelter

bushman in Australia, a person who lives in the bush (wilderness)

cactus (plural: **cacti**) flowering plant of dry regions that has water-storing fleshy stems and, usually, sharp spines

calorie unit that measures the amount of heat energy that food provides to the body

camouflage colors and patterns that allow a person, animal, or thing to blend in with its surroundings

campaign planned activities designed to lead to a particular result

canal artificial waterway for boats or for draining or supplying water to land

canoe a small, light, and narrow boat having sharp front and back ends and moved by paddling

canopy overhead covering

captive (noun: **captivity**) (adjective) taken and held in a cage or as a prisoner; (noun) one who has been taken or held in a cage or as a prisoner

caravan group of pack animals or of vehicles traveling together one behind the other

carbohydrates plentiful, energy-producing natural substances that are formed by many food plants eaten by animals

carcass dead body or leftover parts of an animal

cargo goods transported in a ship, airplane, or other vehicle

cartridge sealed container

cassava tropical plant that has a thick underground rootlike part and can be made into a number of foods

cast (verb) to form a shape by pouring a liquid into a mold and letting it harden

cathedral large Christian church where a bishop is in charge

ceramics objects made out of clay baked at high temperatures

cereal starchy seeds of certain grass plants grown for food

chairman person who leads a meeting or an organization

champagne a sparkling white wine

channel narrow passageway between two areas of water

chapel small, sometimes private place for prayer or special religious services

charitable done to serve the needs of the poor or sick

château castle or large country house, especially in France

chemical one of the combined substances making up living and nonliving things

chemist scientist who studies the makeup and properties of physical substances and the changes that they go through

choreographer creator of a dance

circulate to flow

citadel castle or fortress that protects a city

citrus kind of tree or shrub grown in warm regions and having thick rind (skin) and fleshy fruits, including oranges, grapefruits, and lemons

civil rights the social and personal rights of a citizen

civil war war between opposing groups of citizens of the same country

civilization the way of life of a people at a particular time or place; also, a fairly advanced culture and technology

classical traditional in style

climate average weather in a particular area

clockwise in the direction that a clock's hands move, as viewed from the front

cloudburst sudden heavy rainfall

cobbled made of rounded stones larger than a pebble and smaller than a boulder

colony (adjective: **colonial**; verb: **colonize**) 1) in general, a settlement established in a distant territory and controlled by a more powerful and expanding nation; 2) in biology, a group of similar organisms that live together in a particular place

comet chunk of frozen space debris that has a shiny tail and orbits the Sun

commanding grand and powerful

commandment law or rule for living

commerce (adjective: **commercial**) the buying and selling of goods, especially on a large scale and between different places

commission (verb) to order to be made; (noun) an order granting the power to perform various acts or duties

commoner person who is not of the noble or upper classes

communism (adjective: **communist**) system of government in which all property is owned by the state or community and all citizens are supposed to have a share in the total wealth

composer person who writes music

composition literary, musical, or other artistic work

concentrated condensed, or made thicker, by removing water

conductor the leader of an orchestra

conflict disagreement, struggle, or fighting

congress the main lawmaking group of some nations

conquistador (plural: **conquistadores**) a Spanish conqueror of Latin America

conservation the care and protection of something fragile, unique, and valuable, such as rare wildlife or ancient structures

conservative tending to safeguard existing views, conditions, or traditions

constitution document containing the basic beliefs and laws of a nation, state, or social group

continent one of the largest of Earth's landmasses

contour the outline of a figure, body, or surface

contract (verb) to make smaller by tightening or squeezing together

controversial causing division or disagreement

convert to change; to win over to a new or different belief

conveyor belt a loop of material that can move objects from one worker or workstation to the next for the steps needed to make a product

convict (noun) person serving a prison sentence

core central part

corkscrew device with a handle and a spiral-twist metal piece, used for removing certain bottle stoppers

corridor passageway into which compartments or rooms open

counterclockwise in the direction opposite to the way a clock's hands move, as viewed from the front

countless too many to count

craft (noun) a skill or trade; (verb) to make skillfully, usually by hand

crater bowl-shaped dent in a surface

crest (adjective: **crested**) 1) in biology, a standing clump of fur or feathers, usually on an animal's head; 2) in geography, the upper edge or limit of something, such as the top of a mountain

critic person who studies and comments on the quality of performances or works of art

crossbreed to produce offspring from parents of two varieties or species

crossroads place where roads cross; also, a central meeting place or a decision-making point

crown prince (feminine: **crown princess**) the prince next in line for a crown or throne

crude oil oil taken from the ground and not yet cleaned or separated into different products; also called petroleum

cruise a pleasure trip on a large boat or ship

crusade campaign or cause taken up with passion and belief

crystal clear colorless glass of very good quality

cuisine style of cooking; also, foods made in that style

cultivate in gardening and farming, to plant crops and to care for them as they grow

culture the ways of life, traditions, and behaviors of a specific group of people

customhouse place where duties or taxes are paid on goods coming into or leaving a country

cutting in gardening and farming, a section of an adult plant capable of developing into a new individual

Cyrillic having to do with the alphabet for writing in Russian and other Eastern European languages

data factual information or details

dean in education, the head of a division of a school or university

debris trash or fragments

debut first formal public appearance

decade ten-year period

delta large triangular area made of material deposited at the mouth of a river, where it empties into the sea

democracy (adjective: **democratic**) government in which the highest power is held by the citizens; they either use their power directly (usually by voting) or choose others to act for them

depict to represent by a picture

deposit substance laid down by a natural process

deputy member of a lawmaking group in some nations

descendant member of a recent age group of a family or similar division that began years earlier

descended (adjective) related through a long line of ancestors

descent ancestry, heritage, or origin

devastate to wreck or destroy

device tool or piece of equipment

devise to figure out, invent, or plan

dialect one of several varieties of a language used by the members of a particular group or class of people

dialogue conversation in a play, film, or written work

diameter the length of a straight line through the center of an object

dictate to speak for another person to write down or for a machine to record

dictator person who rules with total power, often in a cruel or brutal way

diesel type of fuel-fed engine

digestive system parts of the body that work together to break down food into simpler forms that can be used by the body

dike mound of earth built to control water

diplomat person who works to keep up friendly relations between the governments of different countries

discrimination the treatment of some individuals or groups differently from others without any fair or proper reason

disk in plants, the central part of certain flower heads, as in daisies and sunflowers; the disks, in turn, are surrounded by ray flowers

dismay sadness or disappointment

dispute (verb) to argue with

diverse varied; different

divine holy, godlike, or concerning God

dome large rounded structure shaped like half of a ball

domestic (verb: **domesticate**) tame

dominant having influence or control over another person, place, or thing

drastic huge, extreme, or dramatic

drawback problem or bad side

drought long period of dry weather

dual two

duct pipe, tube, or channel through which liquid or gases flow

dung animal waste

dwindle to become smaller or less

dynasty series of rulers of the same family

echo (verb) to repeat or imitate a sound

economical cheap and efficient

economy the system in a country or group by which goods are made, services are offered, and both are sold and used

ecosystem community of all the living things in a region, their physical environment, and all their interrelationships

edict law or order given by a ruler or leader

edit to cut down to a different or shorter version

effortless easy and natural

element in science, one of the basic unique substances that make up all matter

elevation the height of an object above sea level (that is, the surface of the ocean)

embassy the living quarters or office of an ambassador (a person who officially represents his or her own government in a foreign country)

embroidery needlework done to decorate cloth

emperor (feminine: **empress**) the ruler of an empire

empire a major widespread area under a single government, or a number of territories or peoples under one supreme ruler

endangered species a group of plants or animals whose entire survival is threatened

energetic lively or active

engineer person who is trained to design and produce complex structures such as roads, bridges, and dams

enlightenment remarkably clear state of awareness, understanding, and inner peace

equator imaginary circle running east-to-west around the Earth that lies halfway between the North Pole and the South Pole

erosion (verb: **erode**) the process of wearing down; especially, the wearing away of soil or rock by wind, water, or ice

ethnic having to do with a large group of people who share a racial, national, tribal, religious, language, or cultural background

ethnography (adjective: **ethnographic**) the study of human cultures

evaporate change into a vapor or gaseous form, usually by means of heating

evergreen (adjective) having leaves that remain green and working through winter and more than one growing season

evolution (verb: **evolve**) the process of changing, especially over time

exile (noun) banishment or official separation

exotic unusual and unfamiliar

expanse large area

expedition a planned journey or trip made for a specific purpose

export to carry or send abroad, especially for sale in another country

expression communication, usually of emotions or ideas

extend to stretch out or reach across a distance, space, or time

extinct no longer existing

extremist person who holds unusually strong opinions or beliefs

famine drastic food shortage, often ending in starvation for many

fantastical highly imaginative and unrealistic

fast (noun) period of time when a person gives up or limits eating, often for religious reasons

ferocious fierce and wild

fertile rich and productive; able to yield quality crops in large quantities

fertilizer natural or artificial substance used to make soil better for growing crops

fiber strand or threadlike structure

fix in photography, to make an image lasting

flare (verb) to fan out or expand

flask container for liquid

flax the fiber from which linen cloth is made

fleece wool of an animal such as a sheep or a goat

flourish to grow successfully; to do well

fodder coarse food for farm animals

foliage the leaves of a plant

forefoot one of the front feet of an animal with four or more feet

forestry the science and work of caring for forests

formal following a specific order or pattern

fortify to strengthen with weapons and by military defenses

fortress well-defended place

fossil an imprint or other trace in rock of an animal, plant, or other living thing

foundation the support on which something rests; also, the base from which an idea or creation grows

fragrance (adjective: **fragrant**) sweet, pleasant, and often flowery or fruity smell

frankincense a sweet-smelling substance from an African or Arabian tree

fresco painting done on freshly spread moist plaster

frigid frozen or extremely cold

fungus (plural: **fungi**) organism (such as a mushroom or mold) similar to a plant but lacking a stem, roots, leaves, and the substance called "chlorophyll"

fuse an electrical safety device

fusion the blending or combination of two or more things, as if melted together

gallery room or building that is used to display special objects or works of art

gangster member of a gang of criminals

gear a toothed wheel that works as part of a machine

gemstone natural material that can be cut and polished for use in jewelry

generate to create or be the cause of

geography the natural physical features of an area; also, the study of the countries of the world and of the Earth's surface features

geometric based on straight lines, curves, and simple shapes such as circles and squares

gesture movement of the body, arms, hands, or legs to express feelings or thoughts

gills pair of breathing organs found in fish and some other water-dwelling animals

glacier large riverlike body of ice moving slowly down a slope or spreading over a land surface

gladiator in ancient Rome, a person who fought to the death as part of a public entertainment

gland structure in animals that produces special substances, such as sweat or oil or milk

glider soaring aircraft similar to an airplane but without an engine

global warming increase in the average temperature on the planet Earth

gorge narrow steep-walled canyon

gory violent and bloody

Gospel one of the first four New Testament books of the Bible, telling of the life, death, and resurrection (raising from the dead) of Jesus Christ

gospel, or **gospel music** black American music that grew mostly from Christian church services, blues, and traditional spirituals

governess woman who teaches and trains a child in a private home

gravity force that attracts objects to each other, keeps people and objects anchored to the ground, and keeps planets circling the Sun

guerrilla person who is part of an independent fighting force that makes surprise raids behind enemy lines

gymnastics difficult physical exercises, often performed as a sport in competitions

habitat the physical environment in which a living thing dwells

hail small balls or lumps of ice that fall from the sky, as rain does

handicrafts articles, such as pottery, made by hand by an individual person

handiwork creative product

hare rabbitlike animal

harness (verb) to control, much as an animal may be hitched up and controlled by its harness

harvest the gathering of a crop

hatch to come forth from an egg or other protective covering during development

headquarters the governing and directing center of an organization

heath low evergreen shrub with needlelike leaves and clusters of small flowers

hemisphere half of the planet Earth or any other globe-shaped object

herb pleasant-smelling plant (such as mint, oregano, basil, and coriander) often used in cooking, either in part or as a whole

heritage background or descent

hermit person who has withdrawn from society to live alone

hibernate to pass the winter in a sleeping or resting state

highland high or mountainous land

horizon distant point where the land and the sky appear to meet

hot spring a source of hot water coming from underground

hull hard outer shell of a seed; also, the outer layer of a boat or ship

humanitarian devoted to the happiness and welfare of other people

humidity (adjective: **humid**) moisture or dampness; especially, the amount of moisture in the air

hurricane major tropical storm that occurs in the Atlantic Ocean and features high winds moving in circular patterns; in the Pacific Ocean such storms are called "typhoons"

husk usually thin, dry outer covering of a fruit or seed

hymn song of joy or praise, often to a god

immigrant person who goes to a country to live there

immigration the process of moving to a new country

immortal living or lasting forever

impaired damaged or limited

imperial having to do with an emperor or empire

impish playfully naughty

implant (noun) object inserted within living tissue; (verb) to insert securely or deeply

import to bring from a foreign place

impression mark or figure made by pressing one object onto the surface of another; also, the effect or feeling an object or person creates

inanimate not living

incense substance that produces a sweet smell when burned

indivisible unable to be divided

industrial having to do with businesses that construct or produce something

Industrial Revolution 18th-century era that began when power-driven machinery became common

industrialized built up and modernized through business and manufacturing

industry business and manufacturing

inhabited (adjective) occupied; having residents

inhaler device through which medicine is drawn in through the nose or mouth

inlaid decorated with materials set into the surface

inland part of a country away from the coast

inspiration something that causes a particular thought, feeling, or idea

instinct natural tendency of a living thing to respond in a particular way to a situation

integrate (adjective: **integrated**) to combine two or more parts in order to create a more-balanced whole; especially, to remove barriers that isolate one group of people from another

international having to do with two or more countries

intricate complicated or detailed

investigate to look into or study

islet small island

isolate to keep separate or alone

isthmus narrow strip of land connecting two larger land areas

ivory material that makes up elephant and walrus tusks

judo sport, developed from the Japanese fighting art of jujitsu, in which opponents use quick movements and careful positioning to try to throw each other to the ground

kernel whole grain or seed of a cereal plant

kerosene fuel for lanterns

laboratory place where science tests and experiments are done

landmass large area of land

landscape picture showing views of nature and the countryside

larva (plural: **larvae**) wingless, often wormlike stage of many insects

lash to tie or attach

layperson (adjective: **lay**) person who belongs to a religious group but is not part of its official clergy (as a priest or minister is)

legacy something handed down from an earlier time or person

legislature organized government group with the power to make laws

lens (plural: **lenses**) curved piece of glass that concentrates rays of light

liberation freedom

literacy the ability to read and write

litter group of newborn animals born to the same mother at the same time

livestock animals kept or raised, especially farm animals such as cattle, pigs, sheep, goats, and horses

locomotive railway vehicle that carries the engine that moves train cars along

loot to steal from a home or public place, especially during rioting or wartime

lumber wood used for building or carpentry

lunar having to do with the Moon

lung organ that helps some animals breathe air

lyrics the words of a song

magistrate official who looks after the laws of a particular area

magnify to make something appear larger

majestic grand or splendid

majority most; usually, more than half of a group of individual people or things

majority rule system in which the majority (that is, a number over half) of a group is given the power to make decisions that the entire group must accept

mammal class of warm-blooded animals that feed their young with milk from special mammary glands, have an internal backbone, and are more or less covered with hair

mangrove tropical tree or shrub that has partly exposed roots and grows thickly in areas of salty water

manufacture to make from raw materials, by hand or by machine

manuscript handwritten or typewritten document

marginal lying at or near the outer edge (margin) of some larger place, object, or group

marine having to do with the ocean

marmalade clear, usually sugary jelly containing pieces of fruit and fruit rind

marsh area of soft wet land usually overgrown by grasses and sedges

massive heavy or large

matter physical substance or material from which something is made

mausoleum large or fancy tomb

meal coarsely ground substance

medicinal used as a medicine

medieval period in European history from the 5th to about the 14th century AD

meditation (verb: **meditate**) quiet, focused concentration, meant to calm and clear the mind; sometimes used to reach a spiritual awareness

memorial something that keeps alive the memory of a person or event

mesa flat-topped hill or small upland with steep sides

meteorite mass of material from space that reaches the Earth's surface

method way or system

metropolitan having to do with a city and its heavily populated surrounding areas

microphone device that changes sound to electrical signals, usually in order to record or send sound

migration movement from one country or place to another

minaret in Islamic architecture, the tall slender tower of a mosque, from which Muslims are called to prayer

mineral substance that is not animal or plant and is an important nutrient for living things

mischievous playfully naughty

moccasin soft leather shoe first worn by Native American Indians

module independent unit made to be part of a larger structure

molecules the smallest possible pieces of a particular substance

mollusk any member of a group of animals that have no backbone and are usually enclosed in a shell (for example, snails, clams, or squids)

molten melted

monarchy form of government in which the ruler inherits the position and rules for life; monarchs include kings, queens, emperors, and tsars

monastery housing for people who have taken religious vows, especially for monks

monk man who lives separately from society, either alone or in a community of men, so that he can devote all his time to religious life

monsoon regular period of heavy rainfall and wind, especially in southern Asia

monument stone or building set up in memory of a person or event

mosque Muslim place of worship

mountaineer mountain climber

mourn to feel great sorrow, usually because of a death or other loss

mural a painting on a wall

mussel kind of mollusk (shellfish)

muzzle animal's snout (jaw and nose)

mystical having to do with a person's direct spiritual connection with a god or other supernatural power

myth story that unfolds part of the worldview of a people or is used to explain a belief or natural event

mythology the stories dealing with the gods and heroes of a particular people or culture

native (adjective) living or growing naturally in a particular region

natural resources the materials or qualities supplied by nature (such as minerals or water power) that make a place valuable to people, usually for industrial and manufacturing purposes

nature inborn or instinctive way of behaving or thinking

nectar sweet liquid produced by plants and used by bees in making honey

negotiate to discuss and bargain with another in order to reach an agreement

Negro spiritual religious folk song developed among blacks in the southern United States

network complex system

nobility a nation's upper-class social group

noble of upper-class birth or rank

nocturnal active at night

nomad member of a people who have no permanent home but instead move from place to place, usually with the seasons and within a specific area

nonfiction literature that is based on fact rather than imagination

nostril one of the outer openings of the nose

nuclear weapon explosive device that produces enormous power by splitting apart the centers of the tiny particles called "atoms"

nuisance annoying or troublesome person, thing, or event

nursery place where plants are grown for farming, for scientific experiments, or for sale to the public

nutrient substance that a living thing needs in order to stay healthy and grow

ocelot medium-sized wildcat of the Americas

oddity unusual thing or quality

oil (or **crude oil**) liquid taken from the ground and not yet cleaned or separated into such products as gasoline and kerosene; also called petroleum

oral having to do with the mouth

orbit (verb) to travel around an object; (noun) an object's path around another object

orchestra group of musicians playing together, usually with a leader called a "conductor"

order religious community, usually requiring that its members take solemn vows promising duty and faithfulness

organism living thing

organization group of people working together for some purpose

orthodox strictly obeying traditional rules, customs, or beliefs

overseer person in charge of others who are carrying out a task

overwhelm to defeat, beat down, or swallow up

oxygen very common gas that is one of the basic elements necessary for human and animal life

pagan (adjective) non-religious; especially, used disapprovingly to describe a form of worship very different from a familiar and socially acceptable religion

pagoda towerlike Asian temple or memorial building several stories tall, with the edges of the roof at each level curving upward

papyrus tall reed plant that grows in the Nile valley and that the ancient Egyptians used to make an early kind of paper

paralyze to make someone or something unable to move

parasite creature that lives on another, which it usually injures

parka hooded heavy jacket for very cold weather

parliament the lawmaking body of some governments

particle tiny bit or piece

pastel type of drawing crayon

patent (verb) to legally protect the rights to make, use, or sell an invention; (noun) document that legally protects the ownership and use of an invention

patron saint holy person who is chosen to specially protect a group or place

peccary American animal related to the pig

peninsula a finger of land with water on three sides

perfection state of being without flaw or error

permanent unchanging, long-lasting, or meant to last forever

persecute (noun: **persecution**) to treat cruelly or harmfully for an extended period of time; especially, to make a person or group suffer because of their beliefs

pesticide poison that kills insects dangerous to growing plants

petroleum liquid taken from the ground and not yet cleaned or separated into such products as gasoline and kerosene; also called "crude oil"

philharmonic large orchestra that plays classical music

philosopher thinker or seeker after truth and understanding of basic concepts

photoelectric effect electrical effect produced when light strikes a metal surface

physics the science that deals with matter and energy and the way they interact

piazza open place or area formed at the meeting of two or more streets, especially in an Italian town

pied (adjective) having blotches of two or more colors

pilgrim person who travels to a shrine or holy place to worship

pilgrimage journey made to a holy place to worship there

plantation large farming property, usually worked by resident laborers

plate in the Earth sciences, a large segment of the Earth's crust (outer layer) that is constantly in motion

plateau wide land area with a fairly level surface raised sharply above the land on at least one side

plaza open place or area formed at the meeting of two or more streets

pleated folded and laid over another part of some material, especially a piece of cloth

plot the main story of a work of literature

poet laureate poet honored by a country or other region as its most outstanding poet

polar region area at or near the North Pole or South Pole

polio serious disease that may kill or permanently weaken or paralyze its victims

political having to do with creating and controlling a government

pollen (verb: **pollinate**) very fine dusty substance that comes from flowers; it is important in the reproduction of plants

pollute (noun: **pollution**) to poison or make dirty, often with man-made waste

polo team sport played by hitting a wooden ball with mallets through goalposts while on horseback

pope the leader of the Roman Catholic church

population all the people living in a country or other specific area

populous having a large population

porcelain hard white ceramic ware (earthenware) used especially for making dishes

porridge soft food made by boiling grain meal or a vegetable in milk or water until it thickens

port protected harbor where ships dock to load or unload goods

porter person who carries baggage

portray to show by making a picture or by imitating; also, to act the part of a character in a play

potential possible

poultry birds raised for their eggs or meat

poverty the condition of being poor

preach to deliver a sermon; to urge to accept an idea or course of action

precious of great value or high price

predator (adjective: **predatory**) animal that lives by eating other animals

predict to foretell an event on the basis of study, experience, or reasoning

prehistoric having to do with times before written history

presence the strong and self-confident quality a person has that makes others focus on him or her

prey an animal eaten by another animal

prime minister the chief officer of the government in some countries

primitive ancient, or belonging to a very early stage of development

print (noun) work of art made by a process that allows more than one copy of an image to be made

prism piece of many-sided clear crystal

procession group of people moving along in an orderly, often ceremonial way

Promised Land in Judaism, the land of Canaan, which God promised to Abraham and Moses if the Hebrew people promised to worship only him

propeller a device that uses blades that fan outward from a central hub to propel (move) a vehicle, such as a boat or an airplane

prophet a holy person who acts as a messenger between God and people; also, a gifted person with the ability to accurately predict future events

prosperous wealthy

prowl to creep about in a sneaky way, often while hunting

psalm a sacred song or poem used in worship; especially, one of the biblical poems collected in the Book of Psalms

pulp 1) in plants, the juicy fleshy part of a soft fruit; 2) in industry, a mashed-up pasty glop such as the plant material used in making paper

pygmy something very small for its kind

pyramid structure with a square base and four sloping triangle sides that meet in a point at the top

quay structure built along the bank of a waterway for use as a landing place

rabies serious disease of animals that is usually passed on through the bite of a sick (rabid) animal; its effects include extreme salivation, strange behavior, and usually death

radiation energy sent out in the form of rays, waves, or particles

rainforest dense tropical woodland with a high yearly rainfall and very tall trees

ray beam

rebel person who fights against an existing power or way of doing things

recitation act of speaking or reading a piece of literature aloud

reclaim to change to a wanted condition

recycle to reuse, or to pass used or scrap material through various changes in order to create new useful products from it

reef raised length of rocks, coral, or sand at or near the surface of water

refined polished, complex, and advanced

refinery factory that treats crude petroleum and separates it into different parts

region (adjective: **regional**) general area; also, a specific district

reign the time during which a ruler is in power

remains (noun) parts that are left after time passes or some event occurs

repel to force away or resist

reptile major animal group that includes snakes, lizards, and other animals that usually have scales or bony plates

republic form of government in which citizens who are allowed to vote elect officials and representatives responsible for governing by law

research careful search and study

reserve area of land set apart for some special purpose; also (usually plural, reserves), money or valuable items kept in hand or set apart until needed

resort (noun) fancy vacation spot

resurrection raising from the dead

revere to honor

revolt (verb) to rise up (often violently) against the power of a ruler or government

revolution (adjective: **revolutionary**) activity or movement designed to make changes in a situation

rhythm (adjective: **rhythmic**) regular pattern of sound

rind the usually hard or tough outer layer or "skin" of a fruit or vegetable

ritual formal custom or ceremony, often religious

roam to travel or wander freely through a wide area

rodent major animal group that includes mice, squirrels, and other small gnawing animals

rotate (noun: **rotation**) to spin or turn

rubble confused mass of rough or broken things

rudder flat piece attached to the back of a boat or ship and used for steering

ruthless without pity

sabotage damage or destruction of property that interferes with an enemy's use of it

sacred holy

sacrifice (noun) valuable offering made to a god; especially, a human or animal victim killed on an altar

saga tale of historic or legendary figures and events of Norway and Iceland

salvation rescue from the power and effects of sin

samurai warrior class in Japan from about the 12th to the mid-19th century

sanctuary safe place

sap the liquid inside a plant

satellite natural or man-made object that circles another object, usually a planet

savage extremely violent

savanna hot, dry grassland with scattered trees

saw-toothed having an edge or outline like the teeth (cutting points) of a saw

scale in biology, one of the small, stiff, flat plates that form an outer covering on the body of some animals, especially fishes and reptiles

Scandinavia area in northern Europe that includes the countries of Denmark, Norway, and Sweden

scenic having to do with a pleasing view or natural landscape

scholar person who has done advanced study in a special area

scholarship award of money to help pay for a person's education

science fiction stories that deal with the effects of real or imagined science on society or individuals

score in films, the background music that goes with the pictures on the screen

scorpion animal of the arachnid class (which includes spiders) that has a long body and a narrow sectioned tail with a poisonous stinger at the tip

scour scrub hard

sculpture three-dimensional artwork, usually shaped by carving, molding, or welding

sea level the height of the surface of the sea midway between the average high and low tides

seaport port, harbor, or town reachable by seagoing ships

seclusion isolation or separation from others

secretariat department that handles an international or government organization

sedge plant group found in marshes and related to grasses and rushes

self-portrait picture of a person, usually showing the face, that is painted or drawn by the artist himself or herself

semidesert area that is much like a desert but has more rainfall

senate official lawmaking group of some nations

sensitive easily affected

sepulchre place of burial

seraphim in Christianity, Islam, and Judaism, special angels who guard God's throne

shears cutting device similar to scissors but usually larger

shortage situation of need, or amount that is missing or isn't enough

shrine place where honor or worship is offered to a saint or deity

skyline outline of buildings or other large objects against the background of the sky

sleet frozen or partly frozen rain

slum crowded, dirty, run-down housing

smog dirty air, a word made by combining "smoke" and "fog" to describe how the air looks

snout long projecting nose, like that of a pig; also, the long front part of the head of some animals, such as alligators

solar having to do with the Sun

solitary alone

sonar method of locating objects (usually underwater) by sending out sound waves to be reflected back from the objects

sophisticated complicated or stylish

soprano the highest woman's singing voice; also, a person who sings in this voice

Soviet Union country of eastern Europe and northern Asia that existed from 1922 to 1991 and consisted of Russia and 14 other republics

space shuttle rocket-launched airplane-like vehicle that transports people to and from space

species group of living things that have certain characteristics in common and share a name

sphere ball or globe

splendor something very grand or beautiful

spool reel for winding lengths of materials such as tape, thread, or wire

spout tube, pipe, or hole through which liquid flows

square open place or area formed at the meeting of two or more streets

squid sea mollusk that has a long thin body with eight short arms and two usually longer tentacles

staff wooden walking stick

stalk plant's main stem

standard commonly accepted amount or number

starchy containing starch, a natural substance that is made by green plants and is part of many foods

stationary unmoving

steppe land that is dry, usually rather level, and covered with grass

Stone Age the oldest period in which human beings are known to have existed, characterized by the making of stone tools

storage space to keep or hold on to things

strait narrow channel connecting two large bodies of water

strike temporary stopping of normal activities in protest against an act or condition

sturdy physically strong and healthy

stylized simplified or made to suggest natural forms but not imitate them

submerge to put under water

suction holding onto something by sucking

sultan king or ruler, especially of a Muslim state

summit top or highest point

superior better than

superstition unproven belief usually based on a mistaken idea of how something is caused

supreme highest, best, and without limit

supreme court the highest court in a country or other specific official area

surgery a medical procedure or operation for treating a disease or condition

symbolize to stand for something else; especially, to stand for or suggest something that cannot itself be pictured or shown

synagogue Jewish house of worship

synthetic produced artificially

tableland broad flat area of high land

tallow the solid fat of cattle and sheep, used chiefly in making soap, margarine, and candles

tamarind tropical tree whose sharp-tasting fruit is used as a flavoring

tannery place where animal hides are turned into leather, especially by soaking in a tannin solution

tap (verb) to make a hole in something in order to remove the liquid inside

tapered little by little becoming smaller toward one end

tapestry heavy cloth that has designs or pictures woven into it and is often used as a wall hanging

tapir hoofed, long-snouted mammal of Malaysia and the Americas that is related to horses and rhinoceroses

technical having to do with the way a skilled individual handles the details of an art or craft

technique special way of doing something; especially, the way a skilled individual handles the details of an art or craft

technology scientific ideas and knowledge put to actual use

teeming crowded

telegraph device for sending coded messages over long distances by using electrical signals

temperament personality or usual mood

temperate having mild weather

temple building used for worship

tentacle long armlike structure on certain animals, usually found sticking out near the head or mouth and used especially for feeling or grasping

terrace area of hillside that has been leveled off to allow farming on the land

territorial protective of a territory or home area

terrorist person who uses violence to try to reach political goals

text written work

textile cloth

texture the feel of a surface

thatch to cover the roof of a building with plant material such as straw

theme the main idea or subject of a work of art; especially, in music, the main melody that a piece of music builds on

theory in science, an idea or reasoned explanation for why things are as they are or why things happen as they do

thermal springs a source of hot water coming from underground

thorax the middle of the three main divisions of the body of an insect

three-dimensional having depth (or thickness) in addition to width and height

timber wood used for building or carpentry

tolerate to put up with; also, to be able to survive

tollhouse building or booth where a fee is collected for some permission (such as using a highway)

tomb special building or room in which a dead person is buried

topknot short mound of hair worn on the top of the head

tourism business of encouraging travel to a specific location and of managing services for visitors (including lodging, transport, food, and activities)

tourist person who travels for pleasure

tractor heavy vehicle used to pull farm equipment

tradition custom; habit of belief or of living

traditional usual; well known because of custom or longtime use

train (verb) in gardening and farming, to direct the growth of a plant, usually by bending, trimming, and tying off

translation version of a written work that has been changed from its original language into another

transmitter device that sends messages or code

tribute gift, performance, or action meant to show appreciation, respect, or caring for someone or something

tropical having to do with the Earth's warmest and most humid (moist) climates

troupe company or group; especially, a working group of stage performers

truce temporary stop in fighting during a war or other violent conflict

tsar one of the emperors of Russia until 1917

tsunami huge ocean wave produced by an undersea earthquake or volcanic eruption

tuft 1) in plants, a small cluster of flexible leaves or fibers that are attached or close together at the base and free at the opposite end; 2) in animals, a short mound of fur

tundra treeless plain with spotty grasses mostly in extremely cold regions

turban head covering made of a long cloth wrapped around the head or around a close-fitting cap

turpentine oil used to dissolve or thin out paint and other substances

tusk long tooth that overhangs when the mouth is closed and serves for digging food or as a weapon

tutor private teacher

twilight the light between the end of day and the beginning of night; also, the name for that time of day

typhoon major tropical storm that occurs in the Pacific Ocean and features high winds moving in circular patterns; in the Atlantic Ocean such storms are called "hurricanes"

tyrant powerful and cruel ruler; also, someone who acts like a tyrant

unique very unusual or one-of-a-kind

unity oneness or harmony

universal present or occurring everywhere

values morals or ideals

vapor substance in the state of a gas (rather than a solid or liquid)

vast huge or spacious

vaudeville popular American form of entertainment from the 1890s to the 1930s, involving musical, dancing, comedy, magic, and other variety acts

vegetarian person or animal that does not eat meat

vehicle device or machine used to carry something

venom poison that comes from animals

veterinarian doctor who takes care of animals

vibrate to move rapidly back and forth or from side to side

vivid bright or dramatic

vow solemn promise or statement

vulnerable exposed or in danger

wages payment for work or services

warm-blooded having a body temperature that stays mostly unchanged and is not affected by the surrounding environment

waste materials that are unused or left over after some work or action is finished

water power energy produced by moving water that can be used to do physical work; it may come directly from water's own force or from machines run by water that in turn produce even greater power (such as electricity)

waterlogged filled or soaked with water and therefore heavy or hard to manage

waterproof not affected by water

weaned capable of and used to eating food rather than nursing

weld to join metal parts together with heat

wildlife manager scientist who watches over the conditions, habitats, and populations of wild animals and plants

wildlife sanctuary place of protection for animals and plants

worship (verb) to honor and show surrender and obedience to a god or supernatural power

yacht small ship or large boat used for pleasure cruising or racing

What is an index?

An index is a guide to the many subjects in a book or a set of books. It tells you where to find each discussion of every subject.

Why do we use an index?

There is usually a table of contents at the beginning of a book. It tells you the major parts of the book, in order, and the page numbers where each section starts. But it doesn't tell you all the subjects that the book discusses or where to find them. For that, you need to use the index.

How do we use an index?

An index lists all the subjects of a book from A to Z. This makes it easy for you to find what you're looking for, as in the example below:

Ando Hiroshige (Japanese artist) *look under* Hiroshige

ants

apes

Arafat, Yasir (Palestinian leader)

architecture

Argentina (country)

Armstrong, Louis (American musician)

Ashoka (emperor of India)

Asia (continent)

astronauts, *also called* cosmonauts (space explorers)

Notice that the subjects are in **bold-faced type** and in alphabetical order. Notice, also, several other clues that will help you use the index.

First, many subjects are followed by a word or phrase in parentheses that describes the subject.

Second, people with last names have their last names listed first. **Armstrong, Louis** is one example. **Ashoka** is an example of a person without a last name. He is therefore listed under this single name.

Third, some subjects, such as **Ando Hiroshige**, are known by more than one name. In such cases, the index may tell you to look under a different name. All the names of a subject are also included with the name the index tells you to look under. They follow the words *also called.* For example, you'll find the subject **cosmonauts** in **bold-faced type** with an instruction to *look under* astronauts:

> **cosmonauts** (space explorers): *look under* astronauts

Then at **astronauts** you'll find:

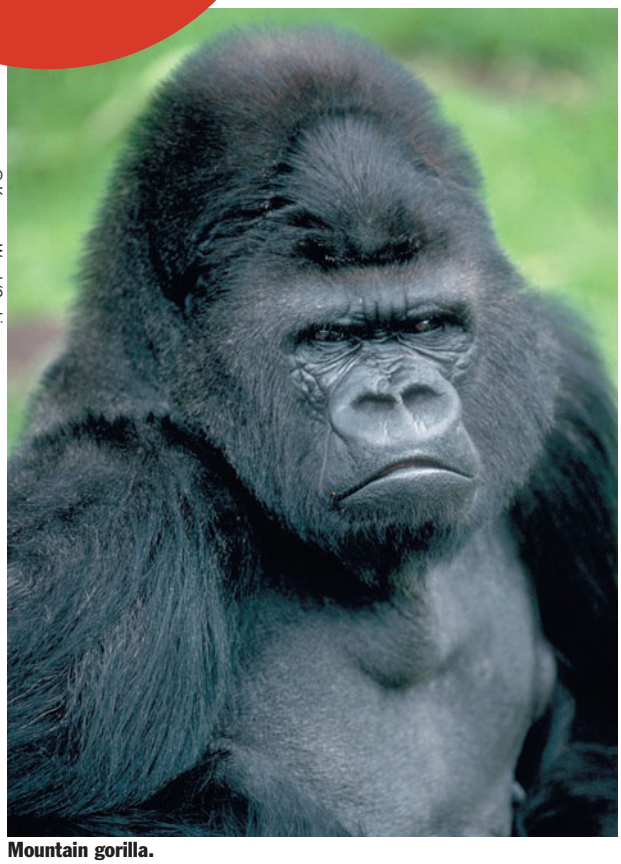
> **astronauts,** *also called* cosmonauts (space explorers)

Some subjects are discussed only in articles on other topics. To find them, the index tells you to *look under* related subjects. For example:

moons (satellites of planets): *look under* Moon; *for other moons look under the planets* Jupiter; Mars; Neptune; Pluto; Saturn; Uranus

My First Britannica

Index



© Kennan Ward/Corbis

Mountain gorilla.

So the first things you need to do to find a subject in the index are:

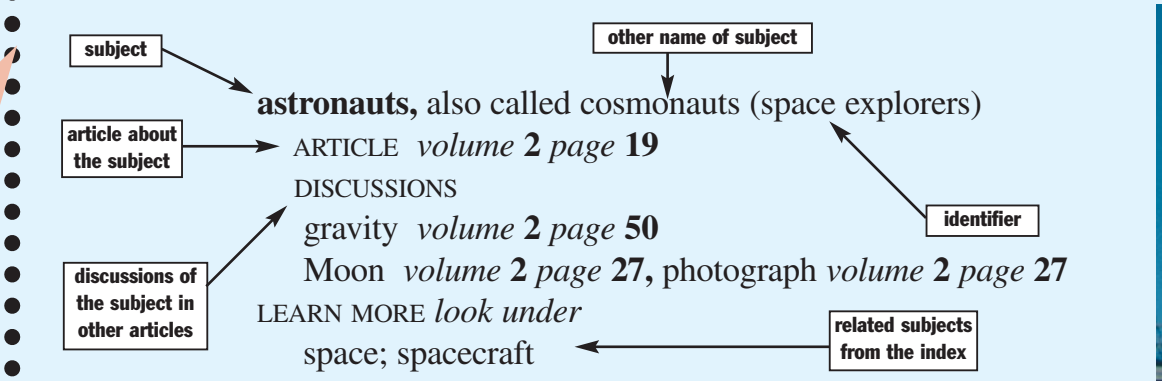
1 Choose a word or phrase that best describes the subject you're interested in. Subjects can be things such as **music** or **telescopes**, places such as **Rome** or **Tokyo**, or people such as **Judi Dench** or **Albert Einstein**. (Remember to look under the last name for most people.)

2 If you can't find the subject you're looking for in the alphabetical list, try to think of different words for your subject and look again. For example, you may want to know about maps. You'll find the information under **atlas**.

3 Once you locate your subject in the index, you'll see that the index works like a map. At each subject, you'll find explanations of how to get to all the places that discuss or illustrate your subject.

How to

How to navigate





© NASA

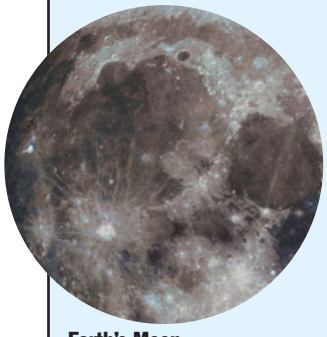
Space shuttle *Endeavor*.

There are important things to notice in this example. If there is an entire article written about your subject, you'll see the word ARTICLE followed by the *volume* and *page* numbers where it can be found:

ARTICLE *volume* **2** *page* **19**

If your subject is also discussed or illustrated in articles other than the main article, or if it appears on a map in the mini-atlas in Volume 13, you'll see the word DISCUSSIONS. Below this is a word or phrase describing each of the other articles or indicating the mini-atlas, also followed by the *volume* and *page* numbers where each can be found. If there are also photographs or illustrations related to your subject, they too will be listed along with their *volume* and *page* numbers:

DISCUSSIONS
gravity *volume* **2** *page* **50**
Moon *volume* **2** *page* **27**, photograph *volume* **2** *page* **27**



Earth's Moon.
© Jet Propulsion Laboratory/NASA

Sometimes you'll see the phrase Did you know? followed by a *volume* and a *page* number. This means that you'll find information about your subject in the DID YOU KNOW? box on that page.

The index sometimes helps you learn more about your subject by giving you a list of related subjects. You'll find these after the words LEARN MORE *look under*

LEARN MORE *look under* space; spacecraft

Now you're ready to explore MY FIRST BRITANNICA, **using one of the best guides there is—the index!**

use the index

I N D E X



Abbey Theatre (theatre in Dublin, Ireland)
DISCUSSIONS
Dublin *volume* **6** *page* **26**
LEARN MORE *look under* theater

Abd ol-Baha, *also called* Abdul Baha (Baha'i leader)
DISCUSSIONS
Baha'i *volume* **5** *page* **70,** photograph *volume* **5** *page* **70**

Abominable Snowman, *also called* Yeti (legend)
DISCUSSIONS
Nepal *volume* **7** *page* **55**
LEARN MORE *look under* legends

Abraham (biblical person)
ARTICLE *volume* **5** *page* **52**
LEARN MORE *look under* Bible
people: Jesus Christ; Moses; Muhammad
religions: Christianity; Islam; Judaism

abstract art
DISCUSSIONS
sculpture *volume* **3** *page* **11**

Abu Simbel (ancient temple)
DISCUSSIONS
Did you know? *volume* **8** *page* **55**

Abuja (city in Nigeria)
DISCUSSIONS
Nigeria *volume* **8** *page* **21**

Accra (city in Ghana)
ARTICLE *volume* **8** *page* **12**
DISCUSSIONS
atlas *volume* **13** *page* **6**
Ghana *volume* **8** *page* **11**
LEARN MORE *look under* West Africa

acid rain (pollution)
ARTICLE *volume* **1** *page* **70**
DISCUSSIONS
Did you know? *volume* **6** *page* **53**
LEARN MORE *look under* pollution

Aconcagua, Mount (mountain in Argentina)
DISCUSSIONS
atlas photograph *volume* **13** *page* **10**
Andes *volume* **9** *page* **66**
LEARN MORE *look under* mountains

Acropolis (ancient citadel in Athens, Greece)
DISCUSSIONS
Athens *volume* **6** *page* **85**
Parthenon *volume* **6** *page* **87**
LEARN MORE *look under* architecture

Acts of the Apostles (sacred text)
DISCUSSIONS
Bible *volume* **5** *page* **63**

Addis Ababa (city in Ethiopia)
ARTICLE *volume* **8** *page* **29**
DISCUSSIONS
atlas *volume* **13** *page* **6**
LEARN MORE *look under* Eastern Africa; Ethiopia

"Adi Granth," *also called* "Granth Sahib" (holy book)
DISCUSSIONS
Sikhism *volume* **5** *page* **88**
LEARN MORE *look under*
other holy books: Avesta; Bible; "Daodejing"; Koran

Adrian I (pope)
DISCUSSIONS
Charlemagne illustration *volume* **4** *page* **41**

Aegolius acadicus (birds): *look under* saw-whet owls

aeroplanes: *look under* airplanes

Aesop's fables
ARTICLE *volume* **5** *page* **24**
LEARN MORE *look under*
other Greek stories: Atlas; "Odysseus and the Cyclops"; Trojan Horse, The
other stories about animals: folktales; legends

Afghanistan (country)
ARTICLE *volume* **7** *page* **45**
DISCUSSIONS
atlas *volume* **13** *page* **12**
flag *volume* **7** *page* **45**
LEARN MORE *look under*
places: Iran; South Asia
religion: Islam

Africa (continent)
ARTICLE *volume* **8** *page* **7**
DISCUSSIONS
atlas *volume* **13** *page* **6**
continents *volume* **1** *page* **8,** map *volume* **1** *page* **8**
diamonds *volume* **1** *page* **80**
Did you know? *volume* **4** *page* **72**
LEARN MORE *look under*
countries: Algeria; Angola; Botswana; Egypt; Ethiopia; Ghana; Guinea; Kenya; Liberia; Libya; Madagascar; Malawi; Morocco; Namibia; Nigeria; Senegal; Seychelles; Somalia; South Africa; Sudan, The; Uganda; Zimbabwe
other places: Congo; Nile River; Suez Canal; Victoria Falls
animals: alligators and crocodiles; apes; bats; buffalo; chameleons; donkeys; elephants; gazelles; gorillas; hippopotamuses; lions; mammoths and mastodons; mongooses; monkeys; ostriches; porcupines; sheep; wild goats
people: Mandela, Nelson; Soyinka, Wole
plants: bananas; coffee
stories: "Ananse and the Wisdom Pot"; "Monkey Court, The"

African Americans (people)
DISCUSSIONS
Did you know? *volume* **5** *page* **40**
jazz *volume* **3** *page* **35**
LEARN MORE *look under*
people: Ailey, Alvin; Armstrong, Louis; Basie, Count; Brooks, Gwendolyn; King, Martin Luther, Jr.

African elephants
DISCUSSIONS
elephants *volume* **12** *page* **91,** photograph *volume* **12** *page* **91**

African manatees (mammals)
DISCUSSIONS
manatees *volume* **12** *page* **73**

African National Congress, *also called* ANC (South African political party)
DISCUSSIONS
Nelson Mandela *volume* **4** *page* **53**

agriculture: *look under* farming

ahimsa (religion)
DISCUSSIONS
Hinduism *volume* **5** *page* **79**
Jainism *volume* **5** *page* **87**
LEARN MORE *look under* nonviolence

Ahriman (evil spirit)
DISCUSSIONS
Zoroastrianism *volume* **5** *page* **49**

Ahura Mazda, *also called* Ormazd (god)
DISCUSSIONS
Zoroastrianism *volume* **5** *page* **49**
LEARN MORE *look under* God

"Aida" (opera by Verdi)
DISCUSSIONS
opera photograph *volume* **3** *page* **76**

Aigams (city in Namibia): *look under* Windhoek

Ailey, Alvin (American dance artist)
ARTICLE *volume* **3** *page* **78**
LEARN MORE *look under*
other dancers: Elssler, Fanny; Tallchief, Maria
other famous African Americans: Armstrong, Louis; Basie, Count; Brooks, Gwendolyn

air
DISCUSSIONS
dew *volume* **1** *page* **65**
LEARN MORE *look under* clouds; cyclones; echoes; northern lights; rainbows; thunder and lightning; wind power

aircraft: *look under* airplanes; ballooning; helicopters; space shuttles

airplanes, *also called* aeroplanes
ARTICLE *volume* **2** *page* **71**
DISCUSSIONS
seaplane over the ocean photograph *volume* **7** *page* **93**
LEARN MORE *look under* transportation

Aklavik (town in Canada)
ARTICLE *volume* **9** *page* **13**
LEARN MORE *look under* Canada

Alaska (state in the U.S.)
DISCUSSIONS
atlas *volume* **13** *page* **8**
Did you know? *volume* **2** *page* **84**
glaciers photograph *volume* **1** *page* **55**
peninsulas *volume* **1** *page* **22**
pines photograph *volume* **10** *page* **88**
sheep photograph *volume* **12** *page* **57**
United States of America *volume* **9** *page* **27**
LEARN MORE *look under* United States of America

albatrosses (birds)
ARTICLE *volume* **11** *page* **17**
LEARN MORE *look under* birds; marine animals

Aldrin, Edwin E., *also called* Buzz Aldrin (American astronaut)
DISCUSSIONS
walking on the Moon photograph *volume* **2** *page* **27**

Aleutian Islands (U.S.)
DISCUSSIONS
islands *volume* **1** *page* **12**

Algeria (country)
ARTICLE *volume* **8** *page* **44**
DISCUSSIONS
atlas *volume* **13** *page* **6**
flag *volume* **8** *page* **44**
LEARN MORE *look under*
places: Algiers; North Africa

Algiers (city in Algeria)
ARTICLE *volume* **8** *page* **47**
DISCUSSIONS
atlas *volume* **13** *page* **6**
LEARN MORE *look under* Algeria

Algiers, Bay of (bay in Algeria)
DISCUSSIONS
Algiers photograph *volume* **8** *page* **46**

"Alice's Adventures in Wonderland" (book by Carroll)
DISCUSSIONS
Lewis Carroll *volume* **3** *page* **59,** photograph *volume* **3** *page* **58**

All Souls' Day, *also called* Dia de los Muertos (holiday)
DISCUSSIONS
Mexico *volume* **9** *page* **41**

Allah (name for God)
DISCUSSIONS
Islam *volume* **5** *page* **64**
Koran *volume* **5** *page* **69**
Muhammad *volume* **5** *page* **67**
LEARN MORE *look under* God

Allende, Isabel (Chilean writer)
ARTICLE *volume* **4** *page* **7**
LEARN MORE *look under* Chile; Latin America; literature

alligators and crocodiles
ARTICLE *volume* **11** *page* **77**
LEARN MORE *look under* aquatic animals; hippopotamuses; reptiles; rivers

alpacas (mammals)
DISCUSSIONS
Did you know? *volume* **9** *page* **75**
LEARN MORE *look under* ungulates

Alpha Proxima Centauri (star)
DISCUSSIONS
Did you know? *volume* **2** *page* **10**

Alps (mountains in Europe)
DISCUSSIONS
atlas *volume* **13** *page* **14**
Austria *volume* **6** *page* **48**
Italy *volume* **6** *page* **89**
Switzerland *volume* **6** *page* **46,** photograph *volume* **6** *page* **47**
LEARN MORE *look under* Blanc, Mont; Central Europe; mountains

Alvin Ailey American Dance Theater
DISCUSSIONS
Alvin Ailey *volume* **3** *page* **78**

Amaterasu (Shinto goddess)
DISCUSSIONS
Did you know? *volume* **5** *page* **77**
LEARN MORE *look under* God

Amazon (river and region in South America)
ARTICLE *volume* **9** *page* **62**
DISCUSSIONS
atlas photograph *volume* **13** *page* **10**
anacondas *volume* **11** *page* **81**
Did you know? *volume* **10** *page* **15**
marshes *volume* **1** *page* **26**
Peru *volume* **9** *page* **75**
piranhas *volume* **11** *page* **41**
rivers *volume* **1** *page* **31,** *volume* **9** *page* **64**
South America *volume* **9** *page* **61**
swamps *volume* **1** *page* **28**
LEARN MORE *look under* rainforests; rivers
animals: anacondas; ants; butterflies and moths; crocodiles; manatees; monkeys; parrots and cockatoos; piranhas; spiders

Amazon parrot
DISCUSSIONS
Amazon photograph *volume* **9** *page* **65**
LEARN MORE *look under* birds

Amazonian manatees (mammals)
DISCUSSIONS
manatees *volume* **12** *page* **73**

American buffalo (animals): *look under* bison

American Falls (waterfall in New York state, U.S.)
DISCUSSIONS
Niagara Falls *volume* **9** *page* **21**

American Foundation for the Blind
DISCUSSIONS
Did you know? *volume* **2** *page* **75**

American Indians, *also called* First Nations, *or* Native Americans
ARTICLE *volume* **4** *page* **87**
DISCUSSIONS
Aklavik *volume* **9** *page* **13**
bison *volume* **12** *page* **50**
Canada *volume* **9** *page* **10**
dance photograph *volume* **3** *page* **71**
Did you know? *volume* **5** *page* **17,** *volume* **12** *page* **35**
folk arts and crafts photograph *volume* **3** *page* **7**
llamas *volume* **12** *page* **62,** photograph *volume* **12** *page* **62**
Ontario *volume* **9** *page* **19**
painting *volume* **3** *page* **8,** photograph *volume* **3** *page* **8**
sunflowers *volume* **10** *page* **7**
United States of America *volume* **9** *page* **28**
LEARN MORE *look under*
peoples: Arawak; Aztec Civilization; Chibcha; Guaraní; Inca civilization; Mayan Civilization; Olmec
individual people: Tallchief, Maria
stories: "How Crow Brought Daylight to the World"; "Rabbit Throws Away His Sandal"; "Why Possum's Tail Is Bare"

American Museum of Natural History (museum in New York City, U.S.)
DISCUSSIONS
New York City *volume* **9** *page* **38,** photograph *volume* **9** *page* **38**

American Revolutionary War
DISCUSSIONS
United States of America *volume* **9** *page* **27**

Americas (supercontinent)
DISCUSSIONS
Spain *volume* **6** *page* **11**
LEARN MORE *look under*
people: American Indians
places: Central America; North America; South America

Amin, Idi (Ugandan leader)
DISCUSSIONS
Uganda *volume* **8** *page* **41**

Amman (city in Jordan)
ARTICLE *volume* **7** *page* **79**
DISCUSSIONS
atlas *volume* **13** *page* **12**
LEARN MORE *look under* Middle East

amphibians (animals)
ARTICLE *volume* **11** *page* **91**
LEARN MORE *look under* animals; frogs

Amsterdam (city in the Netherlands)
ARTICLE *volume* **6** *page* **41**
DISCUSSIONS
atlas *volume* **13** *page* **14**
Netherlands, the *volume* **6** *page* **38**
LEARN MORE *look under*
places: Netherlands, the
people: Frank, Anne

anacondas (snakes)
ARTICLE *volume* **11** *page* **81**
DISCUSSIONS
Amazon *volume* **9** *page* **64**
LEARN MORE *look under* snakes

Ananse, *also called* Anansi (folktale character)
DISCUSSIONS
Did you know? *volume* **5** *page* **12**

"Ananse and the Wisdom Pot" (folktale from Ghana)
ARTICLE *volume* **5** *page* **13**
LEARN MORE *look under*
other African stories: "Monkey Court, The"
other folktales: "How Kangaroo Got His Tail"; "Poor Man and the Flask of Oil, The"; "Rabbit Throws Away His Sandal"; "Tiger in the Trap, The"; "Why Possum's Tail Is Bare"; "Yeh-Shen"

Anansi (folktale character): *look under* Ananse

anatosaurs (dinosaurs)
DISCUSSIONS
dinosaurs *volume* **1** *page* **88**

ANC (South African political party): *look under* African National Congress

Ancient Rome: *look under* Roman Republic and Empire

Andean condors (birds)
DISCUSSIONS
Did you know? *volume* **9** *page* **67,** photograph *volume* **9** *page* **66**
LEARN MORE *look under* birds

Andes (mountains in South America)
ARTICLE *volume* **9** *page* **66**
DISCUSSIONS
atlas *volume* **13** *page* **11**
mountains *volume* **1** *page* **16**
Peru *volume* **9** *page* **75**
South America *volume* **9** *page* **61**
LEARN MORE *look under*
places: Machu Picchu
animals: armadillos; llamas

Ando Hiroshige (Japanese artist): *look under* Hiroshige

Angel Falls (waterfall in Venezuela)
DISCUSSIONS
atlas *volume* **13** *page* **11**
Did you know? *volume* **8** *page* **92**
rivers *volume* **1** *page* **31**
LEARN MORE *look under* waterfalls

Angelico, Fra (Italian painter)
DISCUSSIONS
Mary illustration *volume* **5** *page* **60**

Angkor Wat (temple in Cambodia)
ARTICLE *volume* **7** *page* **26**
LEARN MORE *look under* Phnom Penh; Southeast Asia; temples

anglerfish (fish)
DISCUSSIONS
deep-sea life photograph *volume* **11** *page* **54**
fish *volume* **11** *page* **35**
LEARN MORE *look under* marine animals

Angola (country)
ARTICLE *volume* **8** *page* **67**
DISCUSSIONS
atlas *volume* **13** *page* **6**
flag *volume* **8** *page* **67**
LEARN MORE *look under* Luanda; Southern Africa

animals
DISCUSSIONS
Did you know? *volume* **12** *page* **92**
leaves *volume* **1** *page* **67**
LEARN MORE *look under* amphibians; birds; coral; deep-sea life; endangered animals; fish; fossils; insects; jellyfish; mammals; mollusks; reptiles; spiders; sponges
activities: bullfighting; farming; fishing
stories: fables; folktales; legends; myths

Annan, Kofi (Ghanaian and United Nations leader)

DISCUSSIONS
Jane Goodall photograph *volume* **4** *page* **78**

"Annie Allen" (book by Brooks)
DISCUSSIONS
Gwendolyn Brooks *volume* **3** *page* **56**

anoa (animals)
DISCUSSIONS
buffalo *volume* **12** *page* **49**

anoles, *also called* false chameleons (lizards)
DISCUSSIONS
chameleons *volume* **11** *page* **87**

Antarctica (continent)
ARTICLE *volume* **1** *page* **10**
DISCUSSIONS
atlas *volume* **13** *page* **19**
continents *volume* **1** *page* **8,** map *volume* **1** *page* **8**
Did you know? *volume* **2** *page* **42**
LEARN MORE *look under* glaciers; icebergs
animals: albatrosses; penguins

antelope (animals): *look under* gazelles

antennae, *also called* antennas
DISCUSSIONS
ants *volume* **11** *page* **59**

anthills
DISCUSSIONS
ants *volume* **11** *page* **59**

antibiotics (medicines)
DISCUSSIONS
medicine *volume* **2** *page* **60**

Antony, Mark (Roman official)
DISCUSSIONS
Cleopatra *volume* **4** *page* **43**

ants
ARTICLE *volume* **11** *page* **59**
DISCUSSIONS
Did you know? *volume* **11** *page* **6**
LEARN MORE *look under* insects

Anubis (Egyptian god)
DISCUSSIONS
Did you know? *volume* **12** *page* **29**
LEARN MORE *look under* God

apartheid (racial segregation in South Africa)
DISCUSSIONS
South Africa *volume* **8** *page* **85,** photograph *volume* **8** *page* **85**

apatosaurs, *also called* brontosaurs (dinosaurs)
DISCUSSIONS
dinosaurs *volume* **1** *page* **88**

apes
ARTICLE *volume* **12** *page* **9**
LEARN MORE *look under*
kinds of apes: chimpanzees; gibbons; gorillas
similar animals: lemurs; monkeys

aphids (animals)
DISCUSSIONS
ants *volume* **11** *page* **59**

Appalachian Mountains
DISCUSSIONS
atlas *volume* **13** *page* **8**
mountains *volume* **1** *page* **16**
LEARN MORE *look under* mountains

apples (fruit)
ARTICLE *volume* **10** *page* **41**
LEARN MORE *look under* fruits and vegetables; trees

aquatic animals: *look under* alligators and crocodiles; dolphins; ducks; fish; geese; hippopotamuses; marine animals; muskrats; platypuses; swans

Arabia (peninsula and region in Asia)
DISCUSSIONS
atlas *volume* **13** *page* **12**
peninsulas *volume* **1** *page* **22**
LEARN MORE *look under*
people: Arabs
places: Baghdad; Mecca; Middle East; Oman
religion: Islam
animals: camels; wild goats

Arabian camels (animals): *look under* dromedaries

"Arabian Nights" (collection of stories)
DISCUSSIONS
Baghdad *volume* **7** *page* **73**

Arabs (people)
DISCUSSIONS
Abraham *volume* **5** *page* **53**
Israel *volume* **7** *page* **75**
Menachem Begin *volume* **4** *page* **35**
LEARN MORE *look under*
places: Arabia; Middle East; North Africa
religion: Islam
people: peoples

arachnids (animals)
DISCUSSIONS
spiders *volume* **11** *page* **72**
LEARN MORE *look under* insects

Arafat, Yasir (Palestinian leader)
ARTICLE *volume* **4** *page* **30**
LEARN MORE *look under* Middle East
other Middle Eastern leaders: Begin, Menachem; Meir, Golda; Sadat, Anwar el-

Ararat, Mount (mountain in Turkey)
DISCUSSIONS
Yerevan *volume* **7** *page* **67**

Arawak (people)
DISCUSSIONS
Puerto Rico *volume* **9** *page* **57**
LEARN MORE *look under* peoples

architecture
ARTICLE *volume* **3** *page* **13**
LEARN MORE *look under*
people: Costa, Lucio; Fathy, Hassan; Michelangelo; Pei, I. M.
buildings and constructions: Acropolis; Angkor Wat; Brandenburg Gate; bridges; castles; Colosseum; dams; Dionysus, Theater of; Dome of the Rock; dzong; Empire State Building; Eurotunnel; Fushimi Inari shrine; Gateway Arch; Great Wall; Jefferson Memorial; Machu Picchu; mosques; palaces; Panama Canal; Parliament House; pyramids; Sadat Resthouse; Sarnath; Stonehenge; Suez Canal; Taj Mahal; temples; totem pole; towers; Western Wall

Arctic Ocean: *look under*
animals: walruses

Argentina (country)
ARTICLE *volume* **9** *page* **90**
DISCUSSIONS
atlas *volume* **13** *page* **11**
flag *volume* **9** *page* **90**
LEARN MORE *look under*
people: Borges, Jorge Luis
places: Buenos Aires; South America

Arizona (state in the U.S.)
DISCUSSIONS
Grand Canyon *volume* **9** *page* **32,** photograph *volume* **9** *page* **33**
LEARN MORE *look under* United States of America

Arjumand Banu Baygam (Mughal queen): *look under* Mumtaz Mahal

armadillos (animals)
ARTICLE *volume* **12** *page* **87**
LEARN MORE *look under* mammals

Armenia (country)
DISCUSSIONS
atlas *volume* **13** *page* **12**
flag *volume* **7** *page* **67**
LEARN MORE *look under* Yerevan

Armstrong, Louis, *also called* Satchmo (American musician)
ARTICLE *volume* **3** *page* **39**
LEARN MORE *look under* jazz
other famous African Americans: Ailey, Alvin; Basie, Count; Brooks, Gwendolyn

Armstrong, Neil (American astronaut)
DISCUSSIONS
astronauts *volume* **2** *page* **19**

army: *look under* military

army ants (animals)
DISCUSSIONS
Did you know? *volume* **11** *page* **58**

"Around the World in 80 Days" (book by Verne)
DISCUSSIONS
Did you know? *volume* **3** *page* **67**

arthropods (animals)
DISCUSSIONS
spiders *volume* **11** *page* **72**

Arthur (legendary king)
DISCUSSIONS
Knights of the Round Table *volume* **5** *page* **33**
LEARN MORE *look under* legends

arts
VOLUME **3**
LEARN MORE *look under*
types of art: architecture; cinema; dance; folk arts and crafts; literature; music; opera; painting; photography; sculpture; stained glass; theater

Ashoka (emperor of India)
ARTICLE *volume* **4** *page* **32**
LEARN MORE *look under* Buddhism; India
other rulers: Caesar, Julius; Charlemagne; Cleopatra; Elizabeth I; Empress of China; Hirohito

Asia (continent)
VOLUME **7**
DISCUSSIONS
atlas *volume* **13** *page* **12**
classical music *volume* **3** *page* **36**
continents *volume* **1** *page* **8,** map *volume* **1** *page* **8**
dance *volume* **3** *page* **70**
dragons *volume* **5** *page* **9**
LEARN MORE *look under*
countries: Afghanistan; Armenia; Bangladesh; Bhutan; Cambodia; China; India; Indonesia; Iran; Iraq; Israel; Japan; Jordan; Lebanon; Myanmar; Nepal; Oman; Philippines; Saudi Arabia; Singapore; Syria; Thailand; Turkey; Vietnam
other places: Australia; Fertile Crescent; Korean Peninsula; Middle East
religion: Buddhism; Confucius; Daoism; Hinduism; Islam; Jainism; shamanism; Shinto; Sikhism
animals: apes; bats; buffalo; chameleons; donkeys; elephants; gibbons; horses; king cobras; macaques; mammoths and mastodons; mongooses; monkeys; muskrats; pandas; peacocks; porcupines; sheep; tigers; walruses; wild goats; wolves; yaks
plants: rubber trees
stories: Moni Mekhala and Ream Eyso; "Poor Man and the Flask of Oil, The"; "Tiger in the Trap, The"; "Yeh-Shen"

aspirin
DISCUSSIONS
rainforests *volume* **1** *page* **24**
LEARN MORE *look under* medicine

assembly line (industry)
DISCUSSIONS
automobiles *volume* **2** *page* **72**

association football, *also called* soccer (sport)
DISCUSSIONS
Brazil *volume* **9** *page* **79**
Did you know? *volume* **8** *page* **61,** photograph *volume* **8** *page* **61**
England *volume* **6** *page* **15**
Pelé *volume* **4** *page* **104**
Portugal *volume* **6** *page* **8**
LEARN MORE *look under* sports

asteroids, *also called* minor planets
ARTICLE *volume* **2** *page* **22**
LEARN MORE *look under* space

astrology
DISCUSSIONS
Did you know? *volume* **5** *page* **49**

astronauts, *also called* cosmonauts (space explorers)
ARTICLE *volume* **2** *page* **19**
DISCUSSIONS
gravity *volume* **2** *page* **50**
Moon *volume* **2** *page* **27,** photograph *volume* **2** *page* **27**
LEARN MORE *look under* space; spacecraft

astronomy (science)
ARTICLE *volume* **2** *page* **7**
DISCUSSIONS
Mayan civilization *volume* **4** *page* **103**
LEARN MORE *look under*
people: Copernicus, Nicolaus; Galileo Galilei; Kepler, Johannes
things: asteroids; comets; galaxies; planets; solar system; stars; telescopes; universe

Asunción (city in Paraguay)
ARTICLE *volume* **9** *page* **85**
DISCUSSIONS
atlas *volume* **13** *page* **11**
Paraguay *volume* **9** *page* **83**
LEARN MORE *look under* Paraguay

Aswan High Dam (dam in Egypt)
DISCUSSIONS
atlas photograph *volume* **13** *page* **7**
Egypt photograph *volume* **8** *page* **50**
LEARN MORE *look under* dams

Atacama Desert (region in Chile)
DISCUSSIONS
Did you know? *volume* **9** *page* **87**
LEARN MORE *look under* deserts; South America

Athena (Greek goddess)
DISCUSSIONS
owls *volume* **11** *page* **13**
Parthenon *volume* **6** *page* **87**
LEARN MORE *look under* myths

Athens (city in Greece)
ARTICLE *volume* **6** *page* **85**
DISCUSSIONS
atlas *volume* **13** *page* **14**
LEARN MORE *look under*
people: Socrates
places: Greece; Parthenon

athletes: *look under* Freeman, Cathy; Nepomuceno, Rafael "Paeng"; Pelé

Atlantic Ocean
ARTICLE *volume* **1** *page* **39**
DISCUSSIONS
Ferdinand Magellan *volume* **4** *page* **101**
Panama City *volume* **9** *page* **50**
LEARN MORE *look under* oceans
bodies of water: English Channel; Mediterranean Sea
islands: Greenland; Iceland; United Kingdom; West Indies

Atlantic walruses (animals)
DISCUSSIONS
walruses *volume* **12** *page* **75**

Atlantis (legendary island)
DISCUSSIONS
Did you know? *volume* **1** *page* **38**
LEARN MORE *look under* legends

Atlas (Greek myth)
ARTICLE *volume* **5** *page* **29**
LEARN MORE *look under*
other Greek stories: Aesop's fables; "Odysseus and the Cyclops"; Trojan Horse, The
other myths: "How Crow Brought Daylight to the World"; Moni Mekhala and Ream Eyso

atlas (book of maps)
DISCUSSIONS
ATLAS map *volume* **13** *page* **6**
Atlas myth *volume* **5** *page* **29**

atomic bombs (weapons)
DISCUSSIONS
nuclear energy *volume* **2** *page* **62**

Atomium (building in Brussels, Belgium)
DISCUSSIONS
Brussels *volume* **6** *page* **36**
LEARN MORE *look under* atoms

atoms (matter)
ARTICLE *volume* **2** *page* **46**
DISCUSSIONS
nuclear energy *volume* **2** *page* **62**
LEARN MORE *look under* Atomium; nuclear energy

Auckland (city in New Zealand)
DISCUSSIONS
atlas *volume* **13** *page* **16**
Did you know? *volume* **3** *page* **93**

aurora borealis: *look under* northern lights

Austin (city in Texas, U.S.)
DISCUSSIONS
Did you know? *volume* **12** *page* **88**

Australia (island, continent, and country)
ARTICLE *volume* **7** *page* **89**
DISCUSSIONS
atlas *volume* **13** *page* **16**
continents *volume* **1** *page* **8,** map *volume* **1** *page* **8**
LEARN MORE *look under*
people: Freeman, Cathy; Sutherland, Joan; Walker, Kath
places: Canberra; Great Barrier Reef; New Zealand; Sydney; Western Australia
animals: bats; kangaroos; koalas; platypuses; sheep
stories: "How Kangaroo Got His Tail"

Australian Aboriginals (people)
DISCUSSIONS
artwork in Canberra illustration *volume* **7** *page* **90,** photograph *volume* **7** *page* **91**
Australia *volume* **7** *page* **89**
Cathy Freeman *volume* **4** *page* **92**
Did you know? *volume* **7** *page* **95**
Kath Walker *volume* **3** *page* **69**
Western Australia *volume* **7** *page* **97,** photograph *volume* **7** *page* **97**
LEARN MORE *look under* peoples

Austria (country)
ARTICLE *volume* **6** *page* **48**
DISCUSSIONS
atlas *volume* **13** *page* **14**
flag *volume* **6** *page* **48**
wild goats photograph *volume* **12** *page* **59**
LEARN MORE *look under*
people: Elssler, Fanny; Mozart, Wolfgang Amadeus
places: Central Europe; Vienna

automobiles, *also called* cars, *or* motorcars
ARTICLE *volume* **2** *page* **72**
DISCUSSIONS
Did you know? *volume* **6** *page* **6**
transportation *volume* **2** *page* **107**
LEARN MORE *look under* transportation

autumn (season)
DISCUSSIONS
leaves *volume* **1** *page* **67**

Avalokiteshvara (Buddhism)
DISCUSSIONS
Dalai Lama *volume* **5** *page* **85**

Avesta (holy book)
DISCUSSIONS
Zoroastrianism *volume* **5** *page* **49**
LEARN MORE *look under*
other holy books: "Adi Granth"; Bible; "Daodejing"; Koran

ax stroke (painting)
DISCUSSIONS
Did you know? *volume* **3** *page* **28**

Ayers Rock (rock formation in Australia)
DISCUSSIONS
Australia photograph *volume* **7** *page* **88**

Aztec Civilization
DISCUSSIONS
calendars *volume* **2** *page* **77,** illustration *volume* **2** *page* **76**
Did you know? *volume* **9** *page* **40,** *volume* **10** *page* **52**
Mexico *volume* **9** *page* **41**
Mexico City *volume* **9** *page* **43**
LEARN MORE *look under* American Indians

B

Bab, the, *also called* Mirza Ali Mohammad (Muslim leader)
DISCUSSIONS
Baha'i *volume* **5** *page* **70**

Babe (legendary animal)
DISCUSSIONS
Paul Bunyan *volume* **5** *page* **39**

baboons (animals)
DISCUSSIONS
monkeys *volume* **12** *page* **15,** photograph *volume* **12** *page* **15**

bacteria
DISCUSSIONS
Louis Pasteur *volume* **4** *page* **85**
LEARN MORE *look under* life

Bactrian camels (animals)
DISCUSSIONS
camels *volume* **12** *page* **60,** photograph *volume* **12** *page* **61**

Baghdad (city in Iraq)
ARTICLE *volume* **7** *page* **73**
DISCUSSIONS
atlas *volume* **13** *page* **12**
LEARN MORE *look under* Fertile Crescent; Islam; Middle East

Baha Ullah, *also called* Mirza Hoseyn Ali Nuri (Iranian religious leader)
DISCUSSIONS
Baha'i *volume* **5** *page* **70**
LEARN MORE *look under* Zoroaster

Baha'i (religion)
ARTICLE *volume* **5** *page* **70**
DISCUSSIONS
Lotus Temple photograph *volume* **3** *page* **12**

LEARN MORE *look under* religion

Bahubali (Jainism)
DISCUSSIONS
Jainism photograph *volume* **5** *page* **87**

Baikal, Lake (lake in Russia)
DISCUSSIONS
atlas *volume* **13** *page* **12**
Russia *volume* **6** *page* **69**
LEARN MORE *look under* lakes

Balanchine, George (Russian-American choreographer)
DISCUSSIONS
Maria Tallchief *volume* **3** *page* **91**
LEARN MORE *look under* ballet

bald cypress (trees)
DISCUSSIONS
swamps *volume* **1** *page* **28,**
photograph *volume* **1** *page* **29**
LEARN MORE *look under* trees

bald eagles (birds)
DISCUSSIONS
eagles *volume* **11** *page* **14,**
photograph *volume* **11** *page* **15**

baleen (skin)
DISCUSSIONS
whales *volume* **12** *page* **77**

Bali (island and province in Indonesia)
DISCUSSIONS
dance photograph *volume* **3** *page* **70**
LEARN MORE *look under* Indonesia

ballet (dance)
DISCUSSIONS
dance *volume* **3** *page* **70**
LEARN MORE *look under*
people: Ailey, Alvin; Elssler, Fanny; Tallchief, Maria

ballooning (flying)
DISCUSSIONS
Did you know? *volume* **2** *page* **65**
LEARN MORE *look under* aircraft

bamboo (plants)
ARTICLE *volume* **10** *page* **67**
DISCUSSIONS
pandas *volume* **12** *page* **38**
LEARN MORE *look under* grasses

bananas
ARTICLE *volume* **10** *page* **21**
LEARN MORE *look under* fruits and vegetables

Bandaranaike, Sirimavo R. D. (Sri Lankan leader)
DISCUSSIONS
Did you know? *volume* **4** *page* **57**
LEARN MORE *look under* Sri Lanka

Banff National Park (park in Canada)
DISCUSSIONS
Canada photograph *volume* **9** *page* **11**

Bangkok, *also called* Krung Thep (city in Thailand)
ARTICLE *volume* **7** *page* **39**
DISCUSSIONS
atlas *volume* **13** *page* **12**
LEARN MORE *look under* Southeast Asia; Thailand

Bangladesh (country)
ARTICLE *volume* **7** *page* **47**
DISCUSSIONS
atlas *volume* **13** *page* **12**
flag *volume* **7** *page* **47**
Rabindranath Tagore *volume* **3** *page* **65**
LEARN MORE *look under*
animals: Bengal tigers
places: India; Pakistan; South Asia
religions: Hinduism; Islam

Bangladesh, the Concert for
DISCUSSIONS
Ravi Shankar photograph *volume* **3** *page* **49**

Bar Mitzvah (religion)
DISCUSSIONS
Judaism *volume* **5** *page* **50,**
photograph *volume* **5** *page* **51**
LEARN MORE *look under* navjote

"Barber of Seville, The" (opera by Rossini)
DISCUSSIONS
opera *volume* **3** *page* **76**

barley (grain)
ARTICLE *volume* **10** *page* **69**
LEARN MORE *look under* grasses

barn owls (birds)
DISCUSSIONS
owls photograph *volume* **11** *page* **12**

Bas Mitzvah (religion): *look under* Bat Mitzvah

baseball (sport)
DISCUSSIONS
Did you know? *volume* **4** *page* **38,**
volume **9** *page* **49**
LEARN MORE *look under* sports

Basho, *also called* Matsuo Munefusa (Japanese poet)
ARTICLE *volume* **3** *page* **52**
LEARN MORE *look under* literature
people: Brooks, Gwendolyn; Dickinson, Emily; Hiroshige; Kurosawa, Akira; Tagore, Rabindranath; Walker, Kath
places: Japan
things: Buddhism

Basie, Count, *also called* William Basie (American musician)
ARTICLE *volume* **4** *page* **9**
LEARN MORE *look under* jazz
other famous African Americans: Ailey, Alvin; Armstrong, Louis; Brooks, Gwendolyn

Bat Mitzvah, *also called* Bas Mitzvah (religion)
DISCUSSIONS
Judaism *volume* **5** *page* **50**

Batista, Fulgencio (Cuban leader)
DISCUSSIONS
Fidel Castro *volume* **4** *page* **39**

Batlle, Jorge (Uruguayan leader)
DISCUSSIONS
Jorge Luis Borges photograph *volume* **3** *page* **54**

bats (animals)
ARTICLE *volume* **12** *page* **89**
DISCUSSIONS
echoes *volume* **1** *page* **69**
LEARN MORE *look under* birds; mammals

Batswana (people): *look under* Tswana

battery (electricity)
DISCUSSIONS
energy *volume* **2** *page* **48**

Bay of Algiers (bay in Algeria): *look under* Algeria, Bay of

Bay of Fundy (bay in Canada): *look under* Fundy, Bay of

bazaars (markets)
DISCUSSIONS
Amman *volume* **7** *page* **79**
Damascus *volume* **7** *page* **87**

BBC: *look under* British Broadcasting Corporation

bearded pigs
DISCUSSIONS
pigs *volume* **12** *page* **64**

bears (animals): *look under* pandas; polar bears

Beatles, the (British rock group)
DISCUSSIONS
Did you know? *volume* **3** *page* **33**
Ravi Shankar *volume* **3** *page* **48**
LEARN MORE *look under* popular music

Becquerel, Henri (French scientist)
DISCUSSIONS
Marie Curie *volume* **4** *page* **71**

bee bread
DISCUSSIONS
bees *volume* **11** *page* **61**

beehive
DISCUSSIONS
bees *volume* **11** *page* **61**

bees (insects)
ARTICLE *volume* **11** *page* **61**
LEARN MORE *look under* insects

Beethoven, Ludwig van (German composer)
ARTICLE *volume* **3** *page* **40**
LEARN MORE *look under* classical music
people: Mozart, Wolfgang Amadeus

Begin, Menachem (Israeli leader)
ARTICLE *volume* **4** *page* **35**
DISCUSSIONS
Anwar el-Sadat *volume* **4** *page* **59**
LEARN MORE *look under* Israel
other Middle Eastern leaders: Arafat, Yasir; Meir, Golda

Beihai Park (park in Beijing, China)
DISCUSSIONS
Beijing *volume* **7** *page* **11**

Beijing, *also called* Peking (city in China)
ARTICLE *volume* **7** *page* **11**
DISCUSSIONS
atlas *volume* **13** *page* **12**
LEARN MORE *look under* China

Beijing Zoo, *also called* Garden of Ten Thousand Animals (zoo in Beijing, China)
DISCUSSIONS
Beijing *volume* **7** *page* **11**

Beirut (city in Lebanon)
ARTICLE *volume* **7** *page* **80**
DISCUSSIONS
atlas *volume* **13** *page* **12**
LEARN MORE *look under* Lebanon; Middle East

Belfast (city in Northern Ireland, U.K.)
DISCUSSIONS
atlas *volume* **13** *page* **14**
Ireland *volume* **6** *page* **24**
LEARN MORE *look under* United Kingdom

Belgium (country)
DISCUSSIONS
atlas *volume* **13** *page* **14**
flag *volume* **6** *page* **36**
LEARN MORE *look under*
places: Brussels; Western Europe

Belgrade, *also called* Beograd (city in Serbia)
ARTICLE *volume* **6** *page* **79**
DISCUSSIONS
atlas *volume* **13** *page* **14**
LEARN MORE *look under* Serbia

Belize (country)
DISCUSSIONS
Central America *volume* **9** *page* **45**

Bell, Alexander Graham (American inventor)
DISCUSSIONS
Helen Keller *volume* **4** *page* **97**
telephones *volume* **2** *page* **100**

bell peppers (plants)
DISCUSSIONS
peppers *volume* **10** *page* **34,**
photograph *volume* **10** *page* **35**
LEARN MORE *look under* fruits and vegetables

belted kingfishers (birds)
DISCUSSIONS
kingfishers *volume* **11** *page* **9**
LEARN MORE *look under* birds

beluga whales
DISCUSSIONS
whales photograph *volume* **12** *page* **76**
LEARN MORE *look under* marine animals

Bengal tigers
DISCUSSIONS
tigers *volume* **12** *page* **23,** photograph *volume* **12** *page* **22**
LEARN MORE *look under* cats
countries: Bangladesh; India

Beograd (city in Serbia): *look under* Belgrade

"Beowulf" (English story)
DISCUSSIONS
Did you know? *volume* **6** *page* **14**

Berbers (people)
DISCUSSIONS
Libya *volume* **8** *page* **58**
LEARN MORE *look under* peoples

Berlin (city in Germany)
ARTICLE *volume* **6** *page* **45**
DISCUSSIONS
atlas *volume* **13** *page* **14**
Germany *volume* **6** *page* **43**
LEARN MORE *look under* Germany

Berlin Wall
DISCUSSIONS
Berlin *volume* **6** *page* **45,** photograph *volume* **6** *page* **44**
Germany *volume* **6** *page* **43**

Bernhardt, Sarah, *also called* The Divine Sarah (French actress)
ARTICLE *volume* **3** *page* **81**
LEARN MORE *look under* theater
people: Dench, Judi; Welles, Orson

berserkers (warriors)
DISCUSSIONS
Did you know? *volume* **4** *page* **63**

Bhutan (country)
DISCUSSIONS
atlas *volume* **13** *page* **12**
flag *volume* **7** *page* **49**
LEARN MORE *look under*
places: Thimphu
animals: yaks

Bible (holy book)
ARTICLE *volume* **5** *page* **63**
DISCUSSIONS
Did you know? *volume* **5** *page* **54**
Jesus Christ *volume* **5** *page* **58**
Mary *volume* **5** *page* **61**
myths *volume* **5** *page* **7**
printing *volume* **2** *page* **90**
LEARN MORE *look under*
people: Abraham; Jesus Christ; Mary; Moses
religions: Christianity; Judaism
similar writings: Koran

bicycling (sport): *look under* cycling

Bidpai (South Asian stories)
DISCUSSIONS
Kalilah wa Dimnah *volume* **5** *page* **18**

big-band music
DISCUSSIONS
jazz *volume* **3** *page* **35**
popular music *volume* **3** *page* **32**

big bang theory (science)
DISCUSSIONS
universe *volume* **2** *page* **8**
LEARN MORE *look under* astronomy

Big Ben (clock tower in London, England, U.K.)
DISCUSSIONS
London *volume* **6** *page* **16,**
photograph *volume* **6** *page* **17**

bioluminescence (light)
DISCUSSIONS
deep-sea life *volume* **11** *page* **54**
LEARN MORE *look under* light

birds (animals)
ARTICLE *volume* **11** *page* **7**
DISCUSSIONS
Did you know? *volume* **1** *page* **92,** *volume* **10** *page* **6**
LEARN MORE *look under* albatrosses; Andean condors; crested cranes; ducks; eagles; finches; geese; gulls; kingfishers; kiwis; ostriches; owls; parrots and cockatoos; passenger pigeons; peacocks; penguins; swans

bison, *also called* American buffalo
ARTICLE *volume* **12** *page* **50**
DISCUSSIONS
American Indians *volume* **4** *page* **87**
LEARN MORE *look under* buffalo; cattle; ungulates; yaks

Black Forest (region in Germany)
DISCUSSIONS
Germany photograph *volume* **6** *page* **42**
LEARN MORE *look under* forests

black holes (objects in space)
DISCUSSIONS
stars *volume* **2** *page* **10**
LEARN MORE *look under* astronomy

black tea
DISCUSSIONS
tea *volume* **10** *page* **39**

blackberries (fruit)
DISCUSSIONS
Luther Burbank *volume* **4** *page* **66**
LEARN MORE *look under* fruits and vegetables

Blackwell, Elizabeth (American doctor)
ARTICLE *volume* **4** *page* **65**
LEARN MORE *look under* medicine

Blackwell, Emily (American doctor)
DISCUSSIONS
Did you know? *volume* **4** *page* **65**

Blanc, Mont (mountain in Europe)
DISCUSSIONS
atlas photograph *volume* **13** *page* **14**
LEARN MORE *look under* Alps

Blériot, Louis (French aviator)
DISCUSSIONS
airplanes *volume* **2** *page* **71**

blindness
DISCUSSIONS
Helen Keller *volume* **4** *page* **97**
LEARN MORE *look under* Braille

Bloemfontein (city in South Africa)
DISCUSSIONS
atlas *volume* **13** *page* **6**
South Africa *volume* **8** *page* **82**
South African cities *volume* **8** *page* **87**

Blue Danube (river in Europe): *look under* Danube

blue whales (animals)
DISCUSSIONS
whales *volume* **12** *page* **76**
LEARN MORE *look under* marine animals

Bly, Nellie (American journalist)
DISCUSSIONS
Did you know? *volume* **3** *page* **69**

boats: *look under* ships

Boca, La (section in Buenos Aires, Argentina)
DISCUSSIONS
Buenos Aires *volume* **9** *page* **93**
LEARN MORE *look under* Argentina

bodhi trees
DISCUSSIONS
Buddha *volume* **5** *page* **82**
Did you know? *volume* **10** *page* **51**
LEARN MORE *look under* Buddhism; trees

bodhisattva (Buddhism)
DISCUSSIONS
Dalai Lama *volume* **5** *page* **85**
LEARN MORE *look under* Buddhism

body (human): *look under* human beings

Boers (people)
DISCUSSIONS
South African cities *volume* **8** *page* **87**

Bogotá (city in Colombia)
ARTICLE *volume* **9** *page* **73**
DISCUSSIONS
atlas *volume* **13** *page* **11**
Colombia *volume* **9** *page* **71**
LEARN MORE *look under* South America

Bojaxhiu, Agnes Gonxha (nun): *look under* Teresa, Mother

Bolívar, Simón (Latin American leader)
ARTICLE *volume* **4** *page* **89**
LEARN MORE *look under* Latin America

bonobos (animals)
DISCUSSIONS
apes *volume* **12** *page* **9**

books
DISCUSSIONS
printing *volume* **2** *page* **90**

Borges, Jorge Luis (Argentine writer)
ARTICLE *volume* **3** *page* **55**
LEARN MORE *look under* literature

Borglum, Gutzon (American sculptor)
DISCUSSIONS
Did you know? *volume* **3** *page* **10**

Borneo (Southeast Asian island)
DISCUSSIONS
atlas *volume* **13** *page* **12**
gibbons photograph *volume* **12** *page* **12**
shamanism photograph *volume* **5** *page* **90**
LEARN MORE *look under other Southeast Asian islands:* Indonesia; Philippines

Bosnia and Herzegovina (country)
DISCUSSIONS
atlas *volume* **13** *page* **14**
Islam photograph *volume* **5** *page* **65**
LEARN MORE *look under* Eastern Europe; Southern Europe

Bosporus (strait in Turkey)
DISCUSSIONS
atlas *volume* **13** *page* **14**
Mediterranean Sea *volume* **1** *page* **44,** map *volume* **1** *page* **45**
LEARN MORE *look under* Istanbul; waterways

Boston (city in Massachussetts, U.S.)
DISCUSSIONS
Did you know? *volume* **1** *page* **32**
LEARN MORE *look under* United States of America

botanical gardens
DISCUSSIONS
Wellington *volume* **7** *page* **101,** photograph *volume* **7** *page* **101**

botany (study of plants): *look under* plants

Botswana (country)
ARTICLE *volume* **8** *page* **71**
DISCUSSIONS
atlas *volume* **13** *page* **6**
flag *volume* **8** *page* **71**
hippopotamuses photograph *volume* **12** *page* **66**
mongooses photograph *volume* **12** *page* **37**
LEARN MORE *look under* Southern Africa

bovine animals
DISCUSSIONS
cattle *volume* **12** *page* **46**

Brahma (Hindu god)
DISCUSSIONS
Hinduism *volume* **5** *page* **79**
LEARN MORE *look under* God

brahman (Hinduism)
DISCUSSIONS
Hinduism *volume* **5** *page* **79**

Braille (writing)
ARTICLE *volume* **2** *page* **75**
DISCUSSIONS
Helen Keller *volume* **4** *page* **97**
LEARN MORE *look under* communications

Braille, Louis (French educator)
DISCUSSIONS
Braille *volume* **2** *page* **75,** photograph *volume* **2** *page* **74**

Brandenburg Gate (gate in Berlin, Germany)
DISCUSSIONS
Berlin *volume* **6** *page* **45,** photograph *volume* **6** *page* **44**
LEARN MORE *look under* architecture

Brasília (city in Brazil)
ARTICLE *volume* **9** *page* **81**
DISCUSSIONS
atlas *volume* **13** *page* **11**
Brazil *volume* **9** *page* **79**
LEARN MORE *look under* Brazil

Brazil (country)
ARTICLE *volume* **9** *page* **79**
DISCUSSIONS
atlas *volume* **13** *page* **11**
Amazon *volume* **9** *page* **62,** map *volume* **9** *page* **63**
flag *volume* **9** *page* **79**
LEARN MORE *look under*
people: Pelé
places: Brasília; South America

Brer Rabbit (American folktale animal)
DISCUSSIONS
Did you know? *volume* **5** *page* **40**
LEARN MORE *look under* folktales

bridges: *look under* Charles Bridge; Halfpenny Bridge; Victoria Falls Bridge

British Broadcasting Corporation, *also called* BBC
DISCUSSIONS
television *volume* **2** *page* **104**

British Imperial System (measurement system): *look under* Imperial System

British India (country): *look under* Pakistan

Broadway, *also called* The Great White Way (street in New York City, U.S.)
DISCUSSIONS
New York City *volume* **9** *page* **38**
LEARN MORE *look under* theater

broccoli (vegetable)
DISCUSSIONS
cabbages *volume* **10** *page* **29**
LEARN MORE *look under* fruits and vegetables

brontosaurs (dinosaurs): *look under* apatosaurs

Brooklyn Children's Museum (museum in New York City, U.S.)
DISCUSSIONS
Did you know? *volume* **9** *page* **39**

Brooks, Gwendolyn (American poet and teacher)
ARTICLE *volume* **3** *page* **56**
LEARN MORE *look under* literature
other poets: Basho; Dickinson, Emily; Tagore, Rabindranath; Walker, Kath
other famous African Americans: Ailey, Alvin; Armstrong, Louis; Basie, Count

brown moths (insects)
DISCUSSIONS
butterflies and moths photograph *volume* **11** *page* **63**
LEARN MORE *look under* insects

Brown Swiss (breed of cattle)
DISCUSSIONS
cattle *volume* **12** *page* **46**

Brussels, *also called* Brussel, *or* Bruxelles (city in Belgium)
ARTICLE *volume* **6** *page* **36**
DISCUSSIONS
atlas *volume* **13** *page* **14**
LEARN MORE *look under* Western Europe

Brussels sprouts (vegetables)
DISCUSSIONS
Brussels *volume* **6** *page* **36**
cabbages *volume* **10** *page* **29**
LEARN MORE *look under* fruits and vegetables

Bruxelles (city in Belgium): *look under* Brussels

Bucharest (city in Romania)
ARTICLE *volume* **6** *page* **73**
DISCUSSIONS
atlas *volume* **13** *page* **14**
LEARN MORE *look under* Eastern Europe; Paris

Buckingham Palace (palace in London, England, U.K.)
DISCUSSIONS
London photograph *volume* **6** *page* **16**
LEARN MORE *look under* palaces

Buda (former town in Hungary): *look under* Budapest

Budapest (city in Hungary)
ARTICLE *volume* **6** *page* **70**
DISCUSSIONS
atlas *volume* **13** *page* **14**
LEARN MORE *look under* Eastern Europe

Buddha, *also called* Gautama, *or* Siddhartha (founder of Buddhism)
ARTICLE *volume* **5** *page* **82**
DISCUSSIONS
Ashoka photograph *volume* **4** *page* **33**
religion photograph *volume* **5** *page* **42**
statue in Thailand photograph *volume* **7** *page* **6**
LEARN MORE *look under* Buddhism; Dalai Lama; monasticism
other founders of religions: Confucius; Jesus Christ; Muhammad; Zoroaster

Buddhism (religion)
ARTICLE *volume* **5** *page* **81**
DISCUSSIONS
Bangkok *volume* **7** *page* **39,** photograph *volume* **7** *page* **38**
Basho *volume* **3** *page* **52**
Did you know? *volume* **12** *page* **53**
India *volume* **7** *page* **51,** photograph *volume* **7** *page* **50**
macaques *volume* **12** *page* **17**
Shinto *volume* **5** *page* **77**
Thailand photograph *volume* **7** *page* **36**
LEARN MORE *look under*
people: Ashoka; Buddha; Confucius; Dalai Lama; Thant, U
religions and other things: Daoism; Hinduism; Jainism; monasticism; Shinto; Sikhism

Buenos Aires (city in Argentina)
ARTICLE *volume* **9** *page* **93**
DISCUSSIONS
atlas *volume* **13** *page* **11**
LEARN MORE *look under* Argentina

buffalo
ARTICLE *volume* **12** *page* **49**
LEARN MORE *look under* bison; cattle; ungulates; yaks

Buganda (historic kingdom in Africa)
DISCUSSIONS
Kampala *volume* **8** *page* **43**
LEARN MORE *look under* Africa

buildings: *look under* architecture

bulbs
DISCUSSIONS
tulips *volume* **10** *page* **9**

Bulgaria (country)
DISCUSSIONS
atlas *volume* **13** *page* **14**
flag *volume* **6** *page* **74**
LEARN MORE *look under*
places: Eastern Europe; Sofia

bullfighting, *also called* tauromaquia
DISCUSSIONS
Madrid *volume* **6** *page* **13,** photograph *volume* **6** *page* **13**
Portugal *volume* **6** *page* **8**
Spain *volume* **6** *page* **11**

bulls
DISCUSSIONS
cattle *volume* **12** *page* **46**

Bunyan, Paul (legendary person)
ARTICLE *volume* **5** *page* **39**
LEARN MORE *look under*
other American stories: "How Crow Brought Daylight to the World"; "Rabbit Throws Away His Sandal"; "Why Possum's Tail Is Bare"
other legends: dragons; "Golem of Prague, The"; Knights of the Round Table; "Odysseus and the Cyclops"; Trojan Horse, The

Burbank, Luther (American plant breeder)
ARTICLE *volume* **4** *page* **66**
LEARN MORE *look under* plants; science
people: Carver, George Washington

Burgundy (region in France)
DISCUSSIONS
France photograph *volume* **6** *page* **33**

burros (animals): *look under* donkeys

Burundi (country)
DISCUSSIONS
atlas *volume* **13** *page* **6**
dance photograph *volume* **3** *page* **70**
LEARN MORE *look under* Africa

butterflies and moths (insects)
ARTICLE *volume* **11** *page* **63**
DISCUSSIONS
spiders photograph *volume* **11** *page* **73**
LEARN MORE *look under* insects; silkworms

Byzantine Empire (historic empire)
DISCUSSIONS
Istanbul *volume* **7** *page* **69**
LEARN MORE *look under* Roman Republic and Empire



cabbage (vegetable)
ARTICLE *volume* **10** *page* **29**
LEARN MORE *look under* fruits and vegetables; leaves; plants

cable television
DISCUSSIONS
television *volume* **2** *page* **104**

cables
DISCUSSIONS
electricity *volume* **2** *page* **56**

cacao (tree)
ARTICLE *volume* **10** *page* **53**
LEARN MORE *look under* food; trees

cactus (plant)
ARTICLE *volume* **10** *page* **79**
LEARN MORE *look under* plants

caecilians (animals)
DISCUSSIONS
amphibians *volume* **11** *page* **91**

Caerdydd (city in Wales, U.K.): *look under* Cardiff

Caesar, Julius (Roman leader)
ARTICLE *volume* **4** *page* **37**
DISCUSSIONS
Cleopatra *volume* **4** *page* **43**
LEARN MORE *look under* Roman Republic and Empire
other rulers: Ashoka; Charlemagne; Elizabeth I; Empress of China; Hirohito

caffeine
DISCUSSIONS
coffee *volume* **10** *page* **37**

caimans (reptiles)
DISCUSSIONS
alligators and crocodiles *volume* **11** *page* **77**
LEARN MORE *look under* reptiles

Cairo (city in Egypt)
ARTICLE *volume* **8** *page* **53**
DISCUSSIONS
atlas *volume* **13** *page* **6**
LEARN MORE *look under* Egypt; Nile River

calcite (mineral)
DISCUSSIONS
chalk *volume* **1** *page* **83**
LEARN MORE *look under* rocks and minerals

Calder, Alexander (American artist)
DISCUSSIONS
sculpture *volume* **3** *page* **11**
LEARN MORE *look under*
other sculptors: Michelangelo; Picasso, Pablo; Rodin, Auguste

calendars
ARTICLE *volume* **2** *page* **77**
DISCUSSIONS
Mayan civilization *volume* **4** *page* **103**
LEARN MORE *look under* measurement; Moon; solar system

calligraphy
DISCUSSIONS
Did you know? *volume* **5** *page* **69**

calories (energy)
DISCUSSIONS
Did you know? *volume* **2** *page* **49**

Cambodia (country)
DISCUSSIONS
atlas *volume* **13** *page* **12**
flag *volume* **7** *page* **24**
LEARN MORE *look under*
places: Angkor Wat; Phnom Penh; Southeast Asia
stories: Moni Mekhala and Ream Eyso

camels
ARTICLE *volume* **12** *page* **60**
DISCUSSIONS
Oman *volume* **7** *page* **82,** photograph *volume* **7** *page* **82**
The Sudan photograph *volume* **8** *page* **64**
LEARN MORE *look under* llamas; ungulates

cameras (photography)
DISCUSSIONS
photography *volume* **2** *page* **88**

camouflage
DISCUSSIONS
chameleons *volume* **11** *page* **87**
ocelots *volume* **12** *page* **27**

tigers *volume* **12** *page* **23**

Camp David (retreat in Maryland, U.S.)
DISCUSSIONS
Did you know? *volume* **4** *page* **35**

Canaanites (people)
DISCUSSIONS
Did you know? *volume* **7** *page* **76**
LEARN MORE *look under* Middle East; peoples

Canada (country)
ARTICLE *volume* **9** *page* **10**
DISCUSSIONS
atlas *volume* **13** *page* **8**
flag *volume* **9** *page* **10**
theatre photograph *volume* **3** *page* **73**
LEARN MORE *look under*
people: American Indians; Vikings
places: Aklavik; Fundy, Bay of; Great Lakes; Niagara Falls; Ontario; Ottawa; Quebec
animals: bison; porcupines; raccoons; wolves

canals (man-made waterways)
DISCUSSIONS
Amsterdam *volume* **6** *page* **41,** photograph *volume* **6** *page* **40**
LEARN MORE *look under* Panama Canal; Stockholm; Suez Canal; waterways

Canberra (city in Australia)
ARTICLE *volume* **7** *page* **91**
DISCUSSIONS
atlas *volume* **13** *page* **16**
LEARN MORE *look under* Australia; Australian Aboriginals

canoes (boats)
DISCUSSIONS
ships *volume* **2** *page* **94**

canyons (deep narrow valleys)
DISCUSSIONS
sandstone canyon photograph *volume* **1** *page* **76,** photograph *volume* **1** *page* **77**
LEARN MORE *look under* Grand Canyon; Marble Canyon

Cape buffalo (animals)
DISCUSSIONS
buffalo *volume* **12** *page* **49**

Cape Town (city in South Africa)
DISCUSSIONS
atlas *volume* **13** *page* **6**
South Africa *volume* **8** *page* **82**
South African cities *volume* **8** *page* **87**

Capitol, United States (building in Washington, D.C., U.S.)
DISCUSSIONS
Washington, D.C. photograph *volume* **9** *page* **30**
LEARN MORE *look under* United States of America

carbon (chemical element)
DISCUSSIONS
diamonds *volume* **1** *page* **80**

carbon dioxide (chemical compound)
DISCUSSIONS
Did you know? *volume* **1** *page* **71**
leaves *volume* **1** *page* **67**

Cardiff, *also called* Caerdydd (city in Wales, U.K.)
DISCUSSIONS
atlas *volume* **13** *page* **14**
Wales *volume* **6** *page* **28**
LEARN MORE *look under* Wales

Cardiff Castle (castle in Cardiff, Wales, U.K.)
DISCUSSIONS
Wales *volume* **6** *page* **28,** photograph *volume* **6** *page* **29**
LEARN MORE *look under* castles

Caribbean manatees (mammals)
DISCUSSIONS
manatees *volume* **12** *page* **73**

Caribbean Sea (Atlantic Ocean)
DISCUSSIONS
atlas *volume* **13** *page* **8**

Carnegie Hall (concert hall in New York City, U.S.)
DISCUSSIONS
New York City *volume* **9** *page* **38**

carnivores (mammals): *look under* cats; coyotes; dogs; lions; mongooses; ocelots; pandas; raccoons; tigers; walruses; wolves

carnivorous plants, *also called* insect-eating plants
ARTICLE *volume* **10** *page* **19**
LEARN MORE *look under* flowers; insects

carp (fish)
ARTICLE *volume* **11** *page* **37**
LEARN MORE *look under* fish

Carroll, Lewis, *also called* Charles Dodgson (British writer)
ARTICLE *volume* **3** *page* **59**
LEARN MORE *look under* literature

cars: *look under* automobiles

Carter, Jimmy (American leader)
DISCUSSIONS
Anwar el-Sadat photograph *volume* **4** *page* **58**

carts
DISCUSSIONS
transportation *volume* **2** *page* **106**

Carver, George Washington (American researcher)
DISCUSSIONS
peanuts *volume* **10** *page* **30**
LEARN MORE *look under* farming
people: Burbank, Luther

Casablanca (city in Morocco)
DISCUSSIONS
Rabat *volume* **8** *page* **62**
LEARN MORE *look under* Morocco

castles: *look under* Cardiff Castle; chateaux; Edinburgh Castle; Hradcany Castle; Kalemegdan

Castro, Fidel (Cuban leader)
ARTICLE *volume* **4** *page* **39**
DISCUSSIONS
Cuba *volume* **9** *page* **59**
LEARN MORE *look under*
other communist leaders: Mao Zedong

cat bears: *look under* lesser pandas

cats
ARTICLE *volume* **12** *page* **21**
DISCUSSIONS
Did you know? *volume* **12** *page* **23**
LEARN MORE *look under* carnivores
other cats: lions; ocelots; tigers
other pets: dogs

cattails (plants)
DISCUSSIONS
rushes and reeds *volume* **10** *page* **65,** illustration *volume* **10** *page* **65**
LEARN MORE *look under* grasses

cattle
ARTICLE *volume* **12** *page* **46**
DISCUSSIONS
Argentina photograph *volume* **9** *page* **91**
LEARN MORE *look under* bison; buffalo; ungulates; yaks
for other animals look under: domesticated animals

cauliflower (vegetable)
DISCUSSIONS
cabbages *volume* **10** *page* **29,** photograph *volume* **10** *page* **29**

caves, *also called* caverns
ARTICLE *volume* **1** *page* **79**

DISCUSSIONS
Niagara Falls *volume* **9** *page* **21**
LEARN MORE *look under* geography; geology

Cayley, Sir George (British scientist)
DISCUSSIONS
airplanes *volume* **2** *page* **71**

CCP (Chinese political party): *look under* Chinese Communist Party

cedars (trees)
ARTICLE *volume* **10** *page* **81**
LEARN MORE *look under* trees

cellular phone, *also called* cell phones, *or* mobile cellular telephones
DISCUSSIONS
telephones *volume* **2** *page* **100**

Central Africa: *look under places:* Congo

Central America
ARTICLE *volume* **9** *page* **45**
DISCUSSIONS
atlas *volume* **13** *page* **8**
floods *volume* **1** *page* **32**
LEARN MORE *look under*
countries: Cuba; Guatemala; Mexico; Nicaragua; Panama
other places: Mexico City; Panama Canal; Panama City; Puerto Rico; West Indies
animals: anoles; armadillos; bats; manatees; monkeys; ocelots; opossums; porcupines; tapirs
stories: "Rabbit Throws Away His Sandal"
things: Mayan Civilization

Central Asia
DISCUSSIONS
classical music *volume* **3** *page* **36**
LEARN MORE *look under*
places: Afghanistan; Karakoram Range; Tibet
animals: camels; Siberian tigers; wild goats

Central Europe: *look under*
countries: Austria; Czech Republic; Germany; Poland; Switzerland
other places: Alps; Danube

Central Park (park in New York City, U.S.)
DISCUSSIONS
New York City *volume* **9** *page* **37,** photograph *volume* **9** *page* **36**

Ceres (dwarf planet): *look under* dwarf planet

Ceylon (island country): *look under* Sri Lanka

Chaillot Palace (palace in Paris, France)
DISCUSSIONS
Paris *volume* **6** *page* **35**
LEARN MORE *look under* palaces

chalk (rock)
ARTICLE *volume* **1** *page* **83**
LEARN MORE *look under* rocks and minerals

chamber music
DISCUSSIONS
classical music *volume* **3** *page* **36,** photograph *volume* **3** *page* **36**

chameleons (lizards)
ARTICLE *volume* **11** *page* **87**
DISCUSSIONS
Did you know? *volume* **7** *page* **63**
lizards *volume* **11** *page* **85**
LEARN MORE *look under* alligators and crocodiles; dinosaurs; Komodo dragons; reptiles

channels (waterway): *look under* waterways

character ballet: *look under* theatrical dance

Charlemagne (Holy Roman emperor)
ARTICLE *volume* **4** *page* **41**
LEARN MORE *look under*
other rulers: Ashoka; Caesar, Julius; Cleopatra; Elizabeth I; Empress of China; Hirohito

Charles Bridge (bridge in Prague, Czech Republic)
DISCUSSIONS
Prague *volume* **6** *page* **55,** photograph *volume* **6** *page* **54**
LEARN MORE *look under*
other bridges: Halfpenny Bridge; Victoria Falls Bridge

Charon (moon of Pluto)
DISCUSSIONS
Pluto *volume* **2** *page* **45,** photograph *volume* **2** *page* **44**

chateaux (French castles)
DISCUSSIONS
France *volume* **6** *page* **32**
LEARN MORE *look under* castles

Chernobyl (city in Ukraine)
DISCUSSIONS
Did you know? *volume* **6** *page* **81**
LEARN MORE *look under* nuclear energy; pollution

Cherokee (people)
DISCUSSIONS
American Indians photograph *volume* **4** *page* **86,** photograph *volume* **4** *page* **87**
LEARN MORE *look under* peoples
stories: "Why Possum's Tail Is Bare"

chess (game)
DISCUSSIONS
Did you know? *volume* **6** *page* **76,** *volume* **7** *page* **73**

"Chess Players, The," *also called* "Shatranj ke Khilari" (film by Ray)
DISCUSSIONS
scene photograph *volume* **3** *page* **88**

chewing the cud
DISCUSSIONS
cattle *volume* **12** *page* **47**

Chibcha (people)
DISCUSSIONS
Bogotá *volume* **9** *page* **73**
LEARN MORE *look under* American Indians

Chicago (city in Illinois, U.S.)
DISCUSSIONS
atlas *volume* **13** *page* **8**
Gwendolyn Brooks *volume* **3** *page* **56**
LEARN MORE *look under* jazz; United States of America

chihuahuas (dogs)
DISCUSSIONS
dogs *volume* **12** *page* **29**

Chile (country)
ARTICLE *volume* **9** *page* **87**
DISCUSSIONS
atlas *volume* **13** *page* **11**
Did you know? *volume* **1** *page* **34**
Easter Island *volume* **9** *page* **89**
flag *volume* **9** *page* **87**
painting photograph *volume* **3** *page* **9**
sheep photograph *volume* **12** *page* **56**
tsunamis *volume* **1** *page* **50**
LEARN MORE *look under* South America
people: Allende, Isabel

chimpanzees (animals)
DISCUSSIONS
apes *volume* **12** *page* **9,** photograph *volume* **12** *page* **9**
gorillas *volume* **12** *page* **11**
Jane Goodall *volume* **4** *page* **78,** photograph *volume* **4** *page* **79**
LEARN MORE *look under* primates

China (country)
ARTICLE *volume* **7** *page* **8**

DISCUSSIONS
atlas *volume* **13** *page* **12**
Buddhism photograph *volume* **5** *page* **80**
calendars *volume* **2** *page* **77**
classical music *volume* **3** *page* **36**
Dalai Lama *volume* **5** *page* **85**
Did you know? *volume* **2** *page* **87,** *volume* **2** *page* **90**
dragons *volume* **5** *page* **9**
flag *volume* **7** *page* **8**
Great Wall *volume* **7** *page* **13**
opera *volume* **3** *page* **76**
Pablo Picasso photograph *volume* **4** *page* **21**
pigs photograph *volume* **12** *page* **65**
Seoul *volume* **7** *page* **23**
wheat *volume* **10** *page* **75**
LEARN MORE *look under*
people: Confucius; Empress of China; Mao Zedong; Xia Gui
places: Beijing; East Asia; Great Wall
religions: Buddhism; Confucianism; Daoism
animals and plants: pandas; tea
stories: "Yeh-Shen"

China oranges, *also called* common oranges, *or* sweet oranges (fruit)
DISCUSSIONS
oranges *volume* **10** *page* **49**

Chinese Communist Party, *also called* CCP
DISCUSSIONS
Mao Zedong *volume* **4** *page* **54**
LEARN MORE *look under* communism

Chiron (comet)
DISCUSSIONS
Did you know? *volume* **2** *page* **41**

chlorophyll
DISCUSSIONS
leaves *volume* **1** *page* **67**
LEARN MORE *look under* photosynthesis

chocolate
DISCUSSIONS
Brussels *volume* **6** *page* **36**
cacao *volume* **10** *page* **53,** illustration *volume* **10** *page* **53**

Christ: *look under* Jesus Christ

Christianity (religion)
ARTICLE *volume* **5** *page* **57**
DISCUSSIONS
God *volume* **5** *page* **44,** photograph *volume* **5** *page* **44**
LEARN MORE *look under*
people: Abraham; Jesus Christ; Mary; Moses
branches: Roman Catholicism
writings: Bible
similar religions: Islam; Judaism
practices: monasticism

Christie, Agatha (British writer)
DISCUSSIONS
Did you know? *volume* **3** *page* **73**

Christmas (holiday)
DISCUSSIONS
Christianity *volume* **5** *page* **57**
Did you know? *volume* **4** *page* **11,** *volume* **6** *page* **42,** *volume* **6** *page* **75**

"Christmas Carol, A" (book by Dickens)
DISCUSSIONS
Charles Dickens *volume* **4** *page* **10,** illustration *volume* **4** *page* **11**

Christo (Bulgarian artist)
DISCUSSIONS
sculpture *volume* **3** *page* **11**

Chunnel: *look under* Eurotunnel

churches: *look under* Holy Sepulchre, Church of the; Notre-Dame de Paris, Cathedral of; Saint Basil's Cathedral; Saint Peter's Basilica; Saint Stephen's Cathedral; Westminster Abbey
other places of worship: gurdwaras; mosques; synagogues; temples

Cinderella (folktale person)
DISCUSSIONS
Did you know? *volume* **5** *page* **14**

cinema (motion picture business)
ARTICLE *volume* **3** *page* **75**
DISCUSSIONS
Did you know? *volume* **5** *page* **92,** *volume* **6** *page* **54,** *volume* **7** *page* **100**
LEARN MORE *look under*
people: Dench, Judi; Kurosawa, Akira; Ray, Satyajit
things: motion pictures

Circular Quay (tourist center in Australia)
DISCUSSIONS
Sydney *volume* **7** *page* **95**

cirrus clouds
DISCUSSIONS
clouds *volume* **1** *page* **56,** photograph *volume* **1** *page* **57**
LEARN MORE *look under* weather

citric acid
DISCUSSIONS
Did you know? *volume* **10** *page* **47**

City of the Dead (district in Cairo, Egypt)
DISCUSSIONS
Cairo *volume* **8** *page* **53**
LEARN MORE *look under* Egypt

civil rights
DISCUSSIONS
Martin Luther King *volume* **4** *page* **98**
LEARN MORE *look under* Gandhi, Mahatma; Mandela, Nelson

civilizations: *look under* American Indians; Aztec Civilization; Fertile Crescent; Inca civilization; Indus civilization; Inuit; Mayan Civilization

Cixi (empress of China): *look under* Empress of China

classical music
ARTICLE *volume* **3** *page* **36**
LEARN MORE *look under*
people: Beethoven, Ludwig van; Mozart, Wolfgang Amadeus
places: Vienna

claws
DISCUSSIONS
cats *volume* **12** *page* **21**

Clemens, Samuel Langhorne (American writer): *look under* Twain, Mark

Cleopatra (queen of Egypt)
ARTICLE *volume* **4** *page* **43**
LEARN MORE *look under* Egypt
other rulers: Ashoka; Caesar, Julius; Charlemagne; Elizabeth I; Empress of China; Hirohito

click languages
DISCUSSIONS
Did you know? *volume* **8** *page* **71**
LEARN MORE *look under* Africa; language

climate: *look under* clouds; cyclones; dew; rainbows; temperatures; thunder and lightning; wind

climbing roses
DISCUSSIONS
roses *volume* **10** *page* **11,** photograph *volume* **10** *page* **10**

cloth
DISCUSSIONS
weaving *volume* **2** *page* **108**
LEARN MORE *look under* kente cloth

"Clothespin" (sculpture by Oldenburg)
DISCUSSIONS
sculpture photograph *volume* **3** *page* **10**

cloud nine (saying)
DISCUSSIONS
Did you know? *volume* **1** *page* **57**

clouds
ARTICLE *volume* **1** *page* **56**
LEARN MORE *look under* cyclones; dew; thunder and lightning; water

club wheat (grain)
DISCUSSIONS
wheat *volume* **10** *page* **75**

CN Tower (structure in Toronto, Canada)
DISCUSSIONS
Ontario photograph *volume* **9** *page* **18**
LEARN MORE *look under* towers

Co Loa citadel (monument in Hanoi, Vietnam)
DISCUSSIONS
Hanoi *volume* **7** *page* **42**

coal-gas lights
DISCUSSIONS
Did you know? *volume* **1** *page* **87**

cobras (snakes)
DISCUSSIONS
mongooses *volume* **12** *page* **36**
LEARN MORE *look under* king cobras; snakes

cockatoos (birds): *look under* parrots and cockatoos

cockroaches (insects)
ARTICLE *volume* **11** *page* **65**
LEARN MORE *look under* insects

coco de mer, *also called* double coconut trees (trees)
DISCUSSIONS
Did you know? *volume* **8** *page* **35**
palm *volume* **10** *page* **45**
LEARN MORE *look under* fruits and vegetables

coconuts (fruit)
DISCUSSIONS
palm *volume* **10** *page* **45**
LEARN MORE *look under* fruits and vegetables

coffee
ARTICLE *volume* **10** *page* **37**
DISCUSSIONS
Colombia photograph *volume* **9** *page* **70**
Did you know? *volume* **6** *page* **50**
Ethiopia *volume* **8** *page* **27**
LEARN MORE *look under* plants
things: tea

cold: *look under* temperatures

cold-blooded animals
DISCUSSIONS
amphibians *volume* **11** *page* **91**
LEARN MORE *look under* reptiles

Collins, Phil (British musician)
DISCUSSIONS
popular music photograph *volume* **3** *page* **32**

Colombia (country)
ARTICLE *volume* **9** *page* **71**
DISCUSSIONS
atlas *volume* **13** *page* **11**
donkeys photograph *volume* **12** *page* **42**
flag *volume* **9** *page* **71**
LEARN MORE *look under*
places: Bogotá; South America
people: Bolívar, Simón

colonialism
DISCUSSIONS
Central America *volume* **9** *page* **45**
Sri Lanka *volume* **7** *page* **62**
United States of America *volume* **9** *page* **27**
West Indies *volume* **9** *page* **54**
Western Australia *volume* **7** *page* **97**

color
DISCUSSIONS
chameleons *volume* **11** *page* **87**
leaves *volume* **1** *page* **67**
rainbows *volume* **1** *page* **63**
roses *volume* **10** *page* **11**
Sir Isaac Newton *volume* **4** *page* **83**
universe *volume* **2** *page* **9**
Vincent van Gogh *volume* **3** *page* **27**
LEARN MORE *look under* light

Colorado River (U.S. and Mexico)
DISCUSSIONS
Grand Canyon *volume* **9** *page* **32,** photograph *volume* **9** *page* **32,** photograph *volume* **9** *page* **33**
LEARN MORE *look under* rivers

coloratura sopranos (music)
DISCUSSIONS
Joan Sutherland *volume* **4** *page* **27**
LEARN MORE *look under* opera

Colosseum (arena in Rome, Italy)
DISCUSSIONS
Rome *volume* **6** *page* **91,** photograph *volume* **6** *page* **91**
LEARN MORE *look under* architecture

Columbus, Christopher (Italian explorer)
DISCUSSIONS
Cuba *volume* **9** *page* **59**
Did you know? *volume* **4** *page* **86**
Puerto Rico *volume* **9** *page* **57**
United States of America *volume* **9** *page* **27**
West Indies *volume* **9** *page* **54**
LEARN MORE *look under* exploration

Comédie-Française (French theatre company)
DISCUSSIONS
Sarah Bernhardt *volume* **3** *page* **81**

comets
ARTICLE *volume* **2** *page* **25**
DISCUSSIONS
solar system *volume* **2** *page* **21**
LEARN MORE *look under* space

comic operas
DISCUSSIONS
opera *volume* **3** *page* **76**

common oranges (fruit): *look under* China oranges

communications: *look under* Braille; Internet and the World Wide Web; photography; printing; radio; telephones; television

communism
DISCUSSIONS
Cuba *volume* **9** *page* **59**
Fidel Castro *volume* **4** *page* **39**
Mao Zedong *volume* **4** *page* **54**
Phnom Penh *volume* **7** *page* **24**
LEARN MORE *look under* Union of Soviet Socialist Republics

computer programs: *look under* programs

computers
ARTICLE *volume* **2** *page* **79**
LEARN MORE *look under* Internet and the World Wide Web

Conakry (city in Guinea)
DISCUSSIONS
Guinea *volume* **8** *page* **14**

condors (birds): *look under* Andean condors

Confucianism
DISCUSSIONS
Confucius *volume* **5** *page* **72**
Shinto *volume* **5** *page* **77**

LEARN MORE *look under*
other Eastern religions: Buddhism; Daoism; Hinduism; Jainism; Sikhism

Confucius, *also called* Kongzi (founder of Confucianism)
ARTICLE *volume* **5** *page* **72**
LEARN MORE *look under*
other religious teachers: Buddha; Jesus Christ; Moses; Muhammad; Zoroaster
other religions: Daoism
places: China; Literature, Temple of

Congo (region in Africa)
ARTICLE *volume* **8** *page* **9**
DISCUSSIONS
atlas *volume* **13** *page* **6**
LEARN MORE *look under* Africa

Congo River (river in Africa)
DISCUSSIONS
Did you know? *volume* **8** *page* **8**

Congressional Palace (building in Brasília, Brazil)
DISCUSSIONS
Brasília *volume* **9** *page* **81,** photograph *volume* **9** *page* **80**
LEARN MORE *look under* palaces

conning towers
DISCUSSIONS
submarines photograph *volume* **2** *page* **98**

Conservative Judaism
DISCUSSIONS
Judaism *volume* **5** *page* **50**

Constantinople (historic city in Turkey): *look under* Istanbul

constellations (groups of stars)
DISCUSSIONS
galaxies *volume* **2** *page* **13**

continents
ARTICLE *volume* **1** *page* **8**
LEARN MORE *look under*
places: Africa; Antarctica; Asia; Australia; Europe; North America; South America
things: caves; deserts; marshes; mountains; oasis; peninsulas; rainforests; rivers; swamps

cool jazz
DISCUSSIONS
jazz *volume* **3** *page* **35**

Copenhagen (city in Denmark)
ARTICLE *volume* **6** *page* **62**
DISCUSSIONS
atlas *volume* **13** *page* **14**
LEARN MORE *look under* Denmark

Copernicus, Nicolaus (Polish astronomer)
ARTICLE *volume* **4** *page* **69**
DISCUSSIONS
Poland *volume* **6** *page* **57**
LEARN MORE *look under* astronomy; science
other astronomers: Galileo Galilei; Kepler, Johannes; Piazzi, Giuseppe

Coppola, Francis Ford (American film director)
DISCUSSIONS
Akira Kurosawa photograph *volume* **3** *page* **86**

coquí (frogs)
DISCUSSIONS
Did you know? *volume* **9** *page* **56**
LEARN MORE *look under* frogs

coral (ocean animals)
ARTICLE *volume* **11** *page* **45**
DISCUSSIONS
Great Barrier Reef *volume* **7** *page* **92**
islands *volume* **1** *page* **12**
LEARN MORE *look under* marine animals

coral reef: *look under* Great Barrier Reef

corn (plants)
ARTICLE *volume* **10** *page* **70**
LEARN MORE *look under* fruits and vegetables; grasses

cornets (musical instruments)
DISCUSSIONS
Louis Armstrong *volume* **3** *page* **39**
LEARN MORE *look under* musical instruments

cosmonauts (space explorers): *look under* astronauts

Costa, Lucio (Brazilian architect)
DISCUSSIONS
Brasília *volume* **9** *page* **81**
LEARN MORE *look under* architecture

Costa Rica (country)
DISCUSSIONS
Central America *volume* **9** *page* **45**

Cotswold (district in England, U.K.)
DISCUSSIONS
England photograph *volume* **6** *page* **14**
LEARN MORE *look under* United Kingdom

cotton (plant and fiber)
ARTICLE *volume* **10** *page* **83**
DISCUSSIONS
Nile River *volume* **8** *page* **54**
weaving *volume* **2** *page* **108**
LEARN MORE *look under* plants

countries, *also called* nations
DISCUSSIONS
continents *volume* **1** *page* **8**
LEARN MORE *look under*
continents to find countries: Africa; Asia; Australia; Europe; North America; South America

cows
DISCUSSIONS
cattle *volume* **12** *page* **46,** photograph *volume* **12** *page* **46**
Did you know? *volume* **7** *page* **57**

coyotes (animals)
ARTICLE *volume* **12** *page* **32**
LEARN MORE *look under* carnivores; dogs; wolves

crab-eating macaques (animals)
DISCUSSIONS
macaques *volume* **12** *page* **17**

crab spiders
DISCUSSIONS
spiders *volume* **11** *page* **72**

cracker butterflies (insects)
DISCUSSIONS
butterflies and moths photograph *volume* **11** *page* **63**

crafts: *look under* folk arts and crafts

crested cranes (animals)
DISCUSSIONS
Did you know? *volume* **8** *page* **40**
LEARN MORE *look under* birds

Cretaceous Period (geology)
DISCUSSIONS
Did you know? *volume* **1** *page* **82**
LEARN MORE *look under* paleontology

crickets (insects)
ARTICLE *volume* **11** *page* **67**
DISCUSSIONS
insects *volume* **11** *page* **57**
LEARN MORE *look under* grasshoppers; insects

crocodiles (reptiles): *look under* alligators and crocodiles

Crosby, Bing (American singer and actor)
DISCUSSIONS
Louis Armstrong photograph *volume* **3** *page* **38**

cross-pollination
DISCUSSIONS
Luther Burbank *volume* **4** *page* **66**

crows (birds): *look under*
stories: "How Crow Brought Daylight to the World"

Crusades (Christianity)
DISCUSSIONS
religion *volume* **5** *page* **42**

Cuba (country)
ARTICLE *volume* **9** *page* **59**
DISCUSSIONS
atlas *volume* **13** *page* **8**
flag *volume* **9** *page* **59**
LEARN MORE *look under*
people: Castro, Fidel
places: West Indies
things: sugarcane

Cubism (art)
DISCUSSIONS
Pablo Picasso *volume* **4** *page* **20**
LEARN MORE *look under* painting

culture: *look under* civilizations

cumulonimbus clouds, *also called* thunderheads
DISCUSSIONS
clouds *volume* **1** *page* **56**
LEARN MORE *look under* weather

cumulus clouds
DISCUSSIONS
clouds *volume* **1** *page* **56**
LEARN MORE *look under* weather

curare (drug)
DISCUSSIONS
medicine *volume* **2** *page* **60**
rainforests *volume* **1** *page* **24**

Curie, Marie (French scientist)
ARTICLE *volume* **4** *page* **71**
LEARN MORE *look under*
people: Pasteur, Louis
things: atoms; medicine; nuclear energy; science

Curie, Pierre (French scientist)
DISCUSSIONS
Marie Curie *volume* **4** *page* **71**

currents
DISCUSSIONS
Atlantic Ocean *volume* **1** *page* **39**
Did you know? *volume* **6** *page* **64**
oceans *volume* **1** *page* **37**

Curtiss, Glenn (American bicycle maker)
DISCUSSIONS
airplanes *volume* **2** *page* **71**

cycling, *also called* bicycling (sport)
DISCUSSIONS
Did you know? *volume* **1** *page* **55,** *volume* **2** *page* **49**
Beijing photograph *volume* **7** *page* **10**
LEARN MORE *look under* sports

cyclones, *also called* hurricanes, *or* typhoons (wind storms)
ARTICLE *volume* **1** *page* **61**
DISCUSSIONS
floods *volume* **1** *page* **32**
waves *volume* **1** *page* **49**
LEARN MORE *look under* weather

Cyclopes (legendary giants)
DISCUSSIONS
legend of Odysseus *volume* **5** *page* **27**
LEARN MORE *look under* legends

cygnets (birds)
DISCUSSIONS
swans *volume* **11** *page* **24,** photograph *volume* **11** *page* **24,** photograph *volume* **11** *page* **25**

Cymru (country in the U.K.): *look under* Wales

Czech Republic (country)
ARTICLE *volume* **6** *page* **52**
DISCUSSIONS
atlas *volume* **13** *page* **14**
flag *volume* **6** *page* **52**
LEARN MORE *look under*
places: Central Europe; Prague

Czechoslovakia (historic nation in Europe)
DISCUSSIONS
Czech Republic *volume* **6** *page* **52**



dabbling ducks (birds)
DISCUSSIONS
ducks *volume* **11** *page* **21**

daisies (plants)
DISCUSSIONS
Luther Burbank *volume* **4** *page* **66**

Dakar (city in Senegal)
ARTICLE *volume* **8** *page* **25**
DISCUSSIONS
atlas *volume* **13** *page* **6**
Senegal *volume* **8** *page* **23**
LEARN MORE *look under* West Africa

Dalai Lama (Tibetan leader)
ARTICLE *volume* **5** *page* **85**
LEARN MORE *look under* Buddhism; monasticism

Dall's sheep
DISCUSSIONS
sheep photograph *volume* **12** *page* **57**

Damascus (city in Syria)
ARTICLE *volume* **7** *page* **87**
DISCUSSIONS
atlas *volume* **13** *page* **12**
LEARN MORE *look under* Syria

dams
DISCUSSIONS
water power *volume* **2** *page* **67,** illustration *volume* **2** *page* **66**
LEARN MORE *look under* dikes
dams: Aswan High Dam; Kariba Dam

dance
ARTICLE *volume* **3** *page* **70**
DISCUSSIONS
Did you know? *volume* **5** *page* **90**
LEARN MORE *look under*
people: Ailey, Alvin; Elssler, Fanny; Tallchief, Maria

Danube, *also called* Blue Danube (river in Europe)
DISCUSSIONS
atlas *volume* **13** *page* **14**
Austria *volume* **6** *page* **48**
Budapest *volume* **6** *page* **70,** photograph *volume* **6** *page* **71**
Did you know? *volume* **6** *page* **78**
LEARN MORE *look under* rivers
places: Bucharest; Vienna

Dao, *also called* Tao (Chinese philosophy)
DISCUSSIONS
Daoism *volume* **5** *page* **74**

"Daodejing" (Daoism)
DISCUSSIONS
Daoism *volume* **5** *page* **74**
LEARN MORE *look under*
other holy books: "Adi Granth"; Avesta; Bible; Koran

Daoism, *also called* Taoism (religion and philosophy)
ARTICLE *volume* **5** *page* **74**
DISCUSSIONS
Shinto *volume* **5** *page* **77**
LEARN MORE *look under* Buddhism; Confucius

Dardanelles (strait in Turkey)
DISCUSSIONS
Mediterranean Sea *volume* **1** *page* **44,** map *volume* **1** *page* **45**
LEARN MORE *look under* Istanbul; waterways

dark matter (object in space)
DISCUSSIONS
Did you know? *volume* **2** *page* **9**
LEARN MORE *look under* space

Darwin, Charles (British scientist)
ARTICLE *volume* **4** *page* **73**
DISCUSSIONS
Galapagos Islands *volume* **9** *page* **68**
LEARN MORE *look under* science

date palms (trees)
DISCUSSIONS
Algeria photograph *volume* **1** *page* **35**
oasis *volume* **1** *page* **34,** photograph *volume* **1** *page* **35**
LEARN MORE *look under* palms

"David" (sculpture by Michelangelo)
DISCUSSIONS
Michelangelo *volume* **3** *page* **21,** photograph *volume* **3** *page* **20**

"David Copperfield" (book by Dickens)
DISCUSSIONS
Charles Dickens *volume* **4** *page* **10**

Davis, Miles (American musician)
DISCUSSIONS
jazz *volume* **3** *page* **35**
LEARN MORE *look under* Armstrong, Louis; Basie, Count

de Klerk, F. W. (South African leader)
DISCUSSIONS
Nelson Mandela *volume* **4** *page* **53**
LEARN MORE *look under* South Africa

Dead Sea (lake in the Middle East)
DISCUSSIONS
Israel *volume* **7** *page* **75**
LEARN MORE *look under* lakes; Middle East

Dead Sea Scrolls
DISCUSSIONS
Amman *volume* **7** *page* **79**
Did you know? *volume* **5** *page* **62**
LEARN MORE *look under* sacred writings

deafness, *also called* hearing impairment
ARTICLE *volume* **2** *page* **96**
DISCUSSIONS
Did you know? *volume* **2** *page* **101**
Helen Keller *volume* **4** *page* **97**
LEARN MORE *look under*
people: Beethoven, Ludwig van

"Death and the King's Horseman" (play by Soyinka)
DISCUSSIONS
Wole Soyinka photograph *volume* **3** *page* **63**

Death Valley (desert in California, U.S.)
DISCUSSIONS
atlas photograph *volume* **13** *page* **9**
deserts photograph *volume* **1** *page* **21**
LEARN MORE *look under* deserts; United States of America

deciduous trees: *look under* trees

deep-sea life
ARTICLE *volume* **11** *page* **54**
LEARN MORE *look under* fish; marine animals

Democratic Republic of the Congo (country)
DISCUSSIONS
atlas *volume* **13** *page* **6**
Congo region *volume* **8** *page* **9**
flag *volume* **8** *page* **9**

Denali (mountain in Alaska, United States): *look under* McKinley, Mount

Dench, Judi, *also called* Dame Judi Dench, *or* Judith Olivia Dench (British actress)
ARTICLE *volume* **3** *page* **82**
LEARN MORE *look under* cinema; theater
people: Bernhardt, Sarah; Welles, Orson

Denmark (country)
ARTICLE *volume* **6** *page* **61**
DISCUSSIONS
atlas *volume* **13** *page* **14**
flag *volume* **6** *page* **61**
wind power *volume* **2** *page* **69,** photograph *volume* **2** *page* **68**
LEARN MORE *look under*
places: Copenhagen; Greenland; Scandinavia

deserts
ARTICLE *volume* **1** *page* **20**
LEARN MORE *look under*
places: Algeria; Antarctica; Atacama Desert; Death Valley; Kalahari; Nambung National Park; Namib; Sahara
animals and plants: cactus; camels
things: oasis

designing (theatre)
DISCUSSIONS
theatre *volume* **3** *page* **72**

dew
ARTICLE *volume* **1** *page* **65**
LEARN MORE *look under* clouds
stories: Moni Mekhala and Ream Eyso

Dhaka (city in Bangladesh)
DISCUSSIONS
Bangladesh *volume* **7** *page* **47**

dharma (religion)
DISCUSSIONS
Ashoka *volume* **4** *page* **32**
LEARN MORE *look under* Buddhism

Dia de los Muertos (holiday): *look under* All Souls' Day

dialer
DISCUSSIONS
telephones *volume* **2** *page* **100**

Diamond Head (cape in Hawaii, U.S.)
DISCUSSIONS
Honolulu *volume* **9** *page* **35,** photograph *volume* **9** *page* **34**
LEARN MORE *look under* mountains

diamonds
ARTICLE *volume* **1** *page* **80**
DISCUSSIONS
Amsterdam *volume* **6** *page* **41**
diamond cutter in Johannesburg, South Africa photograph *volume* **8** *page* **83**
South Africa *volume* **8** *page* **82**
LEARN MORE *look under* rocks and minerals

Dickens, Charles (British writer)
ARTICLE *volume* **4** *page* **10**
LEARN MORE *look under* literature

Dickinson, Emily (American poet)
ARTICLE *volume* **3** *page* **60**
LEARN MORE *look under* literature
people: Basho; Brooks, Gwendolyn; Tagore, Rabindranath; Walker, Kath

digital cameras
DISCUSSIONS
photography *volume* **2** *page* **89**

digitalis (drug)
DISCUSSIONS
medicine *volume* **2** *page* **60**

dikes (dams)
DISCUSSIONS
Netherlands, the *volume* **6** *page* **38**
LEARN MORE *look under* dams

dinosaurs (ancient reptiles)
ARTICLE *volume* **1** *page* **88**
DISCUSSIONS
Did you know? *volume* **9** *page* **7,** *volume* **9** *page* **61**
disappearance *volume* **1** *page* **91**
dragons *volume* **5** *page* **9**
LEARN MORE *look under* chalk; fossils; mammoths and mastodons; reptiles; tyrannosaurs

Dionysus, Theater of (Athens, Greece)
DISCUSSIONS
Athens *volume* **6** *page* **85,** photograph *volume* **6** *page* **84**
LEARN MORE *look under* architecture; theater

directing (arts)
DISCUSSIONS
motion pictures *volume* **2** *page* **83**
theatre *volume* **3** *page* **72**
LEARN MORE *look under* Ray, Satyajit

disasters: *look under* cyclones; earthquakes; floods; tsunamis; volcanoes

diseases: *look under* medicine; Pasteur, Louis

Divine Sarah, The (French actress): *look under* Bernhardt, Sarah

diving bells (spiders)
DISCUSSIONS
spiders *volume* **11** *page* **73**

diving ducks (birds)
DISCUSSIONS
ducks *volume* **11** *page* **21**

Dixieland (music)
DISCUSSIONS
jazz *volume* **3** *page* **35**

Dodgson, Charles (British writer): *look under* Carroll, Lewis

dogs
ARTICLE *volume* **12** *page* **29**
DISCUSSIONS
Did you know? *volume* **5** *page* **47**
sheep *volume* **12** *page* **57**
LEARN MORE *look under* carnivores
similar animals: coyotes; wolves
other pets: cats
stories and characters: Aesop's fables; Pluto

dolls
DISCUSSIONS
kachina dolls photograph *volume* **3** *page* **7**

dolphins (animals)
DISCUSSIONS
Did you know? *volume* **12** *page* **7,** *volume* **12** *page* **8,** photograph *volume* **12** *page* **7**
LEARN MORE *look under* aquatic animals; manatees; marine animals; walruses; whales

Dome of the Rock (shrine in Jerusalem, Israel)
DISCUSSIONS
Islam photograph *volume* **5** *page* **64**
Jerusalem *volume* **7** *page* **77,** photograph *volume* **7** *page* **76**
LEARN MORE *look under* architecture

domestic cats: *look under* cats

domesticated animals: *look under* buffalo; camels; cats; cattle; dogs; donkeys; elephants; horses; llamas; pigs; sheep; yaks

Donatello (Italian sculptor)
DISCUSSIONS
sculpture photograph *volume* **3** *page* **11**
LEARN MORE *look under* Michelangelo; Picasso, Pablo; Rodin, Auguste

Dong Kinh (city in Vietnam): *look under* Hanoi

donkeys, *also called* burros (animals)
ARTICLE *volume* **12** *page* **42**
LEARN MORE *look under* horses; ungulates

double coconut trees: *look under* coco de mer

Dover (city in England, U.K.)
DISCUSSIONS
English Channel photograph *volume* **6** *page* **30**
LEARN MORE *look under* White Cliffs of Dover

down (feathers)
DISCUSSIONS
geese *volume* **11** *page* **22**
LEARN MORE *look under* feathers

draco lizards
DISCUSSIONS
lizards *volume* **11** *page* **85**

"Dracula" (book by Stoker)
DISCUSSIONS
Did you know? *volume* **6** *page* **72**

Dragon Lady, The (empress of China): *look under* Empress of China

dragon ships: *look under* longships

dragonflies (insects)
DISCUSSIONS
insects *volume* **11** *page* **57,** illustration *volume* **11** *page* **57**

dragons, *also called* long
ARTICLE *volume* **5** *page* **9**
LEARN MORE *look under*
other European stories: Aesop's fables; Atlas; "Golem of Prague, The"; Knights of the Round Table; "Odysseus and the Cyclops"; Trojan Horse, The
other legends: Bunyan, Paul

drama (literature and theatre)
DISCUSSIONS
Did you know? *volume* **5** *page* **90**
theatre *volume* **3** *page* **72**

dromedaries, *also called* Arabian camels (camels)
DISCUSSIONS
camels *volume* **12** *page* **60,** photograph *volume* **12** *page* **61**

drones (animals)
DISCUSSIONS
bees *volume* **11** *page* **61**

drugs: *look under* medicine

drums (musical instruments): *look under* percussion instruments; rhythm instruments

Dublin (city in Ireland)
ARTICLE *volume* **6** *page* **26**
DISCUSSIONS
atlas *volume* **13** *page* **14**
Ireland *volume* **6** *page* **24**
LEARN MORE *look under* Western Europe

duckbilled platypuses (animals): *look under* platypuses

ducks
ARTICLE *volume* **11** *page* **21**
DISCUSSIONS
Did you know? *volume* **1** *page* **68**
LEARN MORE *look under* birds

Dun Eideann (city in Scotland, U.K.): *look under* Edinburgh

Durbar Square (square in Kathmandu, Nepal)
DISCUSSIONS
Kathmandu photograph *volume* **7** *page* **56**

dwarf planet
DISCUSSIONS
planets *volume* **2** *page* **28**
Pluto *volume* **2** *page* **45**



eagles (birds)
ARTICLE *volume* **11** *page* **14**
LEARN MORE *look under* birds

Earth (planet)
VOLUME **1**
DISCUSSIONS
calendars *volume* **2** *page* **77**
Did you know? *volume* **2** *page* **16**
solar system illustration *volume* **2** *page* **20**
LEARN MORE *look under* planets

Earth sciences: *look under* Earth; geography; geology

earthquakes
DISCUSSIONS
floods *volume* **1** *page* **32**
mountains *volume* **1** *page* **16**
tsunamis *volume* **1** *page* **50**
LEARN MORE *look under*
places: Japan

East Asia
DISCUSSIONS
painting *volume* **3** *page* **8**
LEARN MORE *look under*
places: Beijing; China; Great Wall; Japan; Korean Peninsula; Pyongyang; Seoul
religion: Buddhism; Confucianism; Daoism; Shinto
animals: pandas; tigers

East Indies (islands in Southeast Asia)
DISCUSSIONS
Ferdinand Magellan *volume* **4** *page* **101**
West Indies *volume* **9** *page* **54**

East Pakistan (historic region): *look under* Bangladesh

Easter (holiday)
DISCUSSIONS
Christianity *volume* **5** *page* **57**

Easter Island (island in the Pacific Ocean)
ARTICLE *volume* **9** *page* **89**
DISCUSSIONS
sculpture *volume* **3** *page* **11**
LEARN MORE *look under* islands; Pacific Ocean

Eastern Africa: *look under*
places: Ethiopia; Kenya; Kilimanjaro; Seychelles; Somalia; Tanzania; Uganda

Eastern Europe
DISCUSSIONS
folk arts and crafts photograph *volume* **3** *page* **6**
LEARN MORE *look under*
countries: Romania; Russia; Serbia; Ukraine
cities: Bucharest; Budapest; Istanbul; Sofia
other places: Danube

Eastern Orthodoxy (religion)
DISCUSSIONS
Christianity *volume* **5** *page* **57**

echidnas (animals): *look under* spiny anteaters

echoes
ARTICLE *volume* **1** *page* **68**
DISCUSSIONS
bats *volume* **12** *page* **89**
LEARN MORE *look under* waves

ecology: *look under* ecosystems

ecosystems
DISCUSSIONS
mongooses *volume* **12** *page* **36**
LEARN MORE *look under*
places: Amazon
types: deserts; marshes; oasis; rainforests; swamps

Edinburgh, *also called* Dun Eideann (city in Scotland, U.K.)
ARTICLE *volume* **6** *page* **23**
DISCUSSIONS
atlas *volume* **13** *page* **14**
LEARN MORE *look under* Scotland

Edinburgh Castle (castle in Edinburgh, Scotland, U.K.)
DISCUSSIONS
Edinburgh *volume* **6** *page* **23,** photograph *volume* **6** *page* **22**
LEARN MORE *look under* castles; Scotland

Edison, Thomas (American inventor)
DISCUSSIONS
Did you know? *volume* **2** *page* **57**

editing (motion pictures)
DISCUSSIONS
motion pictures *volume* **2** *page* **82**

education
DISCUSSIONS
Charlemagne *volume* **4** *page* **41**
Confucius *volume* **5** *page* **72**
Muslim schools photograph *volume* **5** *page* **69**
Socrates *volume* **4** *page* **24**

eggs
DISCUSSIONS
Did you know? *volume* **11** *page* **33**
folk arts and crafts photograph *volume* **3** *page* **6**
ostriches photograph *volume* **11** *page* **31**
platypuses *volume* **12** *page* **84**

Egypt (country)
ARTICLE *volume* **8** *page* **51**
DISCUSSIONS
atlas *volume* **13** *page* **6**
cats *volume* **12** *page* **21**
Did you know? *volume* **5** *page* **44**
flag *volume* **8** *page* **51**
Moses *volume* **5** *page* **54**
Nile River *volume* **8** *page* **54**
oasis *volume* **1** *page* **34**
peninsulas *volume* **1** *page* **22**
Pharaohs and the Pyramids *volume* **8** *page* **49**
Sadat Resthouse photograph *volume* **3** *page* **14**
LEARN MORE *look under*
people: Cleopatra; Fathy, Hassan; Sadat, Anwar el-
places: Cairo; North Africa
things: Anubis

Eiffel Tower (tower in Paris, France)
DISCUSSIONS
Did you know? *volume* **3** *page* **12**
Paris *volume* **6** *page* **35,** photograph *volume* **6** *page* **35**
LEARN MORE *look under* towers

Eightfold Path (religion)
DISCUSSIONS
Buddhism *volume* **5** *page* **81**

Einstein, Albert (German-American scientist)
ARTICLE *volume* **4** *page* **74**
LEARN MORE *look under* science

Eisteddfod (Welsh festival)
DISCUSSIONS
Wales *volume* **6** *page* **28**
LEARN MORE *look under* folk music

El Salvador (country)
DISCUSSIONS
Central America *volume* **9** *page* **45**

electricity
ARTICLE *volume* **2** *page* **56**
DISCUSSIONS
energy *volume* **2** *page* **48**
nuclear energy *volume* **2** *page* **62**
thermal power *volume* **2** *page* **64**
thunder and lightning *volume* **1** *page* **58**

water power *volume* **2** *page* **67**
wind power *volume* **2** *page* **69,**
photograph *volume* **2** *page* **68**
LEARN MORE *look under* physical sciences; technology

electromagnet
DISCUSSIONS
electricity *volume* **2** *page* **56**

electrons (atoms)
DISCUSSIONS
atoms *volume* **2** *page* **46,** illustration *volume* **2** *page* **46**

elephants
ARTICLE *volume* **12** *page* **91**
DISCUSSIONS
Did you know? *volume* **7** *page* **36,** *volume* **12** *page* **44,** *volume* **12** *page* **72**
LEARN MORE *look under* mammoths and mastodons; tapirs; ungulates

Elizabeth I, *also called* Good Queen Bess (queen of England)
ARTICLE *volume* **4** *page* **44**
LEARN MORE *look under* England; Shakespeare, William
other rulers: Ashoka; Caesar, Julius; Charlemagne; Cleopatra; Empress of China; Hirohito

Elssler, Fanny (Austrian ballerina)
ARTICLE *volume* **4** *page* **13**
LEARN MORE *look under* dance
other dancers: Ailey, Alvin; Tallchief, Maria

emerald tree boa (snake)
DISCUSSIONS
Amazon photograph *volume* **9** *page* **64**
South America photograph *volume* **9** *page* **60**
LEARN MORE *look under* snakes

emeralds (gemstones)
DISCUSSIONS
Did you know? *volume* **9** *page* **70**

emperor penguins (birds)
DISCUSSIONS
Antarctica photograph *volume* **1** *page* **10**
penguins photograph *volume* **11** *page* **27**

Empire State Building (building in New York City, U.S.)
DISCUSSIONS
New York City *volume* **9** *page* **37**
LEARN MORE *look under* architecture

Empress of China, *also called* Cixi, *or* Empress Dowager, *or* The Dragon Empress
ARTICLE *volume* **4** *page* **47**
LEARN MORE *look under* China
other rulers: Ashoka; Caesar, Julius; Charlemagne; Cleopatra; Elizabeth I; Hirohito

"Encyclopædia Britannica"
DISCUSSIONS
Did you know? *volume* **6** *page* **23**

endangered animals
DISCUSSIONS
Did you know? *volume* **9** *page* **79**
LEARN MORE *look under* giant pandas; gibbons; markhors; tapirs; wisents; yaks

energy
ARTICLE *volume* **2** *page* **48**
DISCUSSIONS
radio *volume* **2** *page* **93**
LEARN MORE *look under*
people: Curie, Marie; Einstein, Albert
things: electricity; nuclear energy; oil; temperatures; thermal power; water power; wind power

England (country in the U.K.)
ARTICLE *volume* **6** *page* **15**
DISCUSSIONS
atlas *volume* **13** *page* **14**
dragons *volume* **5** *page* **9**
flag *volume* **6** *page* **15**
LEARN MORE *look under*
people: Beatles, the; Carroll, Lewis; Cayley, Sir George; Darwin, Charles; Dench, Judi; Dickens, Charles; Elizabeth I; Goodall, Jane; Halley, Edmond; Herschel, Sir William; Newton, Sir Isaac; Shakespeare, William
places: English Channel; London; Scotland; Stonehenge; Wales; White Cliffs of Dover
stories: Knights of the Round Table
things: literature; tea; theater

English Channel, *also called* La Manche (waterway)
ARTICLE *volume* **6** *page* **30**
DISCUSSIONS
atlas *volume* **13** *page* **14**
France *volume* **6** *page* **32**
LEARN MORE *look under* Atlantic Ocean; waterways; Western Europe

English language
DISCUSSIONS
England *volume* **6** *page* **15**
LEARN MORE *look under* language

Enlightenment, *also called* Nirvana (religion)
DISCUSSIONS
Buddha *volume* **5** *page* **82**
Buddhism *volume* **5** *page* **81**

entertainment: *look under*
music: classical music; folk music; jazz; orchestra; popular music
performing arts: cinema; dance; opera; theater
other things: bullfighting; radio; television; vaudeville

environment
DISCUSSIONS
pollution *volume* **1** *page* **73**
rainforests *volume* **1** *page* **24**
LEARN MORE *look under* acid rain; ecosystems; pollution; recycling

Enya (Irish singer)
DISCUSSIONS
popular music photograph *volume* **3** *page* **32**

Eoraptors (dinosaurs)
DISCUSSIONS
Did you know? *volume* **9** *page* **61**
LEARN MORE *look under* dinosaurs

Epistles (sacred texts)
DISCUSSIONS
Bible *volume* **5** *page* **63**

Erebus, Mount (mountain in Antarctica)
DISCUSSIONS
atlas photograph *volume* **13** *page* **18**
LEARN MORE *look under* mountains

Ericson, Leif, *also called* Leif Eriksson (explorer)
DISCUSSIONS
Did you know? *volume* **9** *page* **9**
Vikings *volume* **4** *page* **62**

Erie, Lake (lake in North America)
DISCUSSIONS
Great Lakes *volume* **9** *page* **23**
LEARN MORE *look under* North America

Eriksson, Leif (explorer): *look under* Ericson, Leif

"Eroica" (symphony by Beethoven)
DISCUSSIONS
Ludwig van Beethoven photograph *volume* **3** *page* **40**

erosion
DISCUSSIONS
caves *volume* **1** *page* **79**
mountains *volume* **1** *page* **16**

rivers *volume* **1** *page* **30**

Eskimo (people): *look under* Inuit

Ethiopia (country)
ARTICLE *volume* **8** *page* **27**
DISCUSSIONS
atlas *volume* **13** *page* **6**
flag *volume* **8** *page* **27**
LEARN MORE *look under*
places: Addis Ababa; Eastern Africa

Etna, Mount (volcano in Italy)
DISCUSSIONS
atlas *volume* **13** *page* **14**
Italy *volume* **6** *page* **89**
LEARN MORE *look under* mountains

Etosha National Park (park in Namibia)
DISCUSSIONS
Namibia *volume* **8** *page* **78**

ETs (life on other planets): *look under* extraterrestrial life

eucalyptus trees, *also called* gum trees, *or* stringybark trees
ARTICLE *volume* **10** *page* **85**
DISCUSSIONS
Addis Ababa *volume* **8** *page* **29**
koalas *volume* **12** *page* **81,**
photograph *volume* **12** *page* **80**
LEARN MORE *look under* trees

Europa (moon of Jupiter)
DISCUSSIONS
Jupiter *volume* **2** *page* **36**

Europe (continent)
VOLUME **6**
DISCUSSIONS
atlas *volume* **13** *page* **14**
continents *volume* **1** *page* **8,** map *volume* **1** *page* **8**
dance *volume* **3** *page* **70**
peninsulas *volume* **1** *page* **22**
LEARN MORE *look under*
countries: Austria; Belgium; Bosnia and Herzegovina; Bulgaria; Czech Republic; Denmark; France; Germany; Greece; Hungary; Iceland; Ireland; Italy; Netherlands, the; Norway; Poland; Portugal; Romania; Russia; Serbia; Spain; Sweden; Switzerland; Ukraine; United Kingdom; Vatican City
other places: English Channel; Jura Mountains; Mediterranean Sea; Stonehenge
people: Charlemagne; Vikings
animals: bats; chameleons; horses; mammoths and mastodons; mongooses; muskrats; porcupines; sheep; walruses; wild goats; wisents; wolves
stories: Aesop's fables; Atlas; dragons; "Golem of Prague, The"; Knights of the Round Table; "Odysseus and the Cyclops"; Trojan Horse, The

European bison (animals): *look under* wisents

European Union (international organization)
DISCUSSIONS
Europe *volume* **6** *page* **7**

Eurotunnel, *also called* Chunnel
DISCUSSIONS
English Channel *volume* **6** *page* **30**
LEARN MORE *look under* architecture

evening star (planet): *look under* Venus

Everest, Mount, *also called* Sagarmatha (mountain in Asia)
DISCUSSIONS
atlas photograph *volume* **13** *page* **13**
Did you know? *volume* **1** *page* **16**
Nepal *volume* **7** *page* **55**
Tenzing Norgay *volume* **4** *page* **108,**
photograph *volume* **4** *page* **109**
LEARN MORE *look under* Himalayas; mountains

Everglades (Florida, U.S.)
DISCUSSIONS
Did you know? *volume* **1** *page* **26**

evil: *look under* good and evil

evolution (scientific theory)
DISCUSSIONS
Charles Darwin *volume* **4** *page* **73**
Galapagos Islands *volume* **9** *page* **68**
LEARN MORE *look under* dinosaurs; fossils; Lucy

Excalibur (legendary sword)
DISCUSSIONS
Knights of the Round Table *volume* **5** *page* **33**

exploration: *look under*
people: astronauts; Columbus, Christopher; Gama, Vasco da; Garay, Juan de; Hillary, Edmund; Magellan, Ferdinand; Vikings
things: spacecraft

extraterrestrial life
ARTICLE *volume* **2** *page* **14**
DISCUSSIONS
Did you know? *volume* **2** *page* **28**
LEARN MORE *look under* astronomy; life

eyes
DISCUSSIONS
horses *volume* **12** *page* **40**
owls *volume* **11** *page* **13**
photography *volume* **2** *page* **88**

Eyre, Lake (lake in Australia)
DISCUSSIONS
atlas photograph *volume* **13** *page* **17**
LEARN MORE *look under* lakes



fables
ARTICLE *volume* **5** *page* **7**
LEARN MORE *look under*
stories: Aesop's fables
other kinds of stories: folktales; legends; myths

fairy tales
DISCUSSIONS
myths *volume* **5** *page* **7**

false chameleons (lizards): *look under* anoles

farming
DISCUSSIONS
China photograph *volume* **7** *page* **9**
Mayan civilization *volume* **4** *page* **103**
Nepal photograph *volume* **7** *page* **54**
Vietnam photograph *volume* **7** *page* **41**
LEARN MORE *look under*
animals: buffalo; cattle; llamas; pigs; sheep; yaks
plants: barley; corn; fruits and vegetables; peanuts; rice; rubber trees; seaweed; sugarcane; wheat
people: Burbank, Luther
other things: irrigation

fasting (religious practice)
DISCUSSIONS
Islam *volume* **5** *page* **64**
LEARN MORE *look under* worship

Fathy, Hassan (Egyptian architect)
ARTICLE *volume* **3** *page* **15**
LEARN MORE *look under* architecture
other architects: Michelangelo; Pei, I. M.

Fatima (village in Portugal)
DISCUSSIONS
Did you know? *volume* **5** *page* **60**

feathers
DISCUSSIONS
birds *volume* **11** *page* **7**
Did you know? *volume* **11** *page* **20**
LEARN MORE *look under* down

feeling (nervous system)
DISCUSSIONS
temperatures *volume* **2** *page* **55**

ferns (plants)
DISCUSSIONS
fossils photograph *volume* **1** *page* **84**
LEARN MORE *look under* plants

Fertile Crescent (region of the Middle East)
ARTICLE *volume* **7** *page* **65**
LEARN MORE *look under* Middle East

"Festival Day" (painting by Hiroshige)
DISCUSSIONS
Hiroshige illustration *volume* **3** *page* **16**

"Fifty-three Stations of the Tokaido" (work by Hiroshige)
DISCUSSIONS
Hiroshige *volume* **3** *page* **17,** illustration *volume* **3** *page* **16**
LEARN MORE *look under* painting

figs (plants)
ARTICLE *volume* **10** *page* **51**
LEARN MORE *look under* fruits and vegetables; trees

Filipinos (people): *look under* Philippines

film (photography)
DISCUSSIONS
motion pictures *volume* **2** *page* **82**
photography *volume* **2** *page* **89**

filmmaking: *look under* cinema; motion pictures

films: *look under* cinema; motion pictures

finches (birds)
DISCUSSIONS
Galapagos Islands *volume* **9** *page* **68,** photograph *volume* **9** *page* **68**
LEARN MORE *look under* birds

fire
DISCUSSIONS
Did you know? *volume* **10** *page* **89**

First Nations: *look under* American Indians

fish
ARTICLE *volume* **11** *page* **35**
DISCUSSIONS
amphibians *volume* **11** *page* **91**
fossils *volume* **1** *page* **84,** photograph *volume* **1** *page* **85**
ocean fish photograph *volume* **1** *page* **37**
LEARN MORE *look under* carp; fishing; piranhas; salmon; sharks
for more animals look under: marine animals

fishing
DISCUSSIONS
Atlantic Ocean *volume* **1** *page* **39**
Greenland *volume* **9** *page* **8**
Japan *volume* **7** *page* **16**
Liberia photograph *volume* **8** *page* **16**
Norway *volume* **6** *page* **65**
Sri Lanka photograph *volume* **7** *page* **63**

Fitzroy, Mount (mountain in Argentina)
DISCUSSIONS
Andes photograph *volume* **9** *page* **67**
LEARN MORE *look under* mountains

Five Books of Moses (sacred text): *look under* Torah

five-lined skinks (reptiles)
DISCUSSIONS
lizards photograph *volume* **11** *page* **85**

"Five Weeks in a Balloon" (book by Verne)
DISCUSSIONS
Jules Verne *volume* **3** *page* **66**

fjords
DISCUSSIONS
Norway *volume* **6** *page* **65,** photograph *volume* **6** *page* **64**

flamenco (music and dance)
DISCUSSIONS
Spain *volume* **6** *page* **11**

flight
DISCUSSIONS
airplanes *volume* **2** *page* **71**
LEARN MORE *look under* aircraft; bats; birds; insects

flippers
DISCUSSIONS
walruses *volume* **12** *page* **75,** photograph *volume* **12** *page* **74**

floods
ARTICLE *volume* **1** *page* **32**
LEARN MORE *look under* rivers

Florence (city in Italy)
DISCUSSIONS
atlas *volume* **13** *page* **14**
Italy photograph *volume* **6** *page* **88**

Florida (state in the U.S.)
DISCUSSIONS
Did you know? *volume* **1** *page* **58**
Hurricane Irene photograph *volume* **1** *page* **33**
peninsulas *volume* **1** *page* **22**
LEARN MORE *look under* Everglades; United States of America

Florida Everglades (Florida, U.S.): *look under* Everglades

flowering plants: *look under* cactus; cotton; flowers; fruits and vegetables; grasses; nightshade
trees: eucalyptus trees; rubber trees

flowers
DISCUSSIONS
desert flowers photograph *volume* **1** *page* **20**
foxglove photograph *volume* **2** *page* **61**
Luther Burbank *volume* **4** *page* **66**
LEARN MORE *look under*
plants: cactus; carnivorous plants; foxgloves; honeysuckle; orchids; roses; snapdragons; sunflowers; tulips; water lilies

"Flyer I" (airplane)
DISCUSSIONS
airplanes *volume* **2** *page* **71,** photograph *volume* **2** *page* **70**

"Flyer II" (airplane)
DISCUSSIONS
airplanes *volume* **2** *page* **71**

fog
DISCUSSIONS
clouds *volume* **1** *page* **56**
LEARN MORE *look under* weather

folding (landforms)
DISCUSSIONS
mountains *volume* **1** *page* **16**

folk arts and crafts
ARTICLE *volume* **3** *page* **6**
LEARN MORE *look under* folk dances; folk music; folktales; weaving

folk dances
DISCUSSIONS
dance *volume* **3** *page* **70**
Paraguay photograph *volume* **9** *page* **82**
Portugal *volume* **6** *page* **8**
Ukraine photograph *volume* **6** *page* **81**

folk music
ARTICLE *volume* **3** *page* **31**
DISCUSSIONS
Korean Peninsula *volume* **7** *page* **19**
Portugal *volume* **6** *page* **8**
Ukraine *volume* **6** *page* **80**
Wales *volume* **6** *page* **28**
LEARN MORE *look under* folk arts and crafts; popular music; qawwali

folklore
DISCUSSIONS
Did you know? *volume* **6** *page* **25**
swamps *volume* **1** *page* **28**
LEARN MORE *look under* folk arts and crafts; folk dances; folk music; folktales

folktales
ARTICLE *volume* **5** *page* **7**
LEARN MORE *look under*
stories: "Ananse and the Wisdom Pot"; "How Kangaroo Got His Tail"; "Monkey Court, The"; "Poor Man and the Flask of Oil, The"; "Rabbit Throws Away His Sandal"; "Tiger in the Trap, The"; "Why Possum's Tail Is Bare"; "Yeh-Shen"
other things: fables; folk arts and crafts; legends; myths

food
DISCUSSIONS
energy *volume* **2** *page* **48**
LEARN MORE *look under* cacao; coffee; farming; french fries; haggis; maple; milk; pasta; spices; tea; wieners

foot (measurement)
DISCUSSIONS
measurement *volume* **2** *page* **59**

Forbidden City (palace area in Beijing, China)
DISCUSSIONS
Beijing *volume* **7** *page* **11,** photograph *volume* **7** *page* **11**
LEARN MORE *look under* palaces

Ford, Henry (American car maker)
DISCUSSIONS
automobiles *volume* **2** *page* **72,** photograph *volume* **2** *page* **73**
LEARN MORE *look under* technology

Ford Motor Company
DISCUSSIONS
automobiles *volume* **2** *page* **72**

forests
DISCUSSIONS
Did you know? *volume* **1** *page* **67**
Thailand *volume* **7** *page* **37**
LEARN MORE *look under* Black Forest; rainforests; swamps; trees

fossil fuels (energy sources)
DISCUSSIONS
Did you know? *volume* **1** *page* **85**
thermal power *volume* **2** *page* **64**

fossils
ARTICLE *volume* **1** *page* **84**
LEARN MORE *look under* chalk; dinosaurs; evolution; mammoths and mastodons

Four Noble Truths (Buddhism)
DISCUSSIONS
Buddhism *volume* **5** *page* **81**

Fouta Djallon (region in Guinea)
DISCUSSIONS
Did you know? *volume* **8** *page* **15**

foxes: *look under*
stories: Aesop's fables

foxgloves (flowers)
DISCUSSIONS
medicine *volume* **2** *page* **60,** photograph *volume* **2** *page* **61**
LEARN MORE *look under* flowers

France (country)
ARTICLE *volume* **6** *page* **32**
DISCUSSIONS
atlas *volume* **13** *page* **14**
Did you know? *volume* **7** *page* **41,** *volume* **10** *page* **28**
flag *volume* **6** *page* **32**
jazz *volume* **3** *page* **35**
Quebec *volume* **9** *page* **17**
United States of America *volume* **9** *page* **27**
LEARN MORE *look under*
people: Bernhardt, Sarah; Blériot, Louis; Curie, Marie; Niépce, Joseph-Nicéphore; Pasteur, Louis; Taillefer, Christian; Verne, Jules
places: Algeria; Dakar; English Channel; Paris; Western Europe

Frank, Anne (German diarist)
ARTICLE *volume* **4** *page* **91**
LEARN MORE *look under* literature

frankincense (spice)
DISCUSSIONS
Did you know? *volume* **7** *page* **82**
LEARN MORE *look under* food

Franks (people of Europe)
DISCUSSIONS
Charlemagne *volume* **4** *page* **41**
LEARN MORE *look under* Europe

Freeman, Cathy (Australian athlete)
ARTICLE *volume* **4** *page* **92**
LEARN MORE *look under* athletes; Australia

french fries (food)
DISCUSSIONS
Did you know? *volume* **4** *page* **67**
LEARN MORE *look under* food

frescoes (painting)
DISCUSSIONS
Galileo photograph *volume* **4** *page* **76**
Michelangelo *volume* **3** *page* **21,** photograph *volume* **3** *page* **21**
painting *volume* **3** *page* **8**

freshwater marshes
DISCUSSIONS
marshes *volume* **1** *page* **26**

frogs (animals)
ARTICLE *volume* **11** *page* **93**
DISCUSSIONS
amphibians *volume* **11** *page* **91,** illustration *volume* **11** *page* **90**
Central America photograph *volume* **9** *page* **44**
Did you know? *volume* **9** *page* **56,** *volume* **11** *page* **56**
LEARN MORE *look under* amphibians; coquí; Kermit the Frog

"From the Earth to the Moon" (book by Verne)
DISCUSSIONS
Jules Verne *volume* **3** *page* **66**

fruit bats (animals)
DISCUSSIONS
bats photograph *volume* **12** *page* **89**
Did you know? *volume* **10** *page* **42**

fruits and vegetables: *look under*
apples; bananas; cabbage; cacao; coffee; figs; grapes; jackfruit; lemons; mangoes; nuts; olive; oranges; palms; peanuts; peppers; potatoes; strawberries; tea; tomatoes; yams
people: Burbank, Luther

Fuji, Mount (mountain in Japan)
DISCUSSIONS
atlas *volume* **13** *page* **12**
Japan *volume* **7** *page* **15,** photograph *volume* **7** *page* **15**
LEARN MORE *look under* mountains; volcanoes

Fulani (people)
DISCUSSIONS
Guinea *volume* **8** *page* **14**
LEARN MORE *look under* peoples; West Africa

Fundy, Bay of (bay in Canada)
DISCUSSIONS
tides *volume* **1** *page* **46**
LEARN MORE *look under* Canada

fungi
DISCUSSIONS
ants *volume* **11** *page* **59**

fuses
DISCUSSIONS
electricity *volume* **2** *page* **56**

Fushimi Inari shrine (building in Japan)
DISCUSSIONS
Shinto photograph *volume* **5** *page* **76**



Gaborone (city in Botswana)
DISCUSSIONS
Botswana *volume* **8** *page* **71**
LEARN MORE *look under* Botswana

Gaelic (language)
DISCUSSIONS
Did you know? *volume* **6** *page* **26**
LEARN MORE *look under* language

Gagarin, Yuri (Russian cosmonaut)
DISCUSSIONS
astronauts *volume* **2** *page* **19**

Galapagos Islands (islands in the Pacific Ocean)
ARTICLE *volume* **9** *page* **68**
LEARN MORE *look under* islands; Pacific Ocean; South America

galaxies
ARTICLE *volume* **2** *page* **13**
DISCUSSIONS
universe *volume* **2** *page* **9**
LEARN MORE *look under* solar system; stars

Galilee, Sea of (lake in Israel): *look under* Tiberias, Lake

Galileo Galilei (Italian astronomer, mathematician, and philosopher)
ARTICLE *volume* **4** *page* **77**
DISCUSSIONS
Saturn *volume* **2** *page* **39**
LEARN MORE *look under* astronomy; science
other astronomers: Copernicus, Nicolaus; Kepler, Johannes; Piazzi, Giuseppe

Gama, Vasco da (Portuguese explorer)
DISCUSSIONS
Portugal *volume* **6** *page* **8**
LEARN MORE *look under* exploration

Gandhi, Indira (Indian leader)
DISCUSSIONS
Did you know? *volume* **4** *page* **57**

Gandhi, Mahatma, *also called* Mohandas K. Gandhi (Indian leader)
ARTICLE *volume* **4** *page* **95**
DISCUSSIONS
Did you know? *volume* **8** *page* **84**
LEARN MORE *look under* India
other civil rights leaders: King, Martin Luther, Jr.; Mandela, Nelson

Ganesha (Hindu god)
DISCUSSIONS
God *volume* **5** *page* **44**
Hinduism *volume* **5** *page* **79**

Ganges River, *also called* Ganga (river in Asia)
DISCUSSIONS
Did you know? *volume* **5** *page* **78,** photograph *volume* **5** *page* **79**
swamps *volume* **1** *page* **28**
LEARN MORE *look under* rivers
places: Bangladesh; India

Garay, Juan de (Spanish explorer)
DISCUSSIONS
Buenos Aires *volume* **9** *page* **93**
LEARN MORE *look under* exploration; Spain

gas (cooking and heating)
DISCUSSIONS
Did you know? *volume* **2** *page* **53**

gases (state of matter): *look under* liquids, solids, and gases

gasoline (fuel)
DISCUSSIONS
oil *volume* **2** *page* **84**

"Gates of Hell, The" (sculpture by Rodin)
DISCUSSIONS
Did you know? *volume* **3** *page* **24**

Gateway Arch (monument in United States)
DISCUSSIONS
United States photograph *volume* **9** *page* **27**
LEARN MORE *look under* architecture

gauchos (Argentinian cowboys)
DISCUSSIONS
Argentina *volume* **9** *page* **90**

Gautama (founder of Buddhism): *look under* Buddha

gazelles (animals)
ARTICLE *volume* **12** *page* **55**
LEARN MORE *look under* ungulates
similar animals: sheep; wild goats

Gdansk (city in Poland)
DISCUSSIONS
Poland photograph *volume* **6** *page* **56**

geckos (reptiles)
DISCUSSIONS
lizards photograph *volume* **11** *page* **85**

geese, *also called* goose
ARTICLE *volume* **11** *page* **22**
LEARN MORE *look under* birds

gemstones (minerals used as jewels)
DISCUSSIONS
volcanoes *volume* **1** *page* **15**
LEARN MORE *look under* diamonds

geochemistry (science)
DISCUSSIONS
geology *volume* **1** *page* **75**

geography (science)
ARTICLE *volume* **1** *page* **6**
LEARN MORE *look under* caves; continents; deserts; islands; marshes; mountains; oasis; oceans; peninsulas; rainforests; rivers; swamps; volcanoes

geology (science)
ARTICLE *volume* **1** *page* **75**
DISCUSSIONS
Marie Curie *volume* **4** *page* **71**
LEARN MORE *look under* caves; chalk; diamonds; fossils; oil; rocks and minerals; sand; thermal power; volcanoes

George, Saint (patron saint of England)
DISCUSSIONS
dragons *volume* **5** *page* **9**

Georgium Sidus (planet): *look under* Uranus

geothermal energy
DISCUSSIONS
thermal power *volume* **2** *page* **64**

Germany (country)
ARTICLE *volume* **6** *page* **43**
DISCUSSIONS
atlas *volume* **13** *page* **14**
flag *volume* **6** *page* **43**

LEARN MORE *look under*
people: Beethoven, Ludwig van; Einstein, Albert; Frank, Anne; Herschel, Sir William; Kepler, Johannes
places: Berlin; Central Europe

Gettysburg Address (speech by Lincoln)
DISCUSSIONS
Did you know? *volume* **3** *page* **50**

geysers (hot springs)
DISCUSSIONS
thermal power photograph *volume* **2** *page* **65**

Ghana (country)
ARTICLE *volume* **8** *page* **11**
DISCUSSIONS
atlas *volume* **13** *page* **6**
flag *volume* **8** *page* **11**
LEARN MORE *look under*
places: Accra; West Africa
stories: "Ananse and the Wisdom Pot"

ghost corn snakes (animals)
DISCUSSIONS
snakes photograph *volume* **11** *page* **78**

giant anacondas (snakes)
DISCUSSIONS
anacondas *volume* **11** *page* **81,** photograph *volume* **11** *page* **81**

Giant Jaguar, Temple of the, *also called* Temple of the Jaguar (temple in Guatemala)
DISCUSSIONS
Central America photograph *volume* **9** *page* **44**
Mayan Civilization photograph *volume* **4** *page* **103**
LEARN MORE *look under* temples

giant pandas (animals)
DISCUSSIONS
pandas *volume* **12** *page* **38,** photograph *volume* **12** *page* **38**

giant salamanders (animals)
DISCUSSIONS
amphibians *volume* **11** *page* **91**

gibbons (apes)
ARTICLE *volume* **12** *page* **13**
DISCUSSIONS
apes *volume* **12** *page* **9**
Xia Gui painting illustration *volume* **3** *page* **29**
LEARN MORE *look under* primates

Gibraltar, Strait of (channel)
DISCUSSIONS
atlas *volume* **13** *page* **14**
Mediterranean Sea *volume* **1** *page* **44**
LEARN MORE *look under* waterways

Gila monsters (reptiles)
DISCUSSIONS
lizards *volume* **11** *page* **85**

Gilbert, W.S. (British playwright)
DISCUSSIONS
opera *volume* **3** *page* **76**

giraffes (animals)
DISCUSSIONS
Africa photograph *volume* **8** *page* **6**

Glacier Bay National Park (park in Alaska, U.S.)
DISCUSSIONS
glaciers photograph *volume* **1** *page* **55**

glaciers (ice formations)
ARTICLE *volume* **1** *page* **54**
DISCUSSIONS
caves *volume* **1** *page* **79**
Great Lakes *volume* **9** *page* **23**
mammoths and mastodons *volume* **1** *page* **87**
Norway *volume* **6** *page* **65**
sand *volume* **1** *page* **18**
LEARN MORE *look under* icebergs

glass lizards (reptiles)
DISCUSSIONS
Did you know? *volume* **11** *page* **85**

Gobind Singh, *also called* Gobind Rai (Indian religious teacher)
DISCUSSIONS
Sikhism *volume* **5** *page* **88**

God
ARTICLE *volume* **5** *page* **44**
DISCUSSIONS
Abraham *volume* **5** *page* **52**
Christianity *volume* **5** *page* **57**
Hinduism *volume* **5** *page* **79**
Islam *volume* **5** *page* **64**
Jesus Christ *volume* **5** *page* **58**
Judaism *volume* **5** *page* **50**
Koran *volume* **5** *page* **69**
Mayan civilization *volume* **4** *page* **103**
Moses *volume* **5** *page* **54**
Muhammad *volume* **5** *page* **67**
Shinto *volume* **5** *page* **77**
Sikhism *volume* **5** *page* **88**
Vodun *volume* **5** *page* **92**
Zoroastrianism *volume* **5** *page* **49**
LEARN MORE *look under*
gods: Anubis; Hathor; Ogun
stories about gods and goddesses: Atlas; Moni Mekhala and Ream Eyso

Gogh, Vincent van (Dutch painter): *look under* van Gogh, Vincent

gold
DISCUSSIONS
Did you know? *volume* **1** *page* **76**
Ghana *volume* **8** *page* **11**
goldminers at mine in Obuasi,Ghana photograph *volume* **8** *page* **10**
South Africa *volume* **8** *page* **82**

Gold Coast (historic region in West Africa)
DISCUSSIONS
Accra *volume* **8** *page* **12**

golden eagles (birds)
DISCUSSIONS
eagles *volume* **11** *page* **14,** photograph *volume* **11** *page* **14**

goldfish
DISCUSSIONS
Did you know? *volume* **11** *page* **36**
LEARN MORE *look under* fish

"Golem of Prague, The" (Jewish legend)
ARTICLE *volume* **5** *page* **30**
LEARN MORE *look under*
other European stories: Aesop's fables; Atlas; dragons; Knights of the Round Table; "Odysseus and the Cyclops"; Trojan Horse, The
other legends: Bunyan, Paul
places: Prague

Goliath frogs (animals)
DISCUSSIONS
Did you know? *volume* **11** *page* **93**

Gondwanaland (ancient continent)
DISCUSSIONS
Indian Ocean *volume* **1** *page* **42**
South America *volume* **9** *page* **61**
LEARN MORE *look under* continents

good and evil
DISCUSSIONS
Zoroastrianism *volume* **5** *page* **49**

Good Friday
DISCUSSIONS
Christianity *volume* **5** *page* **57**

Good Hope, Cape of (promontory in South Africa)
DISCUSSIONS
atlas photograph *volume* **13** *page* **7**
LEARN MORE *look under* Southern Africa

Good Queen Bess (queen of England): *look under* Elizabeth I

Goodall, Jane (British scientist)
ARTICLE *volume* **4** *page* **78**
LEARN MORE *look under* apes; science

goose: *look under* geese

gorals (mammals)
DISCUSSIONS
wild goats *volume* **12** *page* **58**

Gorée (island in Senegal)
DISCUSSIONS
Dakar *volume* **8** *page* **25,** photograph *volume* **8** *page* **24**
Senegal *volume* **8** *page* **23**

Gorgon (Greek myth)
DISCUSSIONS
Did you know? *volume* **5** *page* **29**

gorillas
ARTICLE *volume* **12** *page* **11**
DISCUSSIONS
apes *volume* **12** *page* **9**
LEARN MORE *look under* primates

Gospels (sacred text)
DISCUSSIONS
Bible *volume* **5** *page* **63**
Jesus Christ *volume* **5** *page* **58**

Gothic architecture
DISCUSSIONS
Notre-Dame de Paris photograph *volume* **3** *page* **13**

Gotthard Tunnel (tunnel in Switzerland)
DISCUSSIONS
Did you know? *volume* **6** *page* **47**

Goya, Francisco de (Spanish painter)
ARTICLE *volume* **4** *page* **14**
LEARN MORE *look under* painting

grafting (horticulture)
DISCUSSIONS
Luther Burbank *volume* **4** *page* **66**

Gran Colombia (historic republic in South America)
DISCUSSIONS
Bogotá *volume* **9** *page* **73**

Grand Canyon (canyon in Arizona, U.S.)
ARTICLE *volume* **9** *page* **32**
DISCUSSIONS
atlas *volume* **13** *page* **8**
LEARN MORE *look under* United States of America

"Granth Sahib" (holy book): *look under* "Adi Granth"

Grant's gazelles
DISCUSSIONS
gazelles photograph *volume* **12** *page* **54**

grapes (fruit)
ARTICLE *volume* **10** *page* **25**
DISCUSSIONS
France *volume* **6** *page* **32,** photograph *volume* **6** *page* **33**
Switzerland *volume* **6** *page* **46**
LEARN MORE *look under* fruits and vegetables

grasses
ARTICLE *volume* **10** *page* **63**
DISCUSSIONS
rice *volume* **10** *page* **73**
LEARN MORE *look under* bamboo; barley; corn; marshes; plants; rice; rushes and reeds; sugarcane; wheat

grasshoppers (insects)
ARTICLE *volume* **11** *page* **69**
DISCUSSIONS
insects *volume* **11** *page* **57**
LEARN MORE *look under* crickets; insects

gravity
ARTICLE *volume* **2** *page* **50**
DISCUSSIONS
Albert Einstein *volume* **4** *page* **74**
Did you know? *volume* **2** *page* **16**
Moon *volume* **2** *page* **27**
oceans *volume* **1** *page* **37**
sand dunes photograph *volume* **1** *page* **18**
Sir Isaac Newton *volume* **4** *page* **83**
solar system *volume* **2** *page* **21**
tides *volume* **1** *page* **46**
LEARN MORE *look under* physical sciences

gray gibbons (apes)
DISCUSSIONS
gibbons photograph *volume* **12** *page* **12**

gray wolves, *also called* timber wolves
DISCUSSIONS
wolves *volume* **12** *page* **31,** photograph *volume* **12** *page* **30,** photograph *volume* **12** *page* **31**

great apes
DISCUSSIONS
apes *volume* **12** *page* **9**
LEARN MORE *look under* gorillas

Great Barrier Reef (reef in Australia)
ARTICLE *volume* **7** *page* **92**
DISCUSSIONS
atlas *volume* **13** *page* **16**
Australia *volume* **7** *page* **89**
coral *volume* **11** *page* **45,** photograph *volume* **11** *page* **44**
LEARN MORE *look under* Australia; islands

Great Britain (country): *look under* United Kingdom

Great Dismal Swamp (swamp in the U.S.)
DISCUSSIONS
swamps *volume* **1** *page* **28**

Great Fire of London (English history)
DISCUSSIONS
Did you know? *volume* **6** *page* **16**

Great Lakes (lake system in North America)
ARTICLE *volume* **9** *page* **23**
DISCUSSIONS
atlas *volume* **13** *page* **8**
glaciers *volume* **1** *page* **54**
United States of America *volume* **9** *page* **25**
LEARN MORE *look under* lakes; North America

Great Pyramid (pyramid in Egypt)
DISCUSSIONS
Egypt *volume* **8** *page* **49**

Great Red Spot (feature of Jupiter)
DISCUSSIONS
Jupiter *volume* **2** *page* **36,** photograph *volume* **2** *page* **36**

Great Rift Valley (valley in Africa and Asia)
DISCUSSIONS
Kenya *volume* **8** *page* **30**

Great Star of Africa (gem diamond)
DISCUSSIONS
Did you know? *volume* **8** *page* **83**

"Great Train Robbery, The" (film by Porter)
DISCUSSIONS
cinema *volume* **3** *page* **75,** photograph *volume* **3** *page* **75**

Great Wall (wall in China)
ARTICLE *volume* **7** *page* **13**
DISCUSSIONS
atlas *volume* **13** *page* **12**
LEARN MORE *look under* architecture; China

great white sharks
DISCUSSIONS
sharks *volume* **11** *page* **43**
LEARN MORE *look under* sharks

Great White Way, The (street in New York City, U.S.): *look under* Broadway

Greece (country)
ARTICLE *volume* **6** *page* **83**
DISCUSSIONS
atlas *volume* **13** *page* **14**
flag *volume* **6** *page* **83**
God *volume* **5** *page* **44**
myths *volume* **5** *page* **7**
sponges *volume* **11** *page* **47**
LEARN MORE *look under*
people: Socrates
places: Athens; Parthenon; Southern Europe
stories: Aesop's fables; Atlas; "Odysseus and the Cyclops"; Trojan Horse, The

Greek mythology
DISCUSSIONS
myths *volume* **5** *page* **7**
rainbows *volume* **1** *page* **63**
LEARN MORE *look under* myths
gods and goddesses: Hera; Zeus
stories: Atlas; Odysseus

green tea
DISCUSSIONS
tea *volume* **10** *page* **39**

Greenland (island and dependency of Denmark)
ARTICLE *volume* **9** *page* **8**
DISCUSSIONS
atlas *volume* **13** *page* **8**
flag *volume* **9** *page* **8**
North America *volume* **9** *page* **7**
LEARN MORE *look under* Denmark; islands
animals: polar bears; whales

Gregorian calendar
DISCUSSIONS
calendars *volume* **2** *page* **77**

Guaraní (people)
DISCUSSIONS
Asunción *volume* **9** *page* **85**
Did you know? *volume* **9** *page* **82**
LEARN MORE *look under* American Indians; South America

Guatemala (country)
ARTICLE *volume* **9** *page* **46**
DISCUSSIONS
atlas *volume* **13** *page* **8**
flag *volume* **9** *page* **46**
Mayan civilization photograph *volume* **4** *page* **103,** photograph *volume* **4** *page* **103**
LEARN MORE *look under* Central America; Mayan Civilization

Guinea (country)
ARTICLE *volume* **8** *page* **14**
DISCUSSIONS
atlas *volume* **13** *page* **6**
flag *volume* **8** *page* **14**
LEARN MORE *look under* West Africa

guitars (musical instruments)
DISCUSSIONS
Did you know? *volume* **6** *page* **10**
LEARN MORE *look under* musical instruments
people: Santana, Carlos

Gulf Stream (ocean current)
DISCUSSIONS
Atlantic Ocean *volume* **1** *page* **39**
oceans *volume* **1** *page* **37**

gulls (birds)
ARTICLE *volume* **11** *page* **19**
LEARN MORE *look under* birds; marine animals

gum trees: *look under* eucalyptus trees

gurdwaras (places of worship)
DISCUSSIONS
Sikhism *volume* **5** *page* **88**
LEARN MORE *look under* churches; mosques; synagogues; temples

gurus (teachers)
DISCUSSIONS
Sikhism *volume* **5** *page* **88**

Gutenberg, Johannes (German printer)
DISCUSSIONS
Bible photograph *volume* **5** *page* **62**
printing *volume* **2** *page* **90**



haggis (food)
DISCUSSIONS
Did you know? *volume* **6** *page* **20**
LEARN MORE *look under* food

Hagia Sophia (museum in Istanbul, Turkey)
DISCUSSIONS
Istanbul *volume* **7** *page* **69,** photograph *volume* **7** *page* **68**

Hague, the (city in the Netherlands)
DISCUSSIONS
Did you know? *volume* **6** *page* **41**
Netherlands, the *volume* **6** *page* **38**
LEARN MORE *look under* Netherlands, the

haiku (Japanese poetry)
DISCUSSIONS
Basho *volume* **3** *page* **52**

hail (weather)
DISCUSSIONS
clouds *volume* **1** *page* **56**
LEARN MORE *look under* weather

Haiti (country)
DISCUSSIONS
atlas *volume* **13** *page* **8**
Vodun *volume* **5** *page* **92**
LEARN MORE *look under* West Indies

hajj (Islam)
DISCUSSIONS
Islam *volume* **5** *page* **64**
Kaaba photograph *volume* **5** *page* **66**

Halfpenny Bridge (bridge in Dublin, Ireland)
DISCUSSIONS
Dublin photograph *volume* **6** *page* **27**
LEARN MORE *look under*
other bridges: Charles Bridge; Victoria Falls Bridge

Halley, Edmond (English astronomer)
DISCUSSIONS
comets *volume* **2** *page* **25**

Halley's Comet
DISCUSSIONS
comets *volume* **2** *page* **25**

"Hamlet" (play by Shakespeare)
DISCUSSIONS
William Shakespeare *volume* **4** *page* **23**

hammerhead sharks
DISCUSSIONS
sharks *volume* **11** *page* **43,** photograph *volume* **11** *page* **43**
LEARN MORE *look under* sharks

handheld computers
DISCUSSIONS
computers *volume* **2** *page* **79,** photograph *volume* **2** *page* **79**

Hannibal (Carthaginian general)
DISCUSSIONS
Did you know? *volume* **12** *page* **90**

Hanoi, *also called* Dong Kinh, *or* Tonkin, *or* Tonquin (city in Vietnam)
ARTICLE *volume* **7** *page* **42**
DISCUSSIONS
atlas *volume* **13** *page* **12**
LEARN MORE *look under* Southeast Asia; Vietnam

Hanukkah (Jewish holiday)
DISCUSSIONS
Judaism photograph *volume* **5** *page* **50**

Harappa (ancient city in Pakistan)
DISCUSSIONS
Pakistan *volume* **7** *page* **60**

Harare (city in Zimbabwe)
ARTICLE *volume* **8** *page* **91**
DISCUSSIONS
atlas *volume* **13** *page* **6**
LEARN MORE *look under* Zimbabwe

hard drive, *also called* hard disk (computer science)
DISCUSSIONS
computers *volume* **2** *page* **79**

hares: *look under* rabbits and hares

Harrison, George (British musician)
DISCUSSIONS
Ravi Shankar *volume* **3** *page* **48**

Hasa, Al- (oasis in Saudi Arabia)
DISCUSSIONS
oasis *volume* **1** *page* **34**

Hathor (Egyptian goddess)
DISCUSSIONS
Cleopatra illustration *volume* **4** *page* **42**

Havana (city in Cuba)
DISCUSSIONS
Cuba *volume* **9** *page* **59,** photograph *volume* **9** *page* **58**

Hawaii, *also called* Hawaiian Islands (islands and state in the U.S.)
DISCUSSIONS
atlas *volume* **13** *page* **8**
tsunamis *volume* **1** *page* **50**
United States of America *volume* **9** *page* **27**
volcanoes *volume* **1** *page* **15**
LEARN MORE *look under* Hawaiian goose
places: Honolulu; United States of America

Hawaiian goose (bird)
DISCUSSIONS
geese *volume* **11** *page* **22**

Hawaiian Islands (islands and state in the U.S.): *look under* Hawaii

Hazor (ancient city in Israel)
DISCUSSIONS
Fertile Crescent photograph *volume* **7** *page* **64**

hearing aids
DISCUSSIONS
deafness *volume* **2** *page* **96**

hearing impairment: *look under* deafness

heat
DISCUSSIONS
thermal power *volume* **2** *page* **64**
LEARN MORE *look under* temperatures

heath (plant)
DISCUSSIONS
Scotland *volume* **6** *page* **21**
LEARN MORE *look under* plants

Hebrew Bible: *look under* Old Testament

helicopters (aircraft)
DISCUSSIONS
volcano study photograph *volume* **1** *page* **14**
LEARN MORE *look under* aircraft

helium (chemical element)
DISCUSSIONS
Jupiter *volume* **2** *page* **36**

Henson, Jim (American puppeteer)
ARTICLE *volume* **3** *page* **85**
LEARN MORE *look under* television; theater

Hera (Greek goddess)
DISCUSSIONS
peacocks *volume* **11** *page* **28**
LEARN MORE *look under* Greek mythology

Hercules (Greek myth)
DISCUSSIONS
Atlas *volume* **5** *page* **29**

Herero (people)
DISCUSSIONS
Windhoek, Namibia *volume* **8** *page* **81**
women in traditional dress photograph *volume* **8** *page* **81**
LEARN MORE *look under* peoples; Southern Africa

hermits (religion)
DISCUSSIONS
monasticism *volume* **5** *page* **46**

Herschel, Sir William (British-German astronomer)
DISCUSSIONS
Uranus *volume* **2** *page* **40**
LEARN MORE *look under* astronomy

Heyerdahl, Thor (Norwegian scientist)
DISCUSSIONS
Did you know? *volume* **2** *page* **95**

"High Society" (American film)
DISCUSSIONS
Louis Armstrong photograph *volume* **3** *page* **38**

Hillary, Edmund (New Zealand explorer)
DISCUSSIONS
Did you know? *volume* **7** *page* **54**
Tenzing Norgay *volume* **4** *page* **108,** photograph *volume* **4** *page* **109**
LEARN MORE *look under* exploration; New Zealand

Himalayas (mountains in Asia)
DISCUSSIONS
atlas *volume* **13** *page* **12**
Nepal *volume* **7** *page* **55**
Pakistan *volume* **7** *page* **59**
Tenzing Norgay *volume* **4** *page* **108**
Thimphu *volume* **7** *page* **49**
LEARN MORE *look under*
places: Central Asia; South Asia
animals: wild goats; yaks
things: mountains

Hinduism (religion)
ARTICLE *volume* **5** *page* **79**
DISCUSSIONS
God *volume* **5** *page* **44**
India *volume* **7** *page* **51**
myths *volume* **5** *page* **7**
LEARN MORE *look under*
other Eastern religions: Buddhism; Daoism; Jainism; Shinto; Sikhism
people: Gandhi, Mahatma
places: Bangladesh; India; Nepal
other things: monasticism

hip-hop (music and culture)
DISCUSSIONS
Did you know? *volume* **3** *page* **30**

Hippocratic oath (ethical code)
DISCUSSIONS
Did you know? *volume* **6** *page* **82**
LEARN MORE *look under* medicine

hippopotamuses (animals)
ARTICLE *volume* **12** *page* **66**
DISCUSSIONS
Liberia *volume* **8** *page* **17**

LEARN MORE *look under* ungulates
for other African animals look under: Africa

Hirohito, *also called* Michinomiya Hirohito (emperor of Japan)
ARTICLE *volume* **4** *page* **49**
LEARN MORE *look under*
other rulers: Ashoka; Caesar, Julius; Charlemagne; Cleopatra; Elizabeth I; Empress of China

Hiroshige, *also called* Ando Hiroshige (Japanese artist)
ARTICLE *volume* **3** *page* **17**
LEARN MORE *look under* painting
people: Basho; Kurosawa, Akira

Hitler, Adolf (German ruler)
DISCUSSIONS
Germany *volume* **6** *page* **43**

Hoan Kiem, Lake, *also called* Luc Thuy (lake in Hanoi, Vietnam)
DISCUSSIONS
Hanoi *volume* **7** *page* **42**
LEARN MORE *look under* lakes

Holland (country): *look under* Netherlands, the

Holstein (breed of cattle)
DISCUSSIONS
cattle *volume* **12** *page* **46,** photograph *volume* **12** *page* **47**

holy books (religion): *look under* "Adi Granth"; Avesta; Bible; "Daodejing"; Koran

Holy Roman Empire (historic empire)
DISCUSSIONS
Charlemagne *volume* **4** *page* **41**

Holy Sepulchre, Church of the (church in Jersualem)
DISCUSSIONS
Jerusalem *volume* **7** *page* **77,** photograph *volume* **7** *page* **77**

holy wars
DISCUSSIONS
religion *volume* **5** *page* **42**

Honduras (country)
DISCUSSIONS
Central America *volume* **9** *page* **45**

honey
DISCUSSIONS
bees *volume* **11** *page* **61**

honeycombs
DISCUSSIONS
bees photograph *volume* **11** *page* **60**

honeysuckle (plant)
ARTICLE *volume* **10** *page* **12**
LEARN MORE *look under* flowers

Honolulu (city in the U.S.)
ARTICLE *volume* **9** *page* **35**
DISCUSSIONS
atlas *volume* **13** *page* **8**
LEARN MORE *look under* Hawaii

hoof: *look under* hooves

hooves (animal feet)
DISCUSSIONS
horses *volume* **12** *page* **40**
LEARN MORE *look under*
animals with hooves: bison; buffalo; camels; cattle; donkeys; gazelles; hippopotamuses; horses; llamas; pigs; sheep; tapirs; wild goats; yaks

Hope diamond
DISCUSSIONS
Did you know? *volume* **1** *page* **81**

Hopi (Native American people)
DISCUSSIONS
folk arts and crafts photograph *volume* **3** *page* **7**
LEARN MORE *look under* American Indians

horns (animal anatomy): *look under* bison; buffalo; cattle; gazelles; sheep; wild goats

horseback riding
DISCUSSIONS
horses photograph *volume* **12** *page* **41**

horses
ARTICLE *volume* **12** *page* **40**
LEARN MORE *look under* donkeys; tapirs; ungulates

Horseshoe Falls (waterfall in Canada)
DISCUSSIONS
Niagara Falls *volume* **9** *page* **21,** photograph *volume* **9** *page* **21**

hot peppers (plants): *look under* peppers

houngans (Vodun priests)
DISCUSSIONS
Vodun *volume* **5** *page* **92**

house cats: *look under* cats

"House of the Spirits, The" (novel by Allende)
DISCUSSIONS
Allende *volume* **4** *page* **7**

"How Crow Brought Daylight to the World" (Inuit myth)
ARTICLE *volume* **5** *page* **34**
LEARN MORE *look under*
other American stories: Bunyan, Paul; "Rabbit Throws Away His Sandal"; "Why Possum's Tail Is Bare"
other myths: Atlas; Moni Mekhala and Ream Eyso

"How Kangaroo Got His Tail" (Australian folktale)
ARTICLE *volume* **5** *page* **23**
LEARN MORE *look under*
other folktales: "Ananse and the Wisdom Pot"; "Monkey Court, The"; "Poor Man and the Flask of Oil, The"; "Rabbit Throws Away His Sandal"; "Tiger in the Trap, The"; "Why Possum's Tail Is Bare"; "Yeh-Shen"

howler monkeys (animals)
DISCUSSIONS
monkeys *volume* **12** *page* **15**

Hradcany Castle, *also called* Prague Castle (castle in Prague, Czech Republic)
DISCUSSIONS
Prague *volume* **6** *page* **55,** photograph *volume* **6** *page* **54**
LEARN MORE *look under* castles; Czech Republic

Hubble Space Telescope
DISCUSSIONS
Pluto photograph *volume* **2** *page* **45**
telescopes *volume* **2** *page* **103,** photograph *volume* **2** *page* **102**
Venus *volume* **2** *page* **33**

"Huckleberry Finn" (book by Twain)
DISCUSSIONS
Mark Twain *volume* **4** *page* **29,** illustration *volume* **4** *page* **28**

human beings
DISCUSSIONS
Did you know? *volume* **4** *page* **72,** *volume* **8** *page* **26,** *volume* **12** *page* **8**
Kenya *volume* **8** *page* **30**
temperatures *volume* **2** *page* **55**

human body: *look under* human beings

humpback whales
DISCUSSIONS
whales photograph *volume* **12** *page* **76**

Hungary (country)
DISCUSSIONS
atlas *volume* **13** *page* **14**

flag *volume* **6** *page* **70**
LEARN MORE *look under*
places: Budapest; Eastern Europe

Huron, Lake (lake in North America)
DISCUSSIONS
Great Lakes *volume* **9** *page* **23**
LEARN MORE *look under* North America

Hurricane Irene (storm)
DISCUSSIONS
floods photograph *volume* **1** *page* **33**

hurricanes (wind storms): *look under* cyclones

Hwange National Park (elephant sanctuary, Zimbabwe)
DISCUSSIONS
Zimbabwe *volume* **8** *page* **89**

hydroelectric power
DISCUSSIONS
water power *volume* **2** *page* **67**

hydrogen (chemical element)
DISCUSSIONS
Jupiter *volume* **2** *page* **36**
stars *volume* **2** *page* **10**

I

Iberian Peninsula
DISCUSSIONS
atlas *volume* **13** *page* **8**
peninsulas *volume* **1** *page* **22**

ibex (animals)
DISCUSSIONS
wild goats *volume* **12** *page* **58,**
photograph *volume* **12** *page* **59**

ice
DISCUSSIONS
Antarctica *volume* **1** *page* **10**
LEARN MORE *look under* glaciers; icebergs

Ice Age (geology)
DISCUSSIONS
glaciers *volume* **1** *page* **54**

icebergs (ice formations)
ARTICLE *volume* **1** *page* **52**
LEARN MORE *look under* glaciers

iced tea
DISCUSSIONS
Did you know? *volume* **10** *page* **39**

Iceland (country)
DISCUSSIONS
atlas *volume* **13** *page* **14**
flag *volume* **6** *page* **59**
thermal power *volume* **2** *page* **64**
volcanoes *volume* **1** *page* **15**
LEARN MORE *look under*
places: Greenland; Reykjavik; Scandinavia
people: Vikings

igneous rocks
DISCUSSIONS
rocks and minerals *volume* **1** *page* **76**

iguanas (reptiles)
DISCUSSIONS
Galapagos Islands *volume* **9** *page* **68**
LEARN MORE *look under* reptiles

immunization
DISCUSSIONS
Louis Pasteur *volume* **4** *page* **85**

Imperial System, *also called* British Imperial System (measurement system)
DISCUSSIONS
measurement *volume* **2** *page* **59**

implants (medical devices)
DISCUSSIONS
deafness *volume* **2** *page* **96**

"In the Mecca" (book by Brooks)
DISCUSSIONS
Gwendolyn Brooks *volume* **3** *page* **56**

Inari (Japanese god)
DISCUSSIONS
Fushimi Inari shrine photograph *volume* **5** *page* **76**

Inca civilization
DISCUSSIONS
Andes *volume* **9** *page* **66**
Machu Picchu *volume* **9** *page* **77**
Peru *volume* **9** *page* **75**
LEARN MORE *look under* American Indians; South America

inch (measurement)
DISCUSSIONS
measurement *volume* **2** *page* **59**

India (country)
ARTICLE *volume* **7** *page* **51**
DISCUSSIONS
atlas *volume* **13** *page* **12**
Buddhism photograph *volume* **5** *page* **81**
classical music *volume* **3** *page* **36**
dance *volume* **3** *page* **70**
Did you know? *volume* **5** *page* **42,** *volume* **10** *page* **73**
flag *volume* **7** *page* **51**
Indian Ocean *volume* **1** *page* **42**
Lotus Temple photograph *volume* **3** *page* **12**
mangoes *volume* **10** *page* **43**
Mohammed Ali Jinnah *volume* **4** *page* **51**
Mother Teresa *volume* **4** *page* **107**
shamanism photograph *volume* **5** *page* **91**
LEARN MORE *look under*
places: Taj Mahal
people: Ashoka; Buddha; Gandhi, Mahatma; Parsis; Ray, Satyajit; Shankar, Ravi; Tagore, Rabindranath
religion: Buddha; Buddhism; Hinduism; Jainism; shamanism; Sikhism; Zoroastrianism
animals: Bengal tigers; camels; elephants; lesser pandas; lion-tailed macaques; lions; mongooses; monkeys; wild goats

Indian buffalo: *look under* water buffalo

Indian elephants
DISCUSSIONS
elephants *volume* **12** *page* **91,**
photograph *volume* **12** *page* **90**

Indian Ocean
ARTICLE *volume* **1** *page* **42**
DISCUSSIONS
island in the Maldives photograph *volume* **1** *page* **13**
LEARN MORE *look under* oceans

Indian reservations
DISCUSSIONS
American Indians *volume* **4** *page* **87**

Indians (Native Americans): *look under* American Indians

Indonesia (country)
ARTICLE *volume* **7** *page* **29**
DISCUSSIONS
atlas *volume* **13** *page* **12**
dance photograph *volume* **3** *page* **70**
flag *volume* **7** *page* **29**
tea photograph *volume* **10** *page* **39**
LEARN MORE *look under*
places: Bali; Borneo; Java; Southeast Asia
animals: king cobras; Komodo dragons; orangutans; tapirs

Indus civilization
DISCUSSIONS
Pakistan *volume* **7** *page* **60,**
photograph *volume* **7** *page* **61**

industrial diamonds
DISCUSSIONS
diamonds *volume* **1** *page* **80**

insect-eating plants: *look under* carnivorous plants

insecticide
DISCUSSIONS
mosquitoes *volume* **11** *page* **71**

insects
ARTICLE *volume* **11** *page* **57**
LEARN MORE *look under* animals; ants; bees; butterflies and moths; cockroaches; crickets; grasshoppers; mosquitoes
and related animals: spiders

International Space Station
DISCUSSIONS
spacecraft *volume* **2** *page* **16,**
photograph *volume* **2** *page* **17**

Internet and the World Wide Web (computer networks)
ARTICLE *volume* **2** *page* **80**

Inuit, *also called* Eskimo (people)
DISCUSSIONS
Aklavik *volume* **9** *page* **13**
Greenland *volume* **9** *page* **8**
LEARN MORE *look under* peoples
stories: "How Crow Brought Daylight to the World"

Iolani Palace (palace in Honolulu, Hawaii, U.S.)
DISCUSSIONS
Honolulu photograph *volume* **9** *page* **35**
LEARN MORE *look under* palaces

Iran, *also called* Persia (country)
ARTICLE *volume* **7** *page* **71**
DISCUSSIONS
atlas *volume* **13** *page* **12**
flag *volume* **7** *page* **71**
Zoroastrianism *volume* **5** *page* **49**
LEARN MORE *look under* Afghanistan; Middle East; Pakistan

Iraq (country)
DISCUSSIONS
atlas *volume* **13** *page* **12**
flag *volume* **7** *page* **73**
LEARN MORE *look under* Baghdad; Fertile Crescent; Mesopotamia

Ireland (country)
ARTICLE *volume* **6** *page* **24**
DISCUSSIONS
atlas *volume* **13** *page* **14**
flag *volume* **6** *page* **24**
LEARN MORE *look under*
places: Dublin; Western Europe

Irish wolfhounds (dogs)
DISCUSSIONS
dogs *volume* **12** *page* **29**

iron (chemical element)
DISCUSSIONS
stars *volume* **2** *page* **10**

irrigation (farming)
DISCUSSIONS
Fertile Crescent *volume* **7** *page* **65**

Isaac (biblical person)
DISCUSSIONS
Abraham *volume* **5** *page* **53**

Ishmael (biblical person)
DISCUSSIONS
Abraham *volume* **5** *page* **53**

Islam (religion)
ARTICLE *volume* **5** *page* **64**
DISCUSSIONS
God *volume* **5** *page* **44**
Iran *volume* **7** *page* **71**
Mecca *volume* **7** *page* **84**
painting *volume* **3** *page* **8**
Senegal *volume* **8** *page* **23**
Somalia *volume* **8** *page* **36**
Spain *volume* **6** *page* **11**
LEARN MORE *look under*
people: Abraham; Moses; Muhammad
places: Afghanistan; Baghdad; Bangladesh; Mecca; Middle East
writings and other things: Koran; qawwali
similar religions: Baha'i; Christianity; Judaism; Sikhism
stories: "Poor Man and the Flask of Oil, The"

Islamabad (city in Pakistan)
DISCUSSIONS
atlas *volume* **13** *page* **12**
Pakistan *volume* **7** *page* **59**

islands
ARTICLE *volume* **1** *page* **12**
LEARN MORE *look under*
places: Australia; Cuba; Denmark; Easter Island; Galapagos Islands; Great Barrier Reef; Greece; Greenland; Iceland; Indonesia; Ireland; Japan; Madagascar; New Zealand; Philippines; Puerto Rico; Seychelles; Singapore; Sri Lanka; United Kingdom; West Indies
similar things: peninsulas

Israel, *also called* "Promised Land" (ancient people and kingdom)
DISCUSSIONS
Abraham *volume* **5** *page* **52**
Bible *volume* **5** *page* **63**
Judaism *volume* **5** *page* **50**

Israel (country)
ARTICLE *volume* **7** *page* **75**
DISCUSSIONS
atlas *volume* **13** *page* **12**
Abraham *volume* **5** *page* **52**
flag *volume* **7** *page* **75**
Yasir Arafat *volume* **4** *page* **30**
LEARN MORE *look under*
people: Begin, Menachem; Meir, Golda
places: Fertile Crescent; Jerusalem; Middle East
religion: Judaism

Istanbul, *also called* Constantinople (city in Turkey)
ARTICLE *volume* **7** *page* **69**
DISCUSSIONS
atlas *volume* **13** *page* **12**
LEARN MORE *look under* Middle East

isthmus (strip of land)
DISCUSSIONS
Central America *volume* **9** *page* **45**

Italy (country)
ARTICLE *volume* **6** *page* **89**
DISCUSSIONS
atlas *volume* **13** *page* **14**
flag *volume* **6** *page* **89**
mosaic of Jesus Christ photograph *volume* **5** *page* **58**
volcanoes *volume* **1** *page* **15**
LEARN MORE *look under*
people: Galileo Galilei; Michelangelo; Piazzi, Giuseppe
places: Rome; Southern Europe; Vatican City



jackals (animals)
DISCUSSIONS
Did you know? *volume* **12** *page* **29**

jackfruit
ARTICLE *volume* **10** *page* **55**
LEARN MORE *look under* fruits and vegetables; trees

jackrabbits
DISCUSSIONS
rabbits and hares photograph *volume* **12** *page* **92**

Jacob sheep
DISCUSSIONS
Did you know? *volume* **12** *page* **56**

Jaguar, Temple of the (temple in Guatemala): *look under* Giant Jaguar, Temple of the

Jainism (religion)
ARTICLE *volume* **5** *page* **87**
LEARN MORE *look under* Buddhism; Hinduism; monasticism; Sikhism

Jakarta (city in Indonesia)
DISCUSSIONS
atlas *volume* **13** *page* **12**
Indonesia *volume* **7** *page* **29**

Jamestown (city in Virginia, U.S.)
DISCUSSIONS
United States of America *volume* **9** *page* **27**

Japan (country)
ARTICLE *volume* **7** *page* **15**
DISCUSSIONS
atlas *volume* **13** *page* **12**
atomic bombs *volume* **2** *page* **62**
culture *volume* **7** *page* **16**
Did you know? *volume* **4** *page* **55**
flag *volume* **7** *page* **15**
macaques photograph *volume* **12** *page* **16**
Pyongyang *volume* **7** *page* **20**
Seoul *volume* **7** *page* **23**
Shinto *volume* **5** *page* **77**
theatre photograph *volume* **3** *page* **72**
LEARN MORE *look under*
people: Basho; Hirohito; Hiroshige; Kurosawa, Akira
religion: Buddhism; Daoism
things: earthquakes; tea; volcanoes

Japanese macaques (animals)
DISCUSSIONS
macaques *volume* **12** *page* **17,** photograph *volume* **12** *page* **16**

Java (island in Indonesia): *look under* Indonesia

jazz (music)
ARTICLE *volume* **3** *page* **35**
LEARN MORE *look under*
people: Armstrong, Louis; Basie, Count
things: popular music

Jean Bernard (cave in France)
DISCUSSIONS
caves *volume* **1** *page* **79**

Jefferson Memorial (monument in Washington, D.C., U.S.)
DISCUSSIONS
Washington, D.C. photograph *volume* **9** *page* **31**
LEARN MORE *look under* architecture

jellyfish (ocean animals)
ARTICLE *volume* **11** *page* **53**
LEARN MORE *look under* coral; marine animals

Jerusalem (city in Israel)
ARTICLE *volume* **7** *page* **77**
DISCUSSIONS
atlas *volume* **13** *page* **12**
Islam photograph *volume* **5** *page* **64**
Israel *volume* **7** *page* **75**
Judaism photograph *volume* **5** *page* **51**
Menachem Begin photograph *volume* **4** *page* **34**
Muhammad *volume* **5** *page* **67**
LEARN MORE *look under* Middle East

Jesus Christ
ARTICLE *volume* **5** *page* **58**
LEARN MORE *look under* Bible
other biblical people: Abraham; Mary; Moses
religions: Christianity; Islam; Roman Catholicism
other religious leaders: Buddha; Confucius; Muhammad; Zoroaster

jewelry
DISCUSSIONS
Did you know? *volume* **8** *page* **90**
diamonds *volume* **1** *page* **80,** photograph *volume* **1** *page* **80**

jihads (religion): *look under* holy wars

Jina (religion)
DISCUSSIONS
Jainism *volume* **5** *page* **87**

jingxi (music): *look under* Peking opera

Jinnah, Mohammed Ali (Pakistani leader)
ARTICLE *volume* **4** *page* **51**
LEARN MORE *look under* Pakistan
other independence leaders: Gandhi, Mahatma; Mandela, Nelson

joeys (kangaroos)
ARTICLE *volume* **12** *page* **78**

Johannesburg (city in South Africa)
DISCUSSIONS
atlas *volume* **13** *page* **6**
Did you know? *volume* **8** *page* **86**
South Africa *volume* **8** *page* **82**

Johnny Clegg and Savuka (South African musical group)
DISCUSSIONS
popular music photograph *volume* **3** *page* **33**
LEARN MORE *look under* Ladysmith Black Mambazo

Jordan (country)
DISCUSSIONS
atlas *volume* **13** *page* **12**
flag *volume* **7** *page* **79**
LEARN MORE *look under* Amman; Middle East

"Journey to the Center of the Earth, A" (book by Verne)
DISCUSSIONS
Jules Verne *volume* **3** *page* **66**

Judaism (religion)
ARTICLE *volume* **5** *page* **50**
DISCUSSIONS
calendars illustration *volume* **2** *page* **77**
God *volume* **5** *page* **44**
Israel *volume* **7** *page* **75**
Sinai Peninsula *volume* **1** *page* **22**
LEARN MORE *look under*
people: Abraham; Frank, Anne; Moses
stories: "Golem of Prague, The"
writings: Bible
similar religions: Christianity; Islam

"Julius Caesar" (play by Shakespeare)
DISCUSSIONS
Did you know? *volume* **4** *page* **36**

jumping spiders
DISCUSSIONS
spiders *volume* **11** *page* **72,** photograph *volume* **11** *page* **72**

Jupiter (planet)
ARTICLE *volume* **2** *page* **36**
DISCUSSIONS
Did you know? *volume* **2** *page* **19**
solar system illustration *volume* **2** *page* **20**
LEARN MORE *look under* planets

Jura Mountains (mountains in Europe)
DISCUSSIONS
Switzerland *volume* **6** *page* **46**
LEARN MORE *look under* Europe; mountains

jute (plant)
DISCUSSIONS
Bangladesh *volume* **7** *page* **47**



Kaaba (shrine in Mecca, Saudi Arabia)
DISCUSSIONS
Did you know? *volume* **5** *page* **53**
hajj photograph *volume* **5** *page* **66**
Islam *volume* **5** *page* **64**

Kabuki (Japanese arts)
DISCUSSIONS
theatre photograph *volume* **3** *page* **72**

Kabul (city in Afghanistan)
DISCUSSIONS
atlas *volume* **13** *page* **12**
Afghanistan *volume* **7** *page* **45**

kachina dolls
DISCUSSIONS
folk arts and crafts photograph *volume* **3** *page* **7**

Kahlo, Frida (Mexican painter)
ARTICLE *volume* **3** *page* **19**
LEARN MORE *look under* painting

Kalahari (desert in Africa)
DISCUSSIONS
Botswana *volume* **8** *page* **71**
LEARN MORE *look under* Africa; deserts

Kalemegdan, *also called* Singidunum (ancient fortress in Belgrade, Serbia)
DISCUSSIONS
Belgrade *volume* **6** *page* **79,** photograph *volume* **6** *page* **78**
LEARN MORE *look under* castles

Kali (Hindu goddess)
DISCUSSIONS
Hinduism illustration *volume* **5** *page* **78**

"Kalilah wa Dimnah" (Arabian stories)
DISCUSSIONS
The Poor Man and the Flask of Oil *volume* **5** *page* **18**

kami (religious powers)
DISCUSSIONS
Shinto *volume* **5** *page* **77**
LEARN MORE *look under* God; religion; spirits

Kampala (city in Uganda)
ARTICLE *volume* **8** *page* **43**
DISCUSSIONS
atlas *volume* **13** *page* **6**
map *volume* **8** *page* **41**
Uganda *volume* **8** *page* **41**
LEARN MORE *look under* antelope

kangaroos (animals)
ARTICLE *volume* **12** *page* **78**
LEARN MORE *look under*
other Australian animals: koalas; platypuses
other marsupials: opossums
stories: "How Kangaroo Got His Tail"

Karakoram Range (mountains in South Asia)
DISCUSSIONS
atlas *volume* **13** *page* **12**
Pakistan *volume* **7** *page* **59,** photograph *volume* **7** *page* **58**
LEARN MORE *look under* mountains; South Asia

Karakul sheep (mammal)
DISCUSSIONS
Windhoek, Namibia *volume* **8** *page* **81**
LEARN MORE *look under* sheep

Kariba Dam (dam in Africa)
DISCUSSIONS
Zimbabwe *volume* **8** *page* **89,** photograph *volume* **8** *page* **88**
LEARN MORE *look under* dams

karma (religion)
DISCUSSIONS
Hinduism *volume* **5** *page* **79**
Sikhism *volume* **5** *page* **88**

Karoo (tableland in South Africa)
DISCUSSIONS
South Africa *volume* **8** *page* **82**

kathina (Buddhist ceremony)
DISCUSSIONS
Thailand *volume* **7** *page* **37**

Kathmandu (city in Nepal)
ARTICLE *volume* **7** *page* **56**
DISCUSSIONS
atlas *volume* **13** *page* **12**
LEARN MORE *look under* Nepal; South Asia

Keller, Helen (American writer)
ARTICLE *volume* **4** *page* **97**
LEARN MORE *look under* Braille; deafness

kelp (seaweed)
DISCUSSIONS
seaweed *volume* **10** *page* **93**

kente cloth
DISCUSSIONS
Did you know? *volume* **8** *page* **11**
LEARN MORE *look under* cloth

Kenya (country)
ARTICLE *volume* **8** *page* **30**
DISCUSSIONS
atlas *volume* **13** *page* **6**
buffalo photograph *volume* **12** *page* **49**
flag *volume* **8** *page* **30**
LEARN MORE *look under*
places: Eastern Africa; Nairobi
things: coffee

Kepler, Johannes (German astronomer and mathematician)
ARTICLE *volume* **4** *page* **81**
LEARN MORE *look under* astronomy; science
other astronomers: Copernicus, Nicolaus; Galileo Galilei; Piazzi, Giuseppe

Kermit the Frog (Muppet)
DISCUSSIONS
Jim Henson *volume* **3** *page* **85,** photograph *volume* **3** *page* **85**

Khan, Nusrat Fateh Ali (Pakistani singer)
ARTICLE *volume* **3** *page* **43**
LEARN MORE *look under*
other South Asian musicians: Shankar, Ravi
other singers: Sutherland, Joan; Te Kanawa, Kiri

Khan al-Khalili (market in Cairo, Egypt)
DISCUSSIONS
Cairo *volume* **8** *page* **53**

Khmer (people)
DISCUSSIONS
Angkor Wat *volume* **7** *page* **26**
LEARN MORE *look under* peoples

Khoekhoe (people)
DISCUSSIONS
Windhoek, Namibia *volume* **8** *page* **81**

Khone Falls (waterfall in Laos)
DISCUSSIONS
rivers *volume* **1** *page* **31**
LEARN MORE *look under* waterfalls

Khurram (Mughal prince): *look under* Shah Jahan

Kiev (city in Ukraine)
DISCUSSIONS
atlas *volume* **13** *page* **14**
Ukraine *volume* **6** *page* **80**

Kilimanjaro (mountain in Africa)
DISCUSSIONS
atlas photograph *volume* **13** *page* **7**
LEARN MORE *look under* Eastern Africa; mountains

killer whales
DISCUSSIONS
whales photograph *volume* **12** *page* **76**

kilt (Scottish clothing)
DISCUSSIONS
Scotland photograph *volume* **6** *page* **20**

kinetic energy (physics)
DISCUSSIONS
energy *volume* **2** *page* **48**

King, Martin Luther, Jr. (American civil rights leader)
ARTICLE *volume* **4** *page* **98**
LEARN MORE *look under*
other civil rights leaders: Gandhi, Mahatma; Mandela, Nelson

king cobras (snakes)
ARTICLE *volume* **11** *page* **82**
LEARN MORE *look under* mongooses

kingfishers (birds)
ARTICLE *volume* **11** *page* **9**
LEARN MORE *look under* birds

kiwis (birds)
ARTICLE *volume* **11** *page* **33**
DISCUSSIONS
New Zealand *volume* **7** *page* **99**
LEARN MORE *look under* birds; ostriches

Knights of the Round Table (British legend)
ARTICLE *volume* **5** *page* **33**
LEARN MORE *look under*
other European stories: Aesop's fables; Atlas; dragons; "Golem of Prague, The"; "Odysseus and the Cyclops"; Trojan Horse, The
other legends: Bunyan, Paul

koalas (animals)
ARTICLE *volume* **12** *page* **81**
DISCUSSIONS
Did you know? *volume* **10** *page* **85**
LEARN MORE *look under*
other Australian animals: kangaroos; platypuses
other marsupials: opossums

Koko (gorilla)
DISCUSSIONS
Did you know? *volume* **12** *page* **10**

kola nuts
DISCUSSIONS
Did you know? *volume* **10** *page* **58**
LEARN MORE *look under* plants

Komodo dragons (lizards)
DISCUSSIONS
Did you know? *volume* **5** *page* **8**
lizards *volume* **11** *page* **85,**
photograph *volume* **11** *page* **85**
LEARN MORE *look under* alligators and crocodiles; chameleons

Kongzi (founder of Confucianism): *look under* Confucius

kookaburras (birds)
DISCUSSIONS
kingfishers *volume* **11** *page* **9,**
photograph *volume* **11** *page* **8**
LEARN MORE *look under* birds

Koran, *also called* Qur'an (holy book)
ARTICLE *volume* **5** *page* **69**
DISCUSSIONS
Islam *volume* **5** *page* **64**
LEARN MORE *look under* Islam; Muhammad
similar writings: Bible

Korean Peninsula (peninsula in Asia)
ARTICLE *volume* **7** *page* **19**
LEARN MORE *look under*
places: Pyongyang; Seoul
religion: Daoism
stories: "Tiger in the Trap, The"

Korean War (1950–53)
DISCUSSIONS
Korean Peninsula *volume* **7** *page* **19,**
photograph *volume* **7** *page* **18**

kosher (Judaism)
DISCUSSIONS
Did you know? *volume* **5** *page* **51**

Krakatoa (volcano in Indonesia)
DISCUSSIONS
Did you know? *volume* **7** *page* **28**
floods *volume* **1** *page* **32**
LEARN MORE *look under* volcanoes

Krung Thep (city in Thailand): *look under* Bangkok

Kurosawa, Akira (Japanese film-maker)
ARTICLE *volume* **3** *page* **86**
LEARN MORE *look under* cinema
people: Basho; Hiroshige; Ray, Satyajit



"La Stupenda" (Australian opera singer): *look under* Sutherland, Joan

Ladino (people)
DISCUSSIONS
Guatemala *volume* **9** *page* **46**
LEARN MORE *look under* Central America; peoples

Ladysmith Black Mambazo (South African music group)
ARTICLE *volume* **3** *page* **44**
LEARN MORE *look under* popular music

Lagos (city in Nigeria)
DISCUSSIONS
Nigeria *volume* **8** *page* **21**

lakes: *look under* Baikal, Lake; Dead Sea; Eyre, Lake; Great Lakes; Hoan Kiem, Lake; Loch Ness; Malawi, Lake; Tiberias, Lake; Victoria, Lake

Lakshmi (Hindu god)
DISCUSSIONS
Hinduism *volume* **5** *page* **79**
LEARN MORE *look under* God

land and landforms: *look under* geography

land turtles (animals): *look under* tortoises

landscape painting (art)
DISCUSSIONS
Hiroshige *volume* **3** *page* **17**
painting *volume* **3** *page* **8**
Xia Gui *volume* **3** *page* **28**

language: *look under* click languages; English language; Gaelic; Quechua; sign language

Laozi (Chinese philosopher)
DISCUSSIONS
Daoism *volume* **5** *page* **74**

laptop computers, *also called* notebook computers
DISCUSSIONS
computers *volume* **2** *page* **79**

latex (chemical)
DISCUSSIONS
rubber trees *volume* **10** *page* **90,**
photograph *volume* **10** *page* **90**

Latin America: *look under*
people: Allende, Isabel; Bolívar, Simón

places: Central America; South America

lava (volcanoes)
DISCUSSIONS
mountains *volume* **1** *page* **16**
volcanoes *volume* **1** *page* **15**

Law (Jewish writings): *look under* Torah

layering (farming)
DISCUSSIONS
grapes *volume* **10** *page* **25**

leaders: *look under* Arafat, Yasir; Ashoka; Begin, Menachem; Bolívar, Simón; Caesar, Julius; Castro, Fidel; Charlemagne; Cleopatra; Elizabeth I; Empress of China; Hirohito; Jinnah, Mohammed Ali; Mandela, Nelson; Mao Zedong; Meir, Golda; Sadat, Anwar el-; Thant, U

leaf-nosed bats (animals)
DISCUSSIONS
bats photograph *volume* **12** *page* **89**

Leakey, Louis (Kenyan scientist)
DISCUSSIONS
Jane Goodall *volume* **4** *page* **78**
LEARN MORE *look under* science

Leaning Tower of Pisa (tower in Pisa, Italy)
DISCUSSIONS
Europe photograph *volume* **6** *page* **6**
Italy *volume* **6** *page* **89**
LEARN MORE *look under* towers

leather carp (fish)
DISCUSSIONS
carp *volume* **11** *page* **37**
LEARN MORE *look under* fish

leatherback turtles (turtles)
DISCUSSIONS
reptiles *volume* **11** *page* **75**

leaves
ARTICLE *volume* **1** *page* **67**
LEARN MORE *look under* cabbage; plants; tea

Lebanon (country)
DISCUSSIONS
atlas *volume* **13** *page* **12**
flag *volume* **7** *page* **79**
Menachem Begin *volume* **4** *page* **35**
LEARN MORE *look under* Beirut; Fertile Crescent; Middle East

legends
ARTICLE *volume* **5** *page* **7**
LEARN MORE *look under*
stories: Bunyan, Paul; dragons; "Golem of Prague, The"; Knights of the Round Table; "Odysseus and the Cyclops"; Trojan Horse, The
other things: Abominable Snowman; Atlantis; fables; folktales; mermaids; myths

legumes (plants)
DISCUSSIONS
peanuts *volume* **10** *page* **30**
LEARN MORE *look under* plants

lemons
ARTICLE *volume* **10** *page* **47**
LEARN MORE *look under* fruits and vegetables; trees

lemurs (animals)
ARTICLE *volume* **12** *page* **19**
LEARN MORE *look under* primates

L'Enfant, Pierre-Charles (French engineer and artist)
DISCUSSIONS
Washington, D.C., U.S. *volume* **9** *page* **31**

lens
DISCUSSIONS
photography *volume* **2** *page* **88**
telescopes *volume* **2** *page* **103**

leprechauns (Irish folklore)
DISCUSSIONS
Did you know? *volume* **6** *page* **25**

leprosy (disease)
DISCUSSIONS
Did you know? *volume* **12** *page* **86**

Leshan Buddha (statue)
DISCUSSIONS
Did you know? *volume* **5** *page* **80**

lesser apes
DISCUSSIONS
apes *volume* **12** *page* **9**
LEARN MORE *look under* gibbons

lesser pandas, *also called* cat bears, *or* red bear cats (animals)
DISCUSSIONS
pandas *volume* **12** *page* **38,** photograph *volume* **12** *page* **38**

Liberia (country)
ARTICLE *volume* **8** *page* **17**
DISCUSSIONS
atlas *volume* **13** *page* **6**
flag *volume* **8** *page* **17**
LEARN MORE *look under*
places: Monrovia; West Africa

Library of Congress (library in Washington, D.C., U.S.)
DISCUSSIONS
Did you know? *volume* **9** *page* **31**

Libya (country)
ARTICLE *volume* **8** *page* **58**
DISCUSSIONS
atlas *volume* **13** *page* **6**
Did you know? *volume* **1** *page* **34**
flag *volume* **8** *page* **58**
LEARN MORE *look under*
places: North Africa; Tripoli

life
DISCUSSIONS
Buddhism *volume* **5** *page* **81**
Confucius *volume* **5** *page* **72**
energy *volume* **2** *page* **48**
extraterrestrial life *volume* **2** *page* **14**
God *volume* **5** *page* **44**
LEARN MORE *look under* animals; bacteria; fossils; plants

"Life on the Mississippi" (book by Twain)
DISCUSSIONS
Mark Twain *volume* **4** *page* **29**

Liffey, River (river in Ireland)
DISCUSSIONS
Dublin *volume* **6** *page* **26,** photograph *volume* **6** *page* **27**
LEARN MORE *look under* rivers

light
DISCUSSIONS
Albert Einstein *volume* **4** *page* **74**
energy *volume* **2** *page* **48**
rainbows *volume* **1** *page* **63**
LEARN MORE *look under* bioluminescence; color

light bulbs: *look under* electricity

lightning (weather): *look under* thunder and lightning

Lilongwe (city in Malawi)
ARTICLE *volume* **8** *page* **77**
DISCUSSIONS
atlas *volume* **13** *page* **6**
Malawi *volume* **8** *page* **75**
LEARN MORE *look under* Malawi

Lima (city in Peru): *look under* Peru

limestone (rock)
DISCUSSIONS
chalk *volume* **1** *page* **83**
rocks and minerals *volume* **1** *page* **76**
Western Australia photograph *volume* **7** *page* **96**

Lincoln, Abraham (American leader)
DISCUSSIONS
Did you know? *volume* **3** *page* **50**

Lincoln Memorial (monument in Washington, D.C., U.S.)
DISCUSSIONS
Washington, D.C. photograph *volume* **9** *page* **30**

lion-tailed macaques (animals)
DISCUSSIONS
macaques *volume* **12** *page* **17**

lions
ARTICLE *volume* **12** *page* **24**
LEARN MORE *look under* carnivores; cats; ocelots; tigers

lipreading
DISCUSSIONS
deafness *volume* **2** *page* **96**

liquids, solids, and gases (states of matter)
ARTICLE *volume* **2** *page* **52**
LEARN MORE *look under* atoms; physical sciences

Lisbon (city in Portugal)
DISCUSSIONS
atlas *volume* **13** *page* **14**
Portugal *volume* **6** *page* **8**
LEARN MORE *look under* Portugal

literature (art)
ARTICLE *volume* **3** *page* **50**
LEARN MORE *look under* Bible; fables; folktales; Koran; writing
people: Allende, Isabel; Basho; Borges, Jorge Luis; Brooks, Gwendolyn; Carroll, Lewis; Dickens, Charles; Dickinson, Emily; Frank, Anne; Keller, Helen; Shakespeare, William; Soyinka, Wole; Tagore, Rabindranath; Twain, Mark; Verne, Jules; Walker, Kath
places: England

Literature, Temple of (temple in Hanoi, Vietnam)
DISCUSSIONS
Hanoi *volume* **7** *page* **42**
LEARN MORE *look under* temples

Little Mermaid (statue)
DISCUSSIONS
Copenhagen *volume* **6** *page* **62**
LEARN MORE *look under* fairy tales

lizards
ARTICLE *volume* **11** *page* **85**
DISCUSSIONS
reptiles *volume* **11** *page* **75**
LEARN MORE *look under* alligators and crocodiles; chameleons; dinosaurs; Komodo dragons; reptiles

llamas (animals)
ARTICLE *volume* **12** *page* **62**
DISCUSSIONS
Chile photograph *volume* **9** *page* **87**
Did you know? *volume* **9** *page* **75**
LEARN MORE *look under* camels; ungulates

Llanos (region in South America)
DISCUSSIONS
Colombia *volume* **9** *page* **71**
LEARN MORE *look under* South America

loa (voodoo)
DISCUSSIONS
Vodun *volume* **5** *page* **92**

Loch Ness (lake in Scotland)
DISCUSSIONS
Scotland *volume* **6** *page* **21**
LEARN MORE *look under* lakes; myths

locks (canals)
DISCUSSIONS
Panama Canal *volume* **9** *page* **52**
LEARN MORE *look under* ships

locusts (insects)
DISCUSSIONS
insects *volume* **11** *page* **57**

London (city in England, U.K.)
ARTICLE *volume* **6** *page* **16**
DISCUSSIONS
atlas *volume* **13** *page* **14**
England photograph *volume* **6** *page* **15**
LEARN MORE *look under* England

long (Chinese mythology): *look under* dragons

longhorn cattle (animals)
DISCUSSIONS
cattle photograph *volume* **12** *page* **46**

longships, *also called* dragon ships
DISCUSSIONS
Vikings *volume* **4** *page* **62,** photograph *volume* **4** *page* **63**

looms (weaving machines)
DISCUSSIONS
Did you know? *volume* **2** *page* **79**
weaving *volume* **2** *page* **108,** photograph *volume* **2** *page* **109**

Lotus Temple (temple in India)
DISCUSSIONS
architecture photograph *volume* **3** *page* **12**
LEARN MORE *look under* temples

Louvre (museum in Paris, France)
DISCUSSIONS
I. M. Pei *volume* **4** *page* **18,** photograph *volume* **4** *page* **18,** photograph *volume* **4** *page* **19**
LEARN MORE *look under* Paris
things: painting; sculpture

Luanda (city in Angola)
ARTICLE *volume* **8** *page* **68**
DISCUSSIONS
atlas *volume* **13** *page* **6**
LEARN MORE *look under* Angola

Luc Thuy (lake in Hanoi, Vietnam): *look under* Hoan Kiem, Lake

Lucas, George (American film director and producer)
DISCUSSIONS
Akira Kurosawa photograph *volume* **3** *page* **86**

"Lucia di Lammermoor" (opera by Donizetti)
DISCUSSIONS
Joan Sutherland *volume* **4** *page* **27**

Lucy (human ancestor)
DISCUSSIONS
Did you know? *volume* **8** *page* **26**
LEARN MORE *look under* human beings

lumberjacks
DISCUSSIONS
Paul Bunyan *volume* **5** *page* **39**

lungfish
DISCUSSIONS
Did you know? *volume* **11** *page* **34**
LEARN MORE *look under* marine animals

Lyme Regis (city in England, U.K.)
DISCUSSIONS
English Channel photograph *volume* **6** *page* **31**



Ma-Xia school (painting)
DISCUSSIONS
Xia Gui *volume* **3** *page* **28**

Mabovitch, Goldie (Israeli leader): *look under* Meir, Golda

macaques (animals)
ARTICLE *volume* **12** *page* **17**
LEARN MORE *look under* monkeys

macaws (birds)
DISCUSSIONS
parrots and cockatoos *volume* **11** *page* **11,** photograph *volume* **11** *page* **11**

Machu Picchu (ancient Inca city in Peru)
ARTICLE *volume* **9** *page* **77**
DISCUSSIONS
llamas photograph *volume* **12** *page* **63**
LEARN MORE *look under* American Indians; Andes

Mackenzie River (river in Canada)
DISCUSSIONS
Aklavik photograph *volume* **9** *page* **12**
LEARN MORE *look under* rivers

Madagascar (country)
ARTICLE *volume* **8** *page* **73**
DISCUSSIONS
atlas *volume* **13** *page* **6**
LEARN MORE *look under* islands; Southern Africa
animals: chameleons; lemurs

Madonna, the (mother of Jesus): *look under* Mary

"Madonna della Pietà" (sculpture by Michelangelo)
DISCUSSIONS
Michelangelo *volume* **3** *page* **21**

"Madonna of Humility" (painting by Angelico)
DISCUSSIONS
Mary illustration *volume* **5** *page* **60**

madrasahs (Muslim schools)
DISCUSSIONS
Pakistani students photograph *volume* **5** *page* **69**

Madrid (city in Spain)
ARTICLE *volume* **6** *page* **13**
DISCUSSIONS
atlas *volume* **13** *page* **14**
LEARN MORE *look under* Spain

Magdalen Islands (islands in Canada)
DISCUSSIONS
Did you know? *volume* **9** *page* **16**

Magellan (U.S. space probe)
DISCUSSIONS
Did you know? *volume* **4** *page* **100**
launch from space shuttle photograph *volume* **2** *page* **33**
LEARN MORE *look under* exploration; spacecraft

Magellan, Ferdinand (Portuguese explorer)
ARTICLE *volume* **4** *page* **101**
DISCUSSIONS
Portugal *volume* **6** *page* **8**
LEARN MORE *look under* exploration

Magellan, Strait of (channel in South America)
DISCUSSIONS
atlas *volume* **13** *page* **11**
Ferdinand Magellan *volume* **4** *page* **101**

"Magic Flute, The" (opera by Mozart)
DISCUSSIONS
opera *volume* **3** *page* **76**

magic realism (literature)
DISCUSSIONS
Isabel Allende *volume* **4** *page* **7**

magma (molten rock)
DISCUSSIONS
rocks and minerals *volume* **1** *page* **76**
volcanoes *volume* **1** *page* **15**

magnets
DISCUSSIONS
electricity *volume* **2** *page* **56**

Mahavira (founder of Jainism)
DISCUSSIONS
Jainism *volume* **5** *page* **87,** photograph *volume* **5** *page* **86**

Mahé (island in Seychelles)
DISCUSSIONS
Seychelles *volume* **8** *page* **35**

main memory (computer science)
DISCUSSIONS
computers *volume* **2** *page* **79**

malachite kingfishers (birds)
DISCUSSIONS
kingfishers photograph *volume* **11** *page* **9**

Malagasy (people)
DISCUSSIONS
Madagascar *volume* **8** *page* **73**
LEARN MORE *look under* peoples

malaria (disease)
DISCUSSIONS
Did you know? *volume* **11** *page* **71**

Malawi (country)
ARTICLE *volume* **8** *page* **75**
DISCUSSIONS
atlas *volume* **13** *page* **6**
flag *volume* **8** *page* **75**
LEARN MORE *look under* Lilongwe; Southern Africa

Malawi, Lake (lake in Africa)
DISCUSSIONS
Malawi *volume* **8** *page* **75,** photograph *volume* **8** *page* **74**
LEARN MORE *look under* Africa; lakes

Malayan lars (apes): *look under* white-handed gibbons

Malaysia (country)
DISCUSSIONS
atlas *volume* **13** *page* **12**
tea photograph *volume* **10** *page* **38**
LEARN MORE *look under*
animals: tapirs
places: Southeast Asia

Maldives (island country)
DISCUSSIONS
atlas *volume* **13** *page* **12**
island photograph *volume* **1** *page* **13**

Malinke (people)
DISCUSSIONS
Guinea *volume* **8** *page* **14**

mambos (Vodun priestesses)
DISCUSSIONS
Vodun *volume* **5** *page* **92**

mammals (animals)
VOLUME **12**
LEARN MORE *look under* animals; armadillos; bats; carnivores; manatees; marsupials; platypuses; primates; rabbits and hares; rodents; ungulates; whales

Mammoth Cave-Flint Ridge (cave system in the U.S.)
DISCUSSIONS
caves *volume* **1** *page* **79**

mammoths and mastodons (animals)
ARTICLE *volume* **1** *page* **87**
LEARN MORE *look under* elephants; fossils; ungulates

Managua (city in Nicaragua): *look under* Nicaragua

manatees (animals)
ARTICLE *volume* **12** *page* **73**
DISCUSSIONS
Liberia *volume* **8** *page* **17**
LEARN MORE *look under* elephants; hippopotamuses; mammals; marine animals

Manche, La (waterway): *look under* English Channel

Mandela, Nelson (South African leader)
ARTICLE *volume* **4** *page* **53**

DISCUSSIONS
South Africa *volume* **8** *page* **85,** photograph *volume* **8** *page* **84**
LEARN MORE *look under* South Africa *other independence and civil rights leaders:* Gandhi, Mahatma; Jinnah, Mohammed Ali; King, Martin Luther, Jr.

mandrills (monkeys)
DISCUSSIONS
mammals photograph *volume* **12** *page* **7**
LEARN MORE *look under* monkeys

mangoes (fruit)
ARTICLE *volume* **10** *page* **43**
LEARN MORE *look under* fruits and vegetables; trees

mangroves (trees)
DISCUSSIONS
swamps *volume* **1** *page* **28**
LEARN MORE *look under* trees

Manila (city in the Philippines)
DISCUSSIONS
atlas *volume* **13** *page* **12**
Philippines *volume* **7** *page* **33,** photograph *volume* **7** *page* **32**

Manitoulin Island (island in Lake Huron)
DISCUSSIONS
Did you know? *volume* **9** *page* **23**

Mao Zedong (Chinese leader)
ARTICLE *volume* **4** *page* **54**
LEARN MORE *look under* China *others who shaped China:* Confucius *other communist leaders:* Castro, Fidel

Maori (people)
DISCUSSIONS
New Zealand *volume* **7** *page* **99**
LEARN MORE *look under* peoples

maple (tree)
ARTICLE *volume* **10** *page* **56**
LEARN MORE *look under* food; trees

maple sugar
DISCUSSIONS
maple *volume* **10** *page* **56**

maple syrup
DISCUSSIONS
maple *volume* **10** *page* **56,** illustration *volume* **10** *page* **56**

Marble Canyon (canyon in Arizona, U.S.)
DISCUSSIONS
Colorado River photograph *volume* **9** *page* **33**
LEARN MORE *look under* canyons

Marconi, Guglielmo (Italian scientist)
DISCUSSIONS
radio *volume* **2** *page* **93,** photograph *volume* **2** *page* **92**

Mariana Trench (Pacific Ocean)
DISCUSSIONS
Did you know? *volume* **1** *page* **37**
Pacific Ocean *volume* **1** *page* **41**

marine animals: *look under* albatrosses; coral; deep-sea life; dolphins; fish; gulls; jellyfish; manatees; mollusks; octopuses; penguins; salmon; sharks; sponges; walruses; whales

Mariner (American space probes)
DISCUSSIONS
Mercury *volume* **2** *page* **30,** photograph *volume* **2** *page* **30**
LEARN MORE *look under* exploration; spacecraft

markhors (animals)
DISCUSSIONS
wild goats *volume* **12** *page* **58**

Marley, Bob (Jamaican musician)
DISCUSSIONS
popular music photograph *volume* **3** *page* **32**

marmosets (animals)
DISCUSSIONS
monkeys *volume* **12** *page* **15**

marriage
DISCUSSIONS
Did you know? *volume* **1** *page* **45**

Mars (planet)
ARTICLE *volume* **2** *page* **35**
DISCUSSIONS
Did you know? *volume* **1** *page* **30,** *volume* **2** *page* **19**
solar system illustration *volume* **2** *page* **20**
LEARN MORE *look under* planets

marshes
ARTICLE *volume* **1** *page* **26**
LEARN MORE *look under* grasses; rushes and reeds; swamps

marsupials (animals)
DISCUSSIONS
mammals *volume* **12** *page* **7**
LEARN MORE *look under* kangaroos; koalas; opossums

Mary, *also called* Saint Mary, *or* the Madonna, *or* Virgin Mary (mother of Jesus)
ARTICLE *volume* **5** *page* **61**
LEARN MORE *look under* Bible; Christianity; Jesus Christ; Roman Catholicism

Masai (people)
DISCUSSIONS
Kenya photograph *volume* **8** *page* **31**
LEARN MORE *look under* peoples

mastodons (animals): *look under* mammoths and mastodons

Matsuo Munefusa (Japanese poet): *look under* Basho

matter (science)
DISCUSSIONS
atoms *volume* **2** *page* **46**
liquids, solids, and gases *volume* **2** *page* **52**

Matterhorn (mountain in Europe)
DISCUSSIONS
Switzerland photograph *volume* **6** *page* **47**
LEARN MORE *look under* mountains

Maya (people): *look under* Mayan Civilization

Mayan Civilization
ARTICLE *volume* **4** *page* **103**
DISCUSSIONS
calendars *volume* **2** *page* **77**
Central America *volume* **9** *page* **45**
Guatemala *volume* **9** *page* **46**
Mexico photograph *volume* **9** *page* **40**
LEARN MORE *look under* *people:* American Indians *stories:* "Rabbit Throws Away His Sandal"

Mayor, Plaza (plaza in Madrid, Spain)
DISCUSSIONS
Madrid photograph *volume* **6** *page* **12**

Mazar-e Sharif (city in Afghanistan)
DISCUSSIONS
Afghanistan photograph *volume* **7** *page* **44**

Mbundu (people)
DISCUSSIONS
Angola *volume* **8** *page* **67**
LEARN MORE *look under* peoples

McKinley, Mount, *also called* Denali (mountain in Alaska, U.S.)
DISCUSSIONS
atlas photograph *volume* **13** *page* **9**

United States of America *volume* **9** *page* **25**
LEARN MORE *look under* Alaska; mountains

measurement
ARTICLE *volume* **2** *page* **59**
LEARN MORE *look under* calendars

Mecca (city in Saudi Arabia)
ARTICLE *volume* **7** *page* **84**
DISCUSSIONS
atlas *volume* **13** *page* **12**
Islam *volume* **5** *page* **64**
Kaaba photograph *volume* **5** *page* **66**
Muhammad *volume* **5** *page* **67**
LEARN MORE *look under* Islam; Saudi Arabia

medicine (science)
ARTICLE *volume* **2** *page* **60**
DISCUSSIONS
Did you know? *volume* **6** *page* **82,** *volume* **9** *page* **64**
macaques *volume* **12** *page* **17**
Marie Curie *volume* **4** *page* **71**
nuclear energy *volume* **2** *page* **62**
rainforests *volume* **1** *page* **24**
LEARN MORE *look under*
people: Blackwell, Elizabeth; Pasteur, Louis
things: Hippocratic oath

Medina (city in Saudi Arabia)
DISCUSSIONS
Did you know? *volume* **5** *page* **65**
Muhammad *volume* **5** *page* **67**

meditation
DISCUSSIONS
Baha'i *volume* **5** *page* **70**
Buddhism *volume* **5** *page* **81**
Hinduism *volume* **5** *page* **79**
monasticism *volume* **5** *page* **46**

Mediterranean Sea
ARTICLE *volume* **1** *page* **44**
DISCUSSIONS
atlas *volume* **13** *page* **6,** *volume* **13** *page* **12,** *volume* **13** *page* **14**
Suez Canal *volume* **8** *page* **56**
LEARN MORE *look under* Middle East; North Africa; Southern Europe

mediums (occultism)
DISCUSSIONS
Did you know? *volume* **6** *page* **59**

meerkats (animals): *look under* yellow mongooses

Meir, Golda, *also called* Goldie Mabovitch, *or* Goldie Myerson (Israeli leader)
ARTICLE *volume* **4** *page* **57**
LEARN MORE *look under* Israel
other Middle Eastern leaders: Arafat, Yasir; Begin, Menachem; Sadat, Anwar el-

menorahs (candelabra)
DISCUSSIONS
Judaism photograph *volume* **5** *page* **50**

Mercury (planet)
ARTICLE *volume* **2** *page* **30**
DISCUSSIONS
solar system illustration *volume* **2** *page* **20**
LEARN MORE *look under* planets

Merino sheep (animals)
DISCUSSIONS
New Zealand *volume* **7** *page* **99**
LEARN MORE *look under* sheep

Merlin (legendary magician)
DISCUSSIONS
Knights of the Round Table *volume* **5** *page* **33**

mermaids (legendary beings)
DISCUSSIONS
manatees *volume* **12** *page* **73**
LEARN MORE *look under* legends

Mesopotamia (ancient region in Asia)
DISCUSSIONS
transportation *volume* **2** *page* **106**

Messiah (religion)
DISCUSSIONS
Did you know? *volume* **5** *page* **58**

metals
DISCUSSIONS
electricity *volume* **2** *page* **56**

metamorphic rocks
DISCUSSIONS
rocks and minerals *volume* **1** *page* **76**

meteorites (astronomy)
DISCUSSIONS
tsunamis *volume* **1** *page* **50**

metric system (measurement system)
DISCUSSIONS
measurement *volume* **2** *page* **59**

Metropolitan Museum of Art (museum in New York City, U.S.)
DISCUSSIONS
New York City *volume* **9** *page* **38,** photograph *volume* **9** *page* **39**

Mexican bats (animals)
DISCUSSIONS
bats *volume* **12** *page* **89**

Mexico (country)
ARTICLE *volume* **9** *page* **41**
DISCUSSIONS
atlas *volume* **13** *page* **8**
Did you know? *volume* **3** *page* **7**
flag *volume* **9** *page* **41**
peninsulas *volume* **1** *page* **22**
LEARN MORE *look under*
people: Kahlo, Frida; Rivera, Diego; Santana, Carlos
places: Mexico City
things: Mayan Civilization

Mexico City, *also called* Tenochtitlán (city in Mexico)
ARTICLE *volume* **9** *page* **43**
DISCUSSIONS
atlas *volume* **13** *page* **8**
LEARN MORE *look under* Mexico

Michelangelo (Italian artist)
ARTICLE *volume* **3** *page* **21**
DISCUSSIONS
Vatican City *volume* **6** *page* **93**
LEARN MORE *look under* architecture; painting; sculpture
other famous Italians: Galileo Galilei; Marconi, Guglielmo; Piazzi, Giuseppe
other famous artists: Hiroshige; Rivera, Diego; Rodin, Auguste; van Gogh, Vincent

Michigan (state in the U.S.)
DISCUSSIONS
peninsula photograph *volume* **1** *page* **22**

Michigan, Lake (lake in the U.S.)
DISCUSSIONS
Great Lakes *volume* **9** *page* **23,** photograph *volume* **9** *page* **22,** photograph *volume* **9** *page* **23**

Michinomiya Hirohito (emperor of Japan): *look under* Hirohito

microbiology: *look under* Pasteur, Louis

microprocessors (computer science)
DISCUSSIONS
computers *volume* **2** *page* **79**

Mid-Atlantic Ridge (underwater mountain range)
DISCUSSIONS
oceans *volume* **1** *page* **37**

Middle East (region in Asia): *look under*

people: Arafat, Yasir; Begin, Menachem; Fathy, Hassan; Meir, Golda
places: Amman; Baghdad; Beirut; Damascus; Fertile Crescent; Iran; Israel; Istanbul; Jerusalem; Mecca; Mediterranean Sea; Mesopotamia; Oman; Palestine; Suez Canal
religions: Baha'i; Christianity; Islam; Judaism; Zoroastrianism
animals: camels; wild goats

"Midsummer Night's Dream, A" (play by Shakespeare)
DISCUSSIONS
William Shakespeare *volume* **4** *page* **23,** photograph *volume* **4** *page* **23**

mild peppers (plants): *look under* peppers

military
DISCUSSIONS
Braille *volume* **2** *page* **75**
Did you know? *volume* **11** *page* **87**

milk (food)
DISCUSSIONS
Louis Pasteur *volume* **4** *page* **85**
mammals *volume* **12** *page* **6**
LEARN MORE *look under* food

Milky Way Galaxy
DISCUSSIONS
galaxies *volume* **2** *page* **13,** photograph *volume* **2** *page* **12**

minerals: *look under* rocks and minerals

minor planets: *look under* asteroids

miracles
DISCUSSIONS
Jesus Christ *volume* **5** *page* **58**

mirror carp (fish)
DISCUSSIONS
carp *volume* **11** *page* **37**
LEARN MORE *look under* fish

mirrors
DISCUSSIONS
telescopes *volume* **2** *page* **103**

Mirza Ali Mohammad (Muslim leader): *look under* Bab, the

Mirza Hoseyn Ali Nuri (Iranian religious leader): *look under* Baha Ullah

Mississippi River (river in the United States)
DISCUSSIONS
atlas photograph *volume* **13** *page* **9**
Mark Twain *volume* **4** *page* **29**
United States of America *volume* **9** *page* **25**
LEARN MORE *look under* rivers

Mittens (rock formation in the United States)
DISCUSSIONS
United States photograph *volume* **9** *page* **25**

moai (statues)
DISCUSSIONS
Easter Island *volume* **9** *page* **89,** photograph *volume* **9** *page* **88,** photograph *volume* **9** *page* **89**
LEARN MORE *look under* arts; sculpture

mobile cellular telephones: *look under* cellular phone

mobiles (sculptures)
DISCUSSIONS
sculpture *volume* **3** *page* **11**

Model T (automobile)
DISCUSSIONS
automobiles *volume* **2** *page* **72**

modern dance
DISCUSSIONS
dance *volume* **3** *page* **70**

Mogadishu (city in Somalia)
DISCUSSIONS
atlas *volume* **13** *page* **6**
Somalia *volume* **8** *page* **36**
LEARN MORE *look under* Eastern Africa

Mohenjo-daro (ancient city in Pakistan)
DISCUSSIONS
ancient city site photograph *volume* **7** *page* **61**
Pakistan *volume* **7** *page* **60**
stone tablets photograph *volume* **7** *page* **60**

molasses (syrup)
DISCUSSIONS
sugarcane *volume* **10** *page* **76**
LEARN MORE *look under* sugarcane

molecules
DISCUSSIONS
atoms *volume* **2** *page* **46**

mollusks (animals)
ARTICLE *volume* **11** *page* **49**
LEARN MORE *look under* animals; aquatic animals; octopuses

monarch butterflies (insects)
DISCUSSIONS
Did you know? *volume* **11** *page* **63**

monasteries (religion): *look under* monasticism

monasticism (religion)
ARTICLE *volume* **5** *page* **46**
DISCUSSIONS
Buddhism photograph *volume* **5** *page* **81**
Jainism *volume* **5** *page* **87**
Shinto photograph *volume* **5** *page* **77**
Thailand photograph *volume* **7** *page* **36**
LEARN MORE *look under*
people: Buddha; Dalai Lama

mongooses (animals)
ARTICLE *volume* **12** *page* **36**
LEARN MORE *look under* carnivores; king cobras

Moni Mekhala and Ream Eyso (Cambodian myth)
ARTICLE *volume* **5** *page* **16**
LEARN MORE *look under*
other Asian stories: "Poor Man and the Flask of Oil, The"; "Tiger in the Trap, The"; "Yeh-Shen"
other myths: Atlas; "How Crow Brought Daylight to the World"

"Monkey Court, The" (Nigerian folktale)
ARTICLE *volume* **5** *page* **10**
LEARN MORE *look under*
other African stories: "Ananse and the Wisdom Pot"
other folktales: "How Kangaroo Got His Tail"; "Poor Man and the Flask of Oil, The"; "Rabbit Throws Away His Sandal"; "Tiger in the Trap, The"; "Why Possum's Tail Is Bare"; "Yeh-Shen"

monkeys
ARTICLE *volume* **12** *page* **15**
DISCUSSIONS
lemurs *volume* **12** *page* **19**
mandrills photograph *volume* **12** *page* **7**
LEARN MORE *look under*
other animals: apes; gibbons; gorillas; macaques; mandrills
stories: "Monkey Court, The"

monks (religion): *look under* monasticism

monotheism
DISCUSSIONS
God *volume* **5** *page* **44**

monotremes (mammals)
DISCUSSIONS
mammals *volume* **12** *page* **7**

platypuses *volume* **12** *page* **84**

Monrovia (city in Liberia)
ARTICLE *volume* **8** *page* **19**
DISCUSSIONS
atlas *volume* **13** *page* **6**
LEARN MORE *look under* Liberia; Western Africa

monsoons (weather)
DISCUSSIONS
Thailand *volume* **7** *page* **37**

monsters: *look under*
stories: dragons; "Golem of Prague, The"; "Odysseus and the Cyclops"

Montenegro (country)
DISCUSSIONS
Serbia *volume* **6** *page* **76**

Montreal (city in Canada)
DISCUSSIONS
Canada *volume* **9** *page* **10**

Moon (moon of Earth)
ARTICLE *volume* **2** *page* **27**
DISCUSSIONS
astronauts *volume* **2** *page* **19**
calendars *volume* **2** *page* **77**
gravity *volume* **2** *page* **50**
tides *volume* **1** *page* **46**
LEARN MORE *look under* Earth

moons (satellites of planets): *look under* Moon
for other moons look under Jupiter; Mars; Neptune; Pluto; Saturn; Uranus

Morales, Luis de (Spanish painter)
DISCUSSIONS
Mary illustration *volume* **5** *page* **61**

morning star (planet): *look under* Venus

Morocco (country)
DISCUSSIONS
atlas *volume* **13** *page* **6**
flag *volume* **8** *page* **62**
LEARN MORE *look under* Rabat

mosaics (art)
DISCUSSIONS
Jesus Christ photograph *volume* **5** *page* **58**

Moscow (city in Russia)
DISCUSSIONS
Russia *volume* **6** *page* **69,** photograph *volume* **6** *page* **69**

Moses (biblical person)
ARTICLE *volume* **5** *page* **54**
LEARN MORE *look under* Bible
people: Abraham; Jesus Christ; Muhammad
religions: Christianity; Islam; Judaism

mosques (places of worship)
DISCUSSIONS
Afghanistan photograph *volume* **7** *page* **44**
Baghdad photograph *volume* **7** *page* **72**
Cairo photograph *volume* **8** *page* **52**
Damascus *volume* **7** *page* **87,** photograph *volume* **7** *page* **86**
Islam *volume* **5** *page* **64,** photograph *volume* **5** *page* **65**
Nairobi photograph *volume* **8** *page* **33**
Tripoli *volume* **8** *page* **61**
LEARN MORE *look under* churches; gurdwaras; synagogues; temples

mosquitoes (insects)
ARTICLE *volume* **11** *page* **71**
LEARN MORE *look under* insects

mosses (plants)
ARTICLE *volume* **10** *page* **87**
LEARN MORE *look under* plants

moths (insects)
DISCUSSIONS
Did you know? *volume* **11** *page* **61**
LEARN MORE *look under* butterflies and moths

motion pictures
ARTICLE *volume* **2** *page* **82**
LEARN MORE *look under* cinema; photography
people: Ray, Satyajit

motorcars: *look under* automobiles

Mount Rushmore National Memorial (monument in South Dakota, U.S.)
DISCUSSIONS
Did you know? *volume* **3** *page* **10**
North America photograph *volume* **9** *page* **6**
United States photograph *volume* **9** *page* **26**
LEARN MORE *look under* United States of America

mountain goats
DISCUSSIONS
wild goats photograph *volume* **12** *page* **58**

mountain gorillas (animals)
DISCUSSIONS
gorillas photograph *volume* **12** *page* **10**

mountains
ARTICLE *volume* **1** *page* **16**
DISCUSSIONS
geography *volume* **1** *page* **6**
volcanoes *volume* **1** *page* **15**
LEARN MORE *look under*
people: Tenzing Norgay
places: Afghanistan; Alps; Andes; Antarctica; Argentina; Armenia; Austria; Diamond Head; Fuji, Mount; Himalayas; Italy; Karakoram Range; Kilimanjaro; McKinley, Mount; Mid-Oceanic Ridge; Nepal; Norway; Olympus, Mount; Scotland; Serbia; Switzerland; Table Mountain; Vesuvius, Mount
animals: donkeys; llamas; wild goats; yaks
things: glaciers; volcanoes

"Mousetrap, The" (play by Christie)
DISCUSSIONS
Did you know? *volume* **3** *page* **73**

movable type: *look under* type

movies: *look under* cinema; motion pictures

Mozart, Wolfgang Amadeus (Austrian composer)
ARTICLE *volume* **4** *page* **17**
DISCUSSIONS
Ludwig van Beethoven *volume* **3** *page* **40**
opera *volume* **3** *page* **76**
LEARN MORE *look under* classical music; opera

mozzarella (cheese)
DISCUSSIONS
Did you know? *volume* **12** *page* **49**

mudskippers (fish)
DISCUSSIONS
Did you know? *volume* **11** *page* **34**
LEARN MORE *look under* marine animals

Muhammad (prophet of Islam)
ARTICLE *volume* **5** *page* **67**
DISCUSSIONS
Islam *volume* **5** *page* **64**
LEARN MORE *look under* Islam; Koran
other people important to Islam: Abraham; Jesus Christ; Moses
other founders of religions: Buddha; Confucius; Zoroaster

mules (animals)
DISCUSSIONS
donkeys *volume* **12** *page* **42**

mummies
DISCUSSIONS
Did you know? *volume* **6** *page* **61**
Egypt *volume* **8** *page* **49**

Mumtaz Mahal, *also called* Arjumand Banu Baygam (Mughal queen)
DISCUSSIONS
Taj Mahal *volume* **7** *page* **52**

Muppets (puppets)
DISCUSSIONS
Jim Henson *volume* **3** *page* **85,** photograph *volume* **3** *page* **84**

murals (paintings)
DISCUSSIONS
Diego Rivera *volume* **3** *page* **22,** illustration *volume* **3** *page* **22**
painting *volume* **3** *page* **8**

music: *look under*
types of music: classical music; folk music; jazz; popular music
other things: musical instruments; opera; orchestra
non-Western music: Khan, Nusrat Fateh Ali; Ladysmith Black Mambazo; Shankar, Ravi
places: Vienna

musical instruments
DISCUSSIONS
jazz photograph *volume* **3** *page* **34**
Korean Peninsula *volume* **7** *page* **19**
Louis Armstrong photograph *volume* **3** *page* **38**
LEARN MORE *look under* guitars; piano; rhythm instruments; sitars

muskrats (animals)
ARTICLE *volume* **12** *page* **69**
LEARN MORE *look under* porcupines; rabbits and hares; raccoons
for other animals that live in water look under: aquatic animals

Muslims: *look under* Islam

mussels (animals)
DISCUSSIONS
mollusks photograph *volume* **11** *page* **48**

Myanmar (country)
DISCUSSIONS
atlas *volume* **13** *page* **12**
Buddhism photograph *volume* **5** *page* **81**
Yangôn *volume* **7** *page* **30**
LEARN MORE *look under*
people: Thant, U
animals: lesser pandas; tapirs

Myerson, Goldie (Israeli leader): *look under* Meir, Golda

mythology: *look under* myths

myths
ARTICLE *volume* **5** *page* **7**
DISCUSSIONS
Did you know? *volume* **5** *page* **77**
God *volume* **5** *page* **44**
LEARN MORE *look under*
stories: Atlas; "How Crow Brought Daylight to the World"; Moni Mekhala and Ream Eyso
other things: fables; folktales; Greek mythology; legends



Nairobi (city in Kenya)
ARTICLE *volume* **8** *page* **33**
DISCUSSIONS
atlas *volume* **13** *page* **6**
LEARN MORE *look under* Eastern Africa; Kenya

Nambung National Park (park in Australia)
DISCUSSIONS
Western Australia photograph *volume* **7** *page* **96**

Namib (desert in Africa)
DISCUSSIONS
Namibia *volume* **8** *page* **78**
LEARN MORE *look under* deserts

Namibia (country)
ARTICLE *volume* **8** *page* **78**
DISCUSSIONS
atlas *volume* **13** *page* **6**
flag *volume* **8** *page* **78**
LEARN MORE *look under* Southern Africa; Windhoek

Nanak, Guru (Indian religious leader)
DISCUSSIONS
Sikhism *volume* **5** *page* **88**

NASA, *also called* National Aeronautics and Space Administration (U.S. space agency)
DISCUSSIONS
Did you know? *volume* **2** *page* **58**
LEARN MORE *look under* astronauts; spacecraft

Nascimento, Edson Arantes do (Brazilian football player): *look under* Pelé

Nasser, Gamal Abdel (Egyptian leader)
DISCUSSIONS
Anwar el-Sadat *volume* **4** *page* **59**
LEARN MORE *look under* Egypt; Middle East

National Aeronautics and Space Administration (U.S. space agency): *look under* NASA

National Botanic Gardens (garden in Canberra, Australia)
DISCUSSIONS
Canberra *volume* **7** *page* **91**

nations: *look under* countries

Native Americans: *look under* American Indians

natural selection, *also called* survival of the fittest (biology)
DISCUSSIONS
Charles Darwin *volume* **4** *page* **73**
Galapagos Islands *volume* **9** *page* **68**

"Nautilus" (submarine)
DISCUSSIONS
Did you know? *volume* **2** *page* **99**

Navajo (people)
DISCUSSIONS
sand painting photograph *volume* **3** *page* **8**
LEARN MORE *look under* American Indians

navel oranges (fruit)
DISCUSSIONS
oranges photograph *volume* **10** *page* **48**

navjote (religion)
DISCUSSIONS
Zoroastrianism photograph *volume* **5** *page* **48**
LEARN MORE *look under* Bar Mitzvah

Nazis (German political movement)
DISCUSSIONS
Anne Frank *volume* **4** *page* **91**

Ndebele (people)
DISCUSSIONS
Zimbabwe *volume* **8** *page* **89**
LEARN MORE *look under* peoples

neap tides
DISCUSSIONS
tides *volume* **1** *page* **46**

Negro, Cerro (volcano in Nicaragua)
DISCUSSIONS
Nicaragua photograph *volume* **9** *page* **48**
LEARN MORE *look under* volcanoes

Nepal (country)
ARTICLE *volume* **7** *page* **55**
DISCUSSIONS
atlas *volume* **13** *page* **12**
flag *volume* **7** *page* **55**
religion photograph *volume* **5** *page* **42**
LEARN MORE *look under*
people: Tenzing Norgay
places: Kathmandu; South Asia
religion: Buddha; Buddhism; Hinduism
animals: lesser pandas; yaks

Nepomuceno, Rafael "Paeng" (Filipino athlete)
DISCUSSIONS
Did you know? *volume* **7** *page* **32**

Neptune (planet)
ARTICLE *volume* **2** *page* **42**
DISCUSSIONS
solar system illustration *volume* **2** *page* **20**
LEARN MORE *look under* solar system

Ness, Loch (lake in Scotland, U.K.): *look under* Loch Ness

Netherlands, the, *also called* Holland (country)
ARTICLE *volume* **6** *page* **38**
DISCUSSIONS
atlas *volume* **13** *page* **14**
flag *volume* **6** *page* **38**
tulips *volume* **10** *page* **9**
windmills photograph *volume* **2** *page* **69**
LEARN MORE *look under*
people: van Gogh, Vincent
places: Amsterdam; Western Europe

networks (broadcasting)
DISCUSSIONS
television *volume* **2** *page* **104**

neutrons (science)
DISCUSSIONS
atoms *volume* **2** *page* **46,** illustration *volume* **2** *page* **46**

Nevada (state in the U.S.)
DISCUSSIONS
Ruby Marshes photograph *volume* **1** *page* **27**

New Delhi (city in India)
DISCUSSIONS
atlas *volume* **13** *page* **12**
India *volume* **7** *page* **51,** photograph *volume* **7** *page* **51**

New Gourna Village (village in Egypt)
DISCUSSIONS
Hassan Fathy *volume* **3** *page* **15**

New Granada (historic territory in South America)
DISCUSSIONS
Simón Bolívar *volume* **4** *page* **89**

New Orleans (city in Louisiana, U.S.)
DISCUSSIONS
jazz *volume* **3** *page* **35**

New Testament (Bible)
DISCUSSIONS
Bible *volume* **5** *page* **63**
Christianity *volume* **5** *page* **57**
Jesus Christ *volume* **5** *page* **58**
Mary *volume* **5** *page* **61**

New World porcupines
DISCUSSIONS
porcupines *volume* **12** *page* **70,** photograph *volume* **12** *page* **70**

New York City (city in the U.S.)
ARTICLE *volume* **9** *page* **37**
DISCUSSIONS
atlas *volume* **13** *page* **8**
Did you know? *volume* **4** *page* **60,** *volume* **12** *page* **33**
great culture mart *volume* **9** *page* **38**
LEARN MORE *look under* jazz; United States of America; Washington, D.C.

New York City Ballet, *also called* NYCB (American ballet company)
DISCUSSIONS
Maria Tallchief *volume* **3** *page* **91**

New York Infirmary for Women and Children (hospital in New York City, New York, U.S.)
DISCUSSIONS
Elizabeth Blackwell *volume* **4** *page* **65**

New Zealand (country)
ARTICLE *volume* **7** *page* **99**
DISCUSSIONS
atlas *volume* **13** *page* **16**
flag *volume* **7** *page* **99**
horses photograph *volume* **12** *page* **40**
LEARN MORE *look under*
people: Hillary, Edmund; Te Kanawa, Kiri
places: Australia; Wellington
animals: kiwis; sheep

Newton, Sir Isaac (English scientist and mathematician)
ARTICLE *volume* **4** *page* **83**
LEARN MORE *look under* science

Niagara Falls (waterfall in North America)
ARTICLE *volume* **9** *page* **21**
DISCUSSIONS
atlas *volume* **13** *page* **8**
Canada *volume* **9** *page* **10**
Ontario *volume* **9** *page* **18**
rivers *volume* **1** *page* **31**
LEARN MORE *look under* waterfalls

Nicaragua (country)
ARTICLE *volume* **9** *page* **49**
DISCUSSIONS
atlas *volume* **13** *page* **8**
flag *volume* **9** *page* **49**
LEARN MORE *look under* Central America; volcanoes

nickels (coins)
DISCUSSIONS
Did you know? *volume* **12** *page* **51**

Niemeyer, Oscar (Brazilian architect)
DISCUSSIONS
Brasília *volume* **9** *page* **81**

Niépce, Joseph-Nicéphore (French inventor)
DISCUSSIONS
Did you know? *volume* **2** *page* **89**

Nigeria (country)
ARTICLE *volume* **8** *page* **20**
DISCUSSIONS
atlas *volume* **13** *page* **6**
flag *volume* **8** *page* **20**
Muslim school photograph *volume* **5** *page* **69**
LEARN MORE *look under*
people: Soyinka, Wole
places: West Africa
stories: "Monkey Court, The"

night writing (alphabet system)
DISCUSSIONS
Braille *volume* **2** *page* **75**

nightshade (plants)
DISCUSSIONS
Did you know? *volume* **2** *page* **60**
LEARN MORE *look under* flowering plants

Nile River (river in Africa)
ARTICLE *volume* **8** *page* **54**
DISCUSSIONS
atlas *volume* **13** *page* **6**
Africa *volume* **8** *page* **7**
Cairo *volume* **8** *page* **53,** photograph *volume* **8** *page* **53**
Egypt *volume* **8** *page* **51**
marshes *volume* **1** *page* **26**

rivers *volume* **1** *page* **31**
Uganda photograph *volume* **8** *page* **40**
LEARN MORE *look under* Fertile Crescent; North Africa

nimbostratus clouds
DISCUSSIONS
clouds *volume* **1** *page* **56**

Nirvana (religion): *look under* Enlightenment

Nobel Prizes (awards)
DISCUSSIONS
Did you know? *volume* **6** *page* **33**
LEARN MORE *look under* Arafat, Yasir; Begin, Menachem; Curie, Marie; King, Martin Luther, Jr.; Mandela, Nelson; Sadat, Anwar el-; Soyinka, Wole; Tagore, Rabindranath; Teresa, Mother

nonviolence
DISCUSSIONS
Buddhism *volume* **5** *page* **81**
Did you know? *volume* **5** *page* **84**
Hinduism *volume* **5** *page* **79**
Jainism *volume* **5** *page* **87**
Mahatma Gandhi *volume* **4** *page* **95**
Martin Luther King *volume* **4** *page* **98**

Noonuccal, Oodgeroo (Australian writer): *look under* Walker, Kath

Norgay, Tenzing (Nepalese mountain climber): *look under* Tenzing Norgay

Norse mythology
DISCUSSIONS
rainbows *volume* **1** *page* **63**
LEARN MORE *look under* Vikings

Norsemen: *look under* Vikings

North Africa: *look under*
places: Algeria; Algiers; Cairo; Egypt; Libya; Mediterranean Sea; Nile River; Rabat; Sudan, The; Suez Canal; Tripoli
animals: camels

North America (continent)
ARTICLE *volume* **9** *page* **7**
DISCUSSIONS
atlas *volume* **13** *page* **8**
continents *volume* **1** *page* **8,** map *volume* **1** *page* **8**
folk music *volume* **3** *page* **31**
Vikings *volume* **4** *page* **62**
LEARN MORE *look under*
countries: Canada; Mexico; United States of America
other places: Central America; Grand Canyon; Great Lakes; Greenland; Niagara Falls
animals: anoles; bats; bison; coyotes; donkeys; horses; mammoths and mastodons; muskrats; ocelots; opossums; porcupines; raccoons; sheep; walruses; wolves
people: American Indians
stories: Bunyan, Paul; "How Crow Brought Daylight to the World"; "Why Possum's Tail Is Bare"

North Island (island, New Zealand)
DISCUSSIONS
atlas *volume* **13** *page* **16**
New Zealand *volume* **7** *page* **99**

North Korea (country)
DISCUSSIONS
atlas *volume* **13** *page* **12**
flag *volume* **7** *page* **19**
Korean Peninsula *volume* **7** *page* **19**
LEARN MORE *look under* East Asia; Pyongyang

Northern Europe: *look under*
countries: Denmark; Iceland; Norway; Russia; Sweden
people: Vikings

Northern Ireland (country)
DISCUSSIONS
atlas *volume* **13** *page* **14**
flag *volume* **6** *page* **24**

northern lights, *also called* aurora borealis
DISCUSSIONS
Did you know? *volume* **9** *page* **12**
LEARN MORE *look under* light; rainbows

Northwest Indians
DISCUSSIONS
American Indians *volume* **4** *page* **87**

Norway (country)
ARTICLE *volume* **6** *page* **65**
DISCUSSIONS
atlas *volume* **13** *page* **14**
flag *volume* **6** *page* **65**
LEARN MORE *look under* Scandinavia; Vikings

notebook computers: *look under* laptop computers

Notre-Dame de Paris, Cathedral of (church in Paris, France)
DISCUSSIONS
architecture photograph *volume* **3** *page* **13**
Paris *volume* **6** *page* **35,** photograph *volume* **6** *page* **34**
LEARN MORE *look under* Paris

Nova Scotia (province in Canada)
DISCUSSIONS
atlas *volume* **13** *page* **8**
highway and coastline photograph *volume* **1** *page* **6**

nuclear bombs
DISCUSSIONS
cockroaches *volume* **11** *page* **65**
LEARN MORE *look under* nuclear energy

nuclear energy
ARTICLE *volume* **2** *page* **62**
DISCUSSIONS
Marie Curie *volume* **4** *page* **71**
LEARN MORE *look under* atoms; energy; thermal power; water power; wind power

nuclear fission (physics)
DISCUSSIONS
nuclear energy *volume* **2** *page* **62**

nuclear fusion (physics)
DISCUSSIONS
nuclear energy *volume* **2** *page* **62**

nuclear power: *look under* nuclear energy

nuclear power plant
DISCUSSIONS
nuclear energy *volume* **2** *page* **62,** photograph *volume* **2** *page* **63**

nuclear war
DISCUSSIONS
Cuba *volume* **9** *page* **59**

nucleus (atoms)
DISCUSSIONS
atoms *volume* **2** *page* **46,** illustration *volume* **2** *page* **46**
nuclear energy *volume* **2** *page* **62**

nuns (religion): *look under* monasticism

nuts (fruits)
ARTICLE *volume* **10** *page* **58**
LEARN MORE *look under* fruits and vegetables; trees

NYCB (American ballet company): *look under* New York City Ballet

O

Oahu (island in Hawaii, U.S.)
DISCUSSIONS
Honolulu *volume* **9** *page* **35**

oasis
ARTICLE *volume* **1** *page* **34**
DISCUSSIONS
deserts *volume* **1** *page* **20**
LEARN MORE *look under* geography; water

ocean liners (ships)
DISCUSSIONS
ships photograph *volume* **2** *page* **94**

ocean trenches
DISCUSSIONS
Pacific Ocean *volume* **1** *page* **41**
LEARN MORE *look under* Mariana Trench

oceans
ARTICLE *volume* **1** *page* **37**
DISCUSSIONS
deep-sea life *volume* **11** *page* **54**
pollution *volume* **1** *page* **73**
sand *volume* **1** *page* **18**
LEARN MORE *look under*
animals and plants: coral; deep-sea life; fish; gulls; jellyfish; manatees; mollusks; octopuses; penguins; salmon; seaweed; sharks; sponges; turtles; walruses; whales
oceans and seas: Atlantic Ocean; Indian Ocean; Mediterranean Sea; Pacific Ocean
other things: tides; water; waves

ocelots (animals)
ARTICLE *volume* **12** *page* **27**
LEARN MORE *look under* carnivores; cats; lions; tigers

octopuses (ocean animals)
ARTICLE *volume* **11** *page* **51**
LEARN MORE *look under* marine animals; mollusks

Odysseus (Greek legend)
DISCUSSIONS
Odysseus and the Cyclops *volume* **5** *page* **27**

"Odysseus and the Cyclops" (Greek legend)
ARTICLE *volume* **5** *page* **27**
LEARN MORE *look under*
other Greek stories: Aesop's fables; Atlas; Trojan Horse, The
other legends: Bunyan, Paul; dragons; "Golem of Prague, The"; Knights of the Round Table

Ogun (Yoruba god)
DISCUSSIONS
Did you know? *volume* **3** *page* **63**

oil, *also called* petroleum
ARTICLE *volume* **2** *page* **84**
DISCUSSIONS
Oman *volume* **7** *page* **82**
LEARN MORE *look under* automobiles; pollution; "Poor Man and the Flask of Oil, The"
places: Libya; Luanda; Middle East; Norway

oil spill
DISCUSSIONS
pollution *volume* **1** *page* **73,**
photograph *volume* **1** *page* **72**

Okavango River (river in Africa)
DISCUSSIONS
Botswana *volume* **8** *page* **71**
LEARN MORE *look under* Botswana; rivers

Okefenokee Swamp (swamp in the U.S.)
DISCUSSIONS
swamps *volume* **1** *page* **28**

Old Faithful (geyser in Wyoming, U.S.)
DISCUSSIONS
thermal power photograph *volume* **2** *page* **65**

Old Parliament House (building in Canberra, Australia)
DISCUSSIONS
Canberra *volume* **7** *page* **91,**
photograph *volume* **7** *page* **91**

Old Testament (Bible)
DISCUSSIONS
Bible *volume* **5** *page* **63**
Judaism *volume* **5** *page* **50**

Old Town Square (square in Prague, Czech Republic)
DISCUSSIONS
Prague *volume* **6** *page* **55**

Old World porcupines
DISCUSSIONS
porcupines *volume* **12** *page* **70,**
photograph *volume* **12** *page* **71**

Oldenburg, Claes (American artist)
DISCUSSIONS
sculpture photograph *volume* **3** *page* **10**

olive
ARTICLE *volume* **10** *page* **61**
DISCUSSIONS
Greece *volume* **6** *page* **83**
LEARN MORE *look under* fruits and vegetables; trees

Olmec (people)
DISCUSSIONS
Mexico *volume* **9** *page* **41**
LEARN MORE *look under* American Indians

Olympic Games
DISCUSSIONS
Athens *volume* **6** *page* **85**
Cathy Freeman *volume* **4** *page* **92,**
photograph *volume* **4** *page* **92,**
photograph *volume* **4** *page* **93**
Greece *volume* **6** *page* **83**
LEARN MORE *look under* sports

Olympic Peninsula (peninsula in Washington, U.S.)
DISCUSSIONS
peninsulas *volume* **1** *page* **22**

Olympus, Mount (mountain in Greece)
DISCUSSIONS
Greece *volume* **6** *page* **83**
LEARN MORE *look under* mountains

Olympus Mons (volcano on Mars)
DISCUSSIONS
Mars *volume* **2** *page* **35**
LEARN MORE *look under* volcanoes

Oman (country)
ARTICLE *volume* **7** *page* **82**
DISCUSSIONS
atlas *volume* **13** *page* **12**
flag *volume* **7** *page* **82**
LEARN MORE *look under* Arabia; Middle East

Ontario (province in Canada)
ARTICLE *volume* **9** *page* **18**
LEARN MORE *look under* Canada; Great Lakes

Ontario, Lake (lake in North America)
DISCUSSIONS
Great Lakes *volume* **9** *page* **23**
Ontario *volume* **9** *page* **19**
LEARN MORE *look under* North America

oolong tea
DISCUSSIONS
tea *volume* **10** *page* **39**

opera (music)
ARTICLE *volume* **3** *page* **76**
DISCUSSIONS
classical music *volume* **3** *page* **36**
LEARN MORE *look under* music; theater
people: Mozart, Wolfgang Amadeus; Sutherland, Joan; Te Kanawa, Kiri

opossums, *also called* possums (animals)
ARTICLE *volume* **12** *page* **83**

LEARN MORE *look under* marsupials
stories: "Why Possum's Tail Is Bare"

orange juice
DISCUSSIONS
oranges *volume* **10** *page* **49**

oranges (fruit)
ARTICLE *volume* **10** *page* **49**
LEARN MORE *look under* fruits and vegetables; trees

orangutans (apes)
DISCUSSIONS
apes *volume* **12** *page* **9,** photograph *volume* **12** *page* **8**

orbit (astronomy)
DISCUSSIONS
asteroids *volume* **2** *page* **22**

orchestra (music)
DISCUSSIONS
classical music *volume* **3** *page* **36,** photograph *volume* **3** *page* **37**
LEARN MORE *look under* musical instruments

orchids (plants)
ARTICLE *volume* **10** *page* **17**
LEARN MORE *look under* flowers

Oriental cockroaches (insects)
DISCUSSIONS
cockroaches *volume* **11** *page* **65**
LEARN MORE *look under* insects

Ormazd (Zoroastrian god): *look under* Ahura Mazda

Orthodox Judaism
DISCUSSIONS
Judaism *volume* **5** *page* **50**

Osage (Native American people)
DISCUSSIONS
Maria Tallchief *volume* **3** *page* **91**
LEARN MORE *look under* American Indians

ostriches (birds)
ARTICLE *volume* **11** *page* **31**
LEARN MORE *look under* birds; kiwis

Ottawa (city in Canada)
ARTICLE *volume* **9** *page* **14**
DISCUSSIONS
atlas *volume* **13** *page* **8**

outer space: *look under* space

Ovimbundu (people)
DISCUSSIONS
Angola *volume* **8** *page* **67**

owls (birds)
ARTICLE *volume* **11** *page* **13**
LEARN MORE *look under* birds

oxygen (chemical element)
DISCUSSIONS
leaves *volume* **1** *page* **67**



Pacific Ocean
ARTICLE *volume* **1** *page* **41**
DISCUSSIONS
Ferdinand Magellan *volume* **4** *page* **101**
Great Barrier Reef *volume* **7** *page* **92**
islands photograph *volume* **1** *page* **12**
Panama City *volume* **9** *page* **50**
LEARN MORE *look under* Easter Island; Galapagos Islands

Pacific walruses
DISCUSSIONS
walruses *volume* **12** *page* **75**

pagodas (architecture)
DISCUSSIONS
Japan photograph *volume* **7** *page* **15**

painted turtles (animals)
DISCUSSIONS
turtles photograph *volume* **11** *page* **88**

painting (art)
ARTICLE *volume* **3** *page* **8**
LEARN MORE *look under*
people: Goya, Francisco de; Hiroshige; Kahlo, Frida; Michelangelo; Picasso, Pablo; Rivera, Diego; van Gogh, Vincent; Xia Gui

Pakistan (country)
ARTICLE *volume* **7** *page* **59**
DISCUSSIONS
atlas *volume* **13** *page* **12**
Bangladesh *volume* **7** *page* **47**
flag *volume* **7** *page* **59**
Indus Civilization *volume* **7** *page* **60**
Muslim school photograph *volume* **5** *page* **69**
LEARN MORE *look under*
people: Jinnah, Mohammed Ali; Khan, Nusrat Fateh Ali
places: South Asia
religion: Islam

palaces
DISCUSSIONS
Kathmandu *volume* **7** *page* **56**
Seoul *volume* **7** *page* **23,** photograph *volume* **7** *page* **22**
Thailand *volume* **7** *page* **37**
LEARN MORE *look under* architecture
individual palaces: Buckingham Palace; Chaillot Palace; Congressional Palace; Forbidden City; Iolani Palace; Royal Palace; Schönbrunn Palace

paleontology (science)
DISCUSSIONS
geology *volume* **1** *page* **75**
LEARN MORE *look under* Cretaceous Period; fossils

Palestine (region in the Middle East)
DISCUSSIONS
Golda Meir *volume* **4** *page* **57**
Islam photograph *volume* **5** *page* **64**
Isreal *volume* **7** *page* **75**
Menachem Begin *volume* **4** *page* **35**
Yasir Arafat *volume* **4** *page* **30,** photograph *volume* **4** *page* **31**
LEARN MORE *look under* Israel; Middle East

Palestine Liberation Organization, *also called* PLO
DISCUSSIONS
Yasir Arafat *volume* **4** *page* **30**

Palm Pilot (computer)
DISCUSSIONS
handheld computers photograph *volume* **2** *page* **79**

palms
ARTICLE *volume* **10** *page* **45**
DISCUSSIONS
date palms photograph *volume* **1** *page* **35**
LEARN MORE *look under* trees

Pampas, the (grasslands in Argentina)
DISCUSSIONS
Argentina *volume* **9** *page* **90**
LEARN MORE *look under* grasses

"Pan American Unity" (mural by Rivera)
DISCUSSIONS
Diego Rivera illustration *volume* **3** *page* **22**

Panama (country)
DISCUSSIONS
flag *volume* **9** *page* **50**
Panama Canal *volume* **9** *page* **52**
LEARN MORE *look under*
places: Central America; Panama City

Panama Canal (canal in Central America)
ARTICLE *volume* **9** *page* **52**
DISCUSSIONS
atlas *volume* **13** *page* **8**
Panama City *volume* **9** *page* **50**
LEARN MORE *look under* canals; Central America; Panama City

Panama City (city in Panama)
ARTICLE *volume* **9** *page* **50**
DISCUSSIONS
atlas *volume* **13** *page* **8**
LEARN MORE *look under* Panama; Panama Canal

pandas (animals)
ARTICLE *volume* **12** *page* **38**
LEARN MORE *look under* carnivores

paper
ARTICLE *volume* **2** *page* **87**
DISCUSSIONS
rushes and reeds *volume* **10** *page* **65**
LEARN MORE *look under* printing; trees

paper mills
DISCUSSIONS
paper *volume* **2** *page* **87,** photograph *volume* **2** *page* **86**

paprika (plant)
DISCUSSIONS
peppers *volume* **10** *page* **34**

Papua New Guinea (country)
DISCUSSIONS
tsunamis *volume* **1** *page* **50**
yams photograph *volume* **10** *page* **32**
LEARN MORE *look under* Southeast Asia

papyruses (plants)
DISCUSSIONS
rushes and reeds *volume* **10** *page* **65**

Paraguay (country)
ARTICLE *volume* **9** *page* **83**
DISCUSSIONS
atlas *volume* **13** *page* **11**
Asunción *volume* **9** *page* **85**
flag *volume* **9** *page* **83**
LEARN MORE *look under*
places: South America
animals: armadillos; bats; monkeys

Paris (city in France)
ARTICLE *volume* **6** *page* **35**
DISCUSSIONS
atlas *volume* **13** *page* **14**
France photograph *volume* **6** *page* **32**
LEARN MORE *look under*
places: Bucharest; Eiffel Tower; France; Louvre

parks: *look under* Banff National Park; Beihai Park; Central Park; Etosha National Park; Glacier Bay National Park; Hwange National Park; Mount Rushmore National Memorial; Nambung National Park; National Botanic Gardens; Phoenix Park

Parliament, Houses of (buildings in London, England, U.K.)
DISCUSSIONS
London *volume* **6** *page* **16**

Parliament House (building in Canberra, Australia)
DISCUSSIONS
Canberra *volume* **7** *page* **91**

parrots and cockatoos (birds)
ARTICLE *volume* **11** *page* **11**
DISCUSSIONS
Amazon photograph *volume* **9** *page* **65**
LEARN MORE *look under* Amazon parrot; birds

Parsis (people)
DISCUSSIONS
Zoroastrianism *volume* **5** *page* **49,** photograph *volume* **5** *page* **48**
LEARN MORE *look under* India; peoples

Parson's chameleons (lizards)
DISCUSSIONS
chameleons photograph *volume* **11** *page* **86**

Parthenon (temple in Greece)
ARTICLE *volume* **6** *page* **87**
LEARN MORE *look under* Athens; temples

passenger pigeons (birds)
DISCUSSIONS
Did you know? *volume* **9** *page* **26**
LEARN MORE *look under* birds

pasta (food)
DISCUSSIONS
Did you know? *volume* **7** *page* **9**
LEARN MORE *look under* food

Pasteur, Louis (French scientist)
ARTICLE *volume* **4** *page* **85**
LEARN MORE *look under*
people: Curie, Marie
things: medicine; science

pasteurization
DISCUSSIONS
Louis Pasteur *volume* **4** *page* **85**

Patagonia (region in Argentina)
DISCUSSIONS
Argentina *volume* **9** *page* **90,** photograph *volume* **9** *page* **91**

patas monkeys (animals)
DISCUSSIONS
monkeys photograph *volume* **12** *page* **14**

"Pather Panchali" (film by Ray)
DISCUSSIONS
Satyajit Ray *volume* **3** *page* **89**

"Paula" (book by Allende)
DISCUSSIONS
Isabel Allende *volume* **4** *page* **7**

PC (computer): *look under* personal computers

peacocks (birds)
ARTICLE *volume* **11** *page* **28**
LEARN MORE *look under* birds

peanuts
ARTICLE *volume* **10** *page* **30**
DISCUSSIONS
nuts *volume* **10** *page* **59**
LEARN MORE *look under* fruits and vegetables; plants

Pearl Harbor (naval base in Hawaii, U.S.)
DISCUSSIONS
Honolulu *volume* **9** *page* **35**

peat moss (plant)
DISCUSSIONS
mosses *volume* **10** *page* **87**
LEARN MORE *look under* mosses

Pei, I. M., *also called* Ieoh Ming Pei (Chinese-American architect)
ARTICLE *volume* **4** *page* **18**
LEARN MORE *look under* architecture
other architects: Fathy, Hassan; Michelangelo

Peking (city in China): *look under* Beijing

Peking opera, *also called* jingxi
DISCUSSIONS
opera *volume* **3** *page* **76,** photograph *volume* **3** *page* **77**

Pelé, *also called* Edson Arantes do Nascimento (Brazilian athlete)
ARTICLE *volume* **4** *page* **104**
DISCUSSIONS
Brazil *volume* **9** *page* **79**
LEARN MORE *look under* sports

penguins (birds)
ARTICLE *volume* **11** *page* **27**

DISCUSSIONS
Antarctica *volume* **1** *page* **11**
LEARN MORE *look under* birds; marine animals

penicillin (drug)
DISCUSSIONS
medicine *volume* **2** *page* **60**

peninsulas
ARTICLE *volume* **1** *page* **22**
LEARN MORE *look under*
places: Italy; Korean Peninsula
similar things: islands

Pentateuch (sacred text): *look under* Torah

peoples: *look under*
Africa: Berbers; Boers; Fulani; Herero; Malagasy; Masai; Mbundu; Ndebele; Tswana; Wolof; Yoruba; Zulu
Americas: African Americans; American Indians; Inuit; Ladino
Asia, Australia, and New Zealand: Arabs; Australian Aboriginals; Canaanites; Israel; Khmer; Maori; Parsis; Sherpas; Sumerians
Europe: Franks; Vikings

peppers (plants)
ARTICLE *volume* **10** *page* **34**
LEARN MORE *look under* fruits and vegetables

perching ducks (birds)
DISCUSSIONS
ducks *volume* **11** *page* **21**

percussion instruments (music): *look under* rhythm instruments

performing arts: *look under* cinema; dance; opera; theater

periscopes (viewing devices)
DISCUSSIONS
submarines *volume* **2** *page* **99**

Persia (country): *look under* Iran

personal computers, *also called* PC
DISCUSSIONS
computers *volume* **2** *page* **79**

Perth (city in Australia)
DISCUSSIONS
atlas *volume* **13** *page* **16**
Western Australia *volume* **7** *page* **97**

Peru (country)
ARTICLE *volume* **9** *page* **75**
DISCUSSIONS
atlas *volume* **13** *page* **11**
Amazon *volume* **9** *page* **62,** map *volume* **9** *page* **63**
flag *volume* **9** *page* **75**
llamas photograph *volume* **12** *page* **62,** photograph *volume* **12** *page* **63**
LEARN MORE *look under*
people: Bolívar, Simón
places: South America
animals: alpacas; llamas

Pest (former town in Hungary): *look under* Budapest

petroleum: *look under* oil

petrology (science)
DISCUSSIONS
geology *volume* **1** *page* **75**

pharaohs (Egyptian kings)
DISCUSSIONS
Did you know? *volume* **5** *page* **44**
Egypt *volume* **8** *page* **49**
wheat *volume* **10** *page* **75**

Philippines (country)
ARTICLE *volume* **7** *page* **33**
DISCUSSIONS
atlas *volume* **13** *page* **12**
Ferdinand Magellan *volume* **4** *page* **101**
flag *volume* **7** *page* **33**
LEARN MORE *look under* Southeast Asia

Phnom Penh (city in Cambodia)
ARTICLE *volume* **7** *page* **24**
DISCUSSIONS
atlas *volume* **13** *page* **12**
LEARN MORE *look under* Southeast Asia

Phoenix Park (park in Dublin, Ireland)
DISCUSSIONS
Dublin *volume* **6** *page* **26**

photography
ARTICLE *volume* **2** *page* **88**
DISCUSSIONS
motion pictures *volume* **2** *page* **82**
LEARN MORE *look under*
communications; motion pictures

photosynthesis (biology)
DISCUSSIONS
energy *volume* **2** *page* **48**
leaves *volume* **1** *page* **67**

physical sciences: *look under* astronomy; atoms; Earth; electricity; energy; gravity; liquids, solids, and gases; measurement; medicine; nuclear energy; technology; temperatures; thermal power; water power; wind power

piano
DISCUSSIONS
Ludwig van Beethoven *volume* **3** *page* **40**

Piazzi, Giuseppe (Italian astronomer)
DISCUSSIONS
asteroids *volume* **2** *page* **22**
LEARN MORE *look under* astronomy
other astronomers: Copernicus, Nicolaus; Galileo Galilei; Kepler, Johannes

Picasso, Pablo (Spanish artist)
ARTICLE *volume* **4** *page* **20**
LEARN MORE *look under* painting; sculpture

"Pietà" (painting by Morales)
DISCUSSIONS
Mary illustration *volume* **5** *page* **61**

"Pietà" (sculpture by Michelangelo): *look under* "Madonna della Pietà"

pigs
ARTICLE *volume* **12** *page* **64**
LEARN MORE *look under* farming; ungulates

Pillar Edicts (inscriptions by Ashoka): *look under* Rock Edicts

Pillars of Islam
DISCUSSIONS
Islam *volume* **5** *page* **64**

pimientos (plants)
DISCUSSIONS
peppers *volume* **10** *page* **34**

pines (trees)
ARTICLE *volume* **10** *page* **89**
LEARN MORE *look under* trees

pipelines
DISCUSSIONS
oil *volume* **2** *page* **84**

piranhas (fish)
ARTICLE *volume* **11** *page* **41**
DISCUSSIONS
Amazon *volume* **9** *page* **64**
LEARN MORE *look under* fish

pirate spiders
DISCUSSIONS
spiders *volume* **11** *page* **72**

pirates
DISCUSSIONS
Did you know? *volume* **9** *page* **54**

pistachios
DISCUSSIONS
nuts *volume* **10** *page* **59**

LEARN MORE *look under* nuts

pitcher plant
DISCUSSIONS
carnivorous plants *volume* **10** *page* **19**

plains buffalo: *look under* bison

Plains Indians
DISCUSSIONS
American Indians *volume* **4** *page* **87**

planets
ARTICLE *volume* **2** *page* **28**
DISCUSSIONS
solar system *volume* **2** *page* **21**
LEARN MORE *look under*
planets in our solar system: Earth; Jupiter; Mars; Mercury; Neptune; Saturn; Uranus; Venus
other things: asteroids; Pluto

plants
DISCUSSIONS
fossilized fern photograph *volume* **1** *page* **84**
leaves *volume* **1** *page* **67**
Luther Burbank *volume* **4** *page* **66**
medicine *volume* **2** *page* **60**
rainforests *volume* **1** *page* **24**
LEARN MORE *look under* cactus; cotton; flowering plants; flowers; fossils; fruits and vegetables; grasses; heath; mosses; trees

Plato (Greek philosopher)
DISCUSSIONS
Socrates *volume* **4** *page* **24**

platypuses (animals)
ARTICLE *volume* **12** *page* **84**
LEARN MORE *look under* mammals
other Australian animals: kangaroos; koalas

plays (literature and performance): *look under* drama

playwrights
DISCUSSIONS
theatre *volume* **3** *page* **72**
LEARN MORE *look under* Shakespeare, William; Soyinka, Wole

Plaza Mayor (plaza in Madrid, Spain): *look under* Mayor Plaza

PLO (Palestinian political organization): *look under* Palestine Liberation Organization

Pluto (Disney character)
DISCUSSIONS
Did you know? *volume* **2** *page* **45**

Pluto (dwarf planet)
ARTICLE *volume* **2** *page* **45**
DISCUSSIONS
Did you know? *volume* **2** *page* **7**
planets *volume* **2** *page* **28**
solar system *volume* **2** *page* **21,** illustration *volume* **2** *page* **20**

poetry: *look under*
people: Basho; Brooks, Gwendolyn; Dickinson, Emily; Tagore, Rabindranath; Walker, Kath
things: qawwali

Point Xaafuun (coastal feature of Somalia)
DISCUSSIONS
Did you know? *volume* **8** *page* **37**

Poland (country)
ARTICLE *volume* **6** *page* **57**
DISCUSSIONS
atlas *volume* **13** *page* **14**
flag *volume* **6** *page* **57**
LEARN MORE *look under*
people: Copernicus, Nicolaus
places: Central Europe

polar bears
DISCUSSIONS
Did you know? *volume* **9** *page* **11**
mammals photograph *volume* **12** *page* **6**
LEARN MORE *look under* carnivores

polders (reclaimed land)
DISCUSSIONS
Netherlands, the *volume* **6** *page* **38**

police
DISCUSSIONS
dogs photograph *volume* **12** *page* **29**

pollination
DISCUSSIONS
bats *volume* **12** *page* **89**
Luther Burbank *volume* **4** *page* **66**

polliwogs (animals): *look under* tadpoles

pollution
ARTICLE *volume* **1** *page* **73**
DISCUSSIONS
Atlantic Ocean *volume* **1** *page* **39**
Great Lakes *volume* **9** *page* **23**
nuclear energy *volume* **2** *page* **62**
LEARN MORE *look under* acid rain; recycling

Polyphemus (Greek legend)
DISCUSSIONS
Greek legend *volume* **5** *page* **27**

polytheism
DISCUSSIONS
God *volume* **5** *page* **44**

Pompeii (ancient city in Italy)
DISCUSSIONS
dogs *volume* **12** *page* **29**
volcanoes *volume* **1** *page* **15**

Pompey the Great (Roman statesman)
DISCUSSIONS
Julius Caesar *volume* **4** *page* **37**

"Poor Man and the Flask of Oil, The" (South Asian folktale)
ARTICLE *volume* **5** *page* **18**
LEARN MORE *look under*
other Asian stories: Moni Mekhala and Ream Eyso; "Tiger in the Trap, The"; "Yeh-Shen"
other folktales: "Ananse and the Wisdom Pot"; "How Kangaroo Got His Tail"; "Monkey Court, The"; "Rabbit Throws Away His Sandal"

popular music, *also called* pop music
ARTICLE *volume* **3** *page* **32**
LEARN MORE *look under*
people: Santana, Carlos
things: folk music; jazz; Ladysmith Black Mambazo

porcupines
ARTICLE *volume* **12** *page* **70**
LEARN MORE *look under* muskrats; rabbits and hares; raccoons

"Portrait of Dr. Gachet" (painting by van Gogh)
DISCUSSIONS
Did you know? *volume* **3** *page* **26**

portraits (art)
DISCUSSIONS
Francisco de Goya illustration *volume* **4** *page* **14**
Frida Kahlo *volume* **3** *page* **19,** illustration *volume* **3** *page* **18**
painting *volume* **3** *page* **8**
Vincent van Gogh illustration *volume* **3** *page* **27**

Portugal (country)
ARTICLE *volume* **6** *page* **8**
DISCUSSIONS
atlas *volume* **13** *page* **14**
Angola *volume* **8** *page* **67**
Congo region *volume* **8** *page* **9**
flag *volume* **6** *page* **8**
Luanda *volume* **8** *page* **68**
South America *volume* **9** *page* **61**
LEARN MORE *look under*
people: Magellan, Ferdinand
places: Western Europe

possums (animals): *look under* opossums

potatoes (vegetables)
DISCUSSIONS
Did you know? *volume* **4** *page* **67,** *volume* **6** *page* **36,** *volume* **10** *page* **40**
Ireland *volume* **6** *page* **24**
LEARN MORE *look under* fruits and vegetables

Prado Museum (museum in Madrid, Spain)
DISCUSSIONS
Madrid *volume* **6** *page* **13**

Prague, *also called* Praha (city in the Czech Republic)
ARTICLE *volume* **6** *page* **55**
DISCUSSIONS
atlas *volume* **13** *page* **14**
LEARN MORE *look under*
places: Czech Republic
stories: "Golem of Prague, The"

Prague Castle (castle in Prague, Czech Republic): *look under* Hradcany Castle

Praha (city in the Czech Republic): *look under* Prague

prairies
DISCUSSIONS
grasses *volume* **10** *page* **63,**
photograph *volume* **10** *page* **63**

prayer
DISCUSSIONS
Islam *volume* **5** *page* **64,** photograph *volume* **5** *page* **64,** photograph *volume* **5** *page* **65**
LEARN MORE *look under* worship

Preah Morokot (pagoda in Phnom Penh, Cambodia)
DISCUSSIONS
Phnom Penh *volume* **7** *page* **24**

prehistoric ages: *look under* chalk; dinosaurs; fossils; mammoths and mastodons; tyrannosaurs

Preservation Jazz Band
DISCUSSIONS
jazz photograph *volume* **3** *page* **34**

Pretoria (city in South Africa)
DISCUSSIONS
atlas *volume* **13** *page* **6**
South Africa *volume* **8** *page* **82**
South African cities *volume* **8** *page* **87**

Pretorius, Marthinus (Boer South-African leader)
DISCUSSIONS
South African cities *volume* **8** *page* **87**

prides (groups of lions)
DISCUSSIONS
lions *volume* **12** *page* **24**

primates (animals): *look under* apes; chimpanzees; gibbons; gorillas; lemurs; macaques; monkeys

printing
ARTICLE *volume* **2** *page* **90**
LEARN MORE *look under*
people: Hiroshige
things: paper

printing presses
DISCUSSIONS
printing *volume* **2** *page* **90,** illustration *volume* **2** *page* **91**

prism
DISCUSSIONS
Sir Isaac Newton *volume* **4** *page* **83**

programs (computer science)
DISCUSSIONS
computers *volume* **2** *page* **79**

"Promised Land" (biblical place): *look under* Israel

Prophets (sacred text)
DISCUSSIONS
Bible *volume* **5** *page* **63**

Protestantism (religion)
DISCUSSIONS
Christianity *volume* **5** *page* **57**

protons (atoms)
DISCUSSIONS
atoms *volume* **2** *page* **46,** illustration *volume* **2** *page* **46**

Ptolemy II Philadelphus (Egyptian king)
DISCUSSIONS
Did you know? *volume* **7** *page* **78**

Pueblo Indians
DISCUSSIONS
American Indians *volume* **4** *page* **87**

Puerta del Sol (public square in Madrid, Spain)
DISCUSSIONS
Madrid *volume* **6** *page* **13**

Puerto Rico (island commonwealth)
ARTICLE *volume* **9** *page* **57**
DISCUSSIONS
atlas *volume* **13** *page* **8**
LEARN MORE *look under* Central America; islands; United States of America; West Indies

pulp: *look under* wood pulp

puppetry
DISCUSSIONS
Indonesia *volume* **7** *page* **29**
LEARN MORE *look under* Henson, Jim

purring
DISCUSSIONS
cats *volume* **12** *page* **21**
Did you know? *volume* **12** *page* **23**

pygmy hippopotamuses (animals)
DISCUSSIONS
Liberia *volume* **8** *page* **17**
LEARN MORE *look under* hippopotamuses

pygmy hogs (mammals)
DISCUSSIONS
pigs *volume* **12** *page* **64**

pygmy parrots (birds)
DISCUSSIONS
parrots and cockatoos *volume* **11** *page* **11**

Pyongyang (city in North Korea)
ARTICLE *volume* **7** *page* **20**
DISCUSSIONS
atlas *volume* **13** *page* **12**
LEARN MORE *look under* East Asia; Korean Peninsula

pyramids (architecture)
DISCUSSIONS
Egypt *volume* **8** *page* **49,** photograph *volume* **8** *page* **48**
I. M. Pei *volume* **4** *page* **18,** photograph *volume* **4** *page* **18**
LEARN MORE *look under* architecture

pythons (animals)
DISCUSSIONS
snakes photograph *volume* **11** *page* **78**



qawwali (music)
DISCUSSIONS
Nusrat Fateh Ali Khan *volume* **3** *page* **43**

Quadricycles (vehicles)
DISCUSSIONS
automobiles *volume* **2** *page* **72,** photograph *volume* **2** *page* **73**

quarks (science)
DISCUSSIONS
atoms *volume* **2** *page* **46**

Quebec (province in Canada)
ARTICLE *volume* **9** *page* **17**
LEARN MORE *look under* Canada

Quebec City (city in Canada)
DISCUSSIONS
Quebec *volume* **9** *page* **17**
LEARN MORE *look under* Canada

Quechua (language)
DISCUSSIONS
Peru *volume* **9** *page* **75**
LEARN MORE *look under* Inca civilization; language

"Queen Elizabeth 2" (ship)
DISCUSSIONS
ocean liners photograph *volume* **2** *page* **94**

Queenstown (city in New Zealand)
DISCUSSIONS
New Zealand photograph *volume* **7** *page* **98**

Questacon (science museum in Canberra, Australia)
DISCUSSIONS
Canberra *volume* **7** *page* **91**

quetzals (birds)
DISCUSSIONS
Guatemala photograph *volume* **9** *page* **47**
LEARN MORE *look under* birds

quills, *also called* spines
DISCUSSIONS
porcupines *volume* **12** *page* **70**

Qur'an (religious book): *look under* Koran

Qutub Minar (building in New Delhi, India)
DISCUSSIONS
Did you know? *volume* **7** *page* **50**



Rabat (city in Morocco)
ARTICLE *volume* **8** *page* **62**
DISCUSSIONS
atlas *volume* **13** *page* **6**
LEARN MORE *look under* Morocco; North Africa

"Rabbit Throws Away His Sandal" (Mayan folktale)
ARTICLE *volume* **5** *page* **40**
LEARN MORE *look under*
other American stories: Bunyan, Paul; "How Crow Brought Daylight to the World"; "Why Possum's Tail Is Bare"
other folktales: "Ananse and the Wisdom Pot"; "How Kangaroo Got His Tail"; "Monkey Court, The"; "Poor Man and the Flask of Oil, The"; "Tiger in the Trap, The"; "Yeh-Shen"

rabbitfish
DISCUSSIONS
fish *volume* **11** *page* **35**
LEARN MORE *look under* marine animals

rabbits and hares
ARTICLE *volume* **12** *page* **93**
LEARN MORE *look under* mammals; muskrats; porcupines; raccoons
stories: "Rabbit Throws Away His Sandal"; "Tiger in the Trap, The"; "Why Possum's Tail Is Bare"

rabies (disease)
DISCUSSIONS
Louis Pasteur *volume* **4** *page* **85**

Rabin, Yitzhak (prime minister of Israel)
DISCUSSIONS
Yasir Arafat *volume* **4** *page* **30**
LEARN MORE *look under* Israel; Middle East

raccoons, *also called* ringtails (animals)
ARTICLE *volume* **12** *page* **35**
LEARN MORE *look under* carnivores; muskrats; pandas; porcupines; rabbits and hares

radiation (physics)
DISCUSSIONS
nuclear energy *volume* **2** *page* **62**

radio
ARTICLE *volume* **2** *page* **93**
DISCUSSIONS
Did you know? *volume* **2** *page* **80**
popular music *volume* **3** *page* **32**
television *volume* **2** *page* **104**
LEARN MORE *look under* communications
things: radio telescopes

radio telescopes
DISCUSSIONS
Did you know? *volume* **2** *page* **103**

radioactivity
DISCUSSIONS
Marie Curie *volume* **4** *page* **71**

raft: *look under* rafting

rafting (sport)
DISCUSSIONS
Colorado River photograph *volume* **9** *page* **32**

raga (Indian music)
DISCUSSIONS
Did you know? *volume* **3** *page* **49**

Rai, Gobind (Indian religious teacher): *look under* Gobind Singh

railroad
DISCUSSIONS
transportation *volume* **2** *page* **107**

rain (weather)
DISCUSSIONS
clouds *volume* **1** *page* **56**
LEARN MORE *look under* weather
stories: Moni Mekhala and Ream Eyso

rainbows (weather)
ARTICLE *volume* **1** *page* **63**
LEARN MORE *look under* weather

rainforests
ARTICLE *volume* **1** *page* **24**
DISCUSSIONS
Amazon *volume* **9** *page* **64**
Brazil *volume* **9** *page* **79**
Did you know? *volume* **11** *page* **11**
Nicaragua *volume* **9** *page* **49**
pines photograph *volume* **10** *page* **88**
LEARN MORE *look under* Amazon; ecosystems; trees

Ramadan (Islam)
DISCUSSIONS
Islam *volume* **5** *page* **64,** photograph *volume* **5** *page* **64**

"Ran" (film by Kurosawa)
DISCUSSIONS
Akira Kurosawa photograph *volume* **3** *page* **86**

Rangoon (city in Myanmar): *look under* Yangon

rap music
DISCUSSIONS
Did you know? *volume* **3** *page* **30**

Ray, Satyajit (Indian film director)
ARTICLE *volume* **3** *page* **89**
DISCUSSIONS
Ravi Shankar *volume* **3** *page* **48**
LEARN MORE *look under* motion pictures

realism (art)
DISCUSSIONS
Francisco de Goya *volume* **4** *page* **14**
LEARN MORE *look under* painting

Ream Eyso (Cambodian myth): *look under* Moni Mekhala and Ream Eyso

receiver
DISCUSSIONS
telephones *volume* **2** *page* **100**

recycling
DISCUSSIONS
Did you know? *volume* **1** *page* **72**
paper *volume* **2** *page* **87**

red bear cats: *look under* lesser pandas

red-bellied piranhas
DISCUSSIONS
piranhas *volume* **11** *page* **41**
LEARN MORE *look under* fish

red planet: *look under* Mars

Red Sea (sea in the Middle East)
DISCUSSIONS
Suez Canal *volume* **8** *page* **56**

red wolves
DISCUSSIONS
wolves *volume* **12** *page* **31**

reeds (plants): *look under* rushes and reeds

reefs: *look under* Great Barrier Reef

refineries (oil)
DISCUSSIONS
oil *volume* **2** *page* **84**

Reform Judaism
DISCUSSIONS
Judaism *volume* **5** *page* **50**

reincarnation
DISCUSSIONS
Dalai Lama *volume* **5** *page* **85**
Hinduism *volume* **5** *page* **79**
Sikhism *volume* **5** *page* **88**

relativity (science)
DISCUSSIONS
Albert Einstein *volume* **4** *page* **74**

religion
ARTICLE *volume* **5** *page* **42**
DISCUSSIONS
calendars *volume* **2** *page* **77**
dance *volume* **3** *page* **70**
Did you know? *volume* **5** *page* **82,** *volume* **7** *page* **6**
folk arts and crafts *volume* **3** *page* **6**
LEARN MORE *look under*
religion: Baha'i; Buddhism; Christianity; Daoism; Hinduism; Islam; Jainism; Judaism; shamanism; Shinto; Sikhism; Vodun; Zoroastrianism
people: Abraham; Buddha; Confucius; Dalai Lama; God; Jesus Christ; Mary; Moses; Muhammad
other things: Bible; Koran; monasticism

Renaissance (European history)
DISCUSSIONS
Michelangelo photograph *volume* **3** *page* **20**

reptiles (animals)
ARTICLE *volume* **11** *page* **74**
LEARN MORE *look under* alligators and crocodiles; anacondas; chameleons; dinosaurs; iguanas; king cobras; lizards; snakes; turtles

Republic of the Congo (country)
DISCUSSIONS
atlas *volume* **13** *page* **6**
Congo region *volume* **8** *page* **9**
flag *volume* **8** *page* **9**
LEARN MORE *look under* Congo

reservation, Indian: *look under* Indian reservations

resins (chemicals)
DISCUSSIONS
pines *volume* **10** *page* **89**
LEARN MORE *look under* trees

resurrection (religion)
DISCUSSIONS
Jesus Christ *volume* **5** *page* **58**
Koran *volume* **5** *page* **69**

Revelation, Book of (New Testament)
DISCUSSIONS
Bible *volume* **5** *page* **63**

"Revelations" (dance by Ailey)
DISCUSSIONS
Alvin Ailey *volume* **3** *page* **78,** photograph *volume* **3** *page* **79**

Reykjavik (city in Iceland)
ARTICLE *volume* **6** *page* **59**
DISCUSSIONS
atlas *volume* **13** *page* **14**
thermal power *volume* **2** *page* **64**
LEARN MORE *look under* Iceland; Scandinavia; Vikings

Rh factor (blood)
DISCUSSIONS
macaques *volume* **12** *page* **17**

rhesus monkeys (animals)
DISCUSSIONS
macaques *volume* **12** *page* **17,** photograph *volume* **12** *page* **17**

Rhodes, Cecil (British leader)
DISCUSSIONS
Zimbabwe *volume* **8** *page* **89**

rhythm instruments
DISCUSSIONS
Count Basie *volume* **4** *page* **9**

rice
ARTICLE *volume* **10** *page* **73**
DISCUSSIONS
China *volume* **7** *page* **8,** photograph *volume* **7** *page* **9**
marshes *volume* **1** *page* **26**
Vietnam photograph *volume* **7** *page* **41**
LEARN MORE *look under* grasses

"Rikki-Tikki-Tavi" (story by Kipling)
DISCUSSIONS
Did you know? *volume* **12** *page* **37**

ring-tailed lemurs (mammals)
DISCUSSIONS
lemurs *volume* **12** *page* **19,** photograph *volume* **12** *page* **19**

ringtails (animals): *look under* raccoons

Rio de Janeiro (city in Brazil)
DISCUSSIONS
atlas *volume* **13** *page* **11**
Brazil *volume* **9** *page* **79,** photograph *volume* **9** *page* **78**
Did you know? *volume* **6** *page* **9**

Rivera, Diego (Mexican painter)
ARTICLE *volume* **3** *page* **22**
DISCUSSIONS
Frida Kahlo *volume* **3** *page* **19**
LEARN MORE *look under* painting

rivers
ARTICLE *volume* **1** *page* **30**
DISCUSSIONS
sand *volume* **1** *page* **18**
swamps *volume* **1** *page* **28**
LEARN MORE *look under*
rivers: Amazon; Colorado River; Congo River; Danube; Ganges River; Liffey, River; Mackenzie River; Mississippi River; Nile River; Okavango River; Sava River; Seine River; Vltava River; Yangtze River; Zambezi River
animals: alligators and crocodiles; carp; fish; hippopotamuses; manatees; piranhas
things: floods; glaciers; waterways

rock (music): *look under* rock music

rock and roll (music): *look under* rock music

Rock Edicts (inscriptions by Ashoka)
DISCUSSIONS
Ashoka *volume* **4** *page* **32**

rock music, *also called* rock and roll
LEARN MORE *look under*
people: Santana, Carlos

rockets
DISCUSSIONS
astronauts *volume* **2** *page* **19,**
photograph *volume* **2** *page* **18**
LEARN MORE *look under* technology

Rocks, The (district in Sydney, Australia)
DISCUSSIONS
Sydney *volume* **7** *page* **95,**
photograph *volume* **7** *page* **95**

rocks and minerals
ARTICLE *volume* **1** *page* **76**
DISCUSSIONS
Did you know? *volume* **1** *page* **74**
volcanoes *volume* **1** *page* **15**
LEARN MORE *look under* chalk; diamonds; fossils; sand

rodents (animals)
DISCUSSIONS
owls *volume* **11** *page* **13**
LEARN MORE *look under* muskrats; porcupines

Rodin, Auguste (French sculptor)
ARTICLE *volume* **3** *page* **24**
LEARN MORE *look under* sculpture
people: Michelangelo; Picasso, Pablo

Roman Catholicism (religion)
DISCUSSIONS
Christianity *volume* **5** *page* **57**
Did you know? *volume* **4** *page* **76,**
volume **9** *page* **84**
Guatemala *volume* **9** *page* **46**
Mary *volume* **5** *page* **61**
Poland *volume* **6** *page* **57**
religion photograph *volume* **5** *page* **43**
Vatican City *volume* **6** *page* **93**
Vodun *volume* **5** *page* **92**
LEARN MORE *look under* Christianity; monasticism
people: Abraham; Jesus Christ; Moses; Teresa, Mother

Roman Forum (area in Rome, Italy)
DISCUSSIONS
Rome *volume* **6** *page* **91,** photograph *volume* **6** *page* **90**

Roman Republic and Empire
DISCUSSIONS
Did you know? *volume* **12** *page* **90**
God *volume* **5** *page* **44**
Rome *volume* **6** *page* **91**
sponges *volume* **11** *page* **47**
Tripoli *volume* **8** *page* **61**
LEARN MORE *look under*
people: Caesar, Julius
things: Byzantine Empire

Romania (country)
DISCUSSIONS
atlas *volume* **13** *page* **14**
flag *volume* **6** *page* **73**
LEARN MORE *look under*
places: Bucharest; Eastern Europe

Romanticism (arts)
DISCUSSIONS
Did you know? *volume* **3** *page* **41**
LEARN MORE *look under* literature; music

Rome (city in Italy)
ARTICLE *volume* **6** *page* **91**
DISCUSSIONS
atlas *volume* **13** *page* **14**
Italy *volume* **6** *page* **89,** photograph *volume* **6** *page* **89**
LEARN MORE *look under* Vatican City

roses
ARTICLE *volume* **10** *page* **11**
LEARN MORE *look under* flowers

Rossini, Gioacchino (Italian composer)
DISCUSSIONS
opera *volume* **3** *page* **76**

Round Table (British legend): *look under* Knights of the Round Table

Royal Palace (palace in Phnom Penh, Cambodia)
DISCUSSIONS
Phnom Penh photograph *volume* **7** *page* **25**
LEARN MORE *look under* palaces

rubber trees
ARTICLE *volume* **10** *page* **90**
LEARN MORE *look under* trees

Rubicon (stream in Italy)
DISCUSSIONS
Caesar photograph *volume* **4** *page* **36**

Ruby Marshes (marsh in Nevada, U.S.)
DISCUSSIONS
marshes photograph *volume* **1** *page* **27**

ruminants (animals)
DISCUSSIONS
cattle *volume* **12** *page* **47**

running (sports): *look under* Freeman, Cathy

rushes and reeds (plants)
ARTICLE *volume* **10** *page* **65**
LEARN MORE *look under* grasses

Rushmore, Mount (monument in South Dakota, U.S): *look under* Mount Rushmore National Memorial

Ruska, Kathleen Jean Mary (Australian writer): *look under* Walker, Kath

Russia (country)
ARTICLE *volume* **6** *page* **69**
DISCUSSIONS
atlas *volume* **13** *page* **12,** *volume* **13** *page* **14**
astronauts *volume* **2** *page* **19**
flag *volume* **6** *page* **69**
LEARN MORE *look under* Northern Europe; Union of Soviet Socialist Republics

Rwanda (country)
DISCUSSIONS
atlas *volume* **13** *page* **6**
gorillas photograph *volume* **12** *page* **11**
LEARN MORE *look under* Africa



sabi (Japanese art)
DISCUSSIONS
Did you know? *volume* **3** *page* **53**

sacred kingfishers (birds)
DISCUSSIONS
kingfishers photograph *volume* **11** *page* **9**

sacred writings: *look under* "Adi Granth"; Avesta; Bible; "Daodejing"; Koran

Sadat, Anwar el- (Egyptian leader)
ARTICLE *volume* **4** *page* **59**
DISCUSSIONS
Menachem Begin *volume* **4** *page* **35**
LEARN MORE *look under* Egypt
other Middle Eastern leaders: Arafat, Yasir; Meir, Golda

Sadat Resthouse (building in Egypt)
DISCUSSIONS
Hassan Fathy photograph *volume* **3** *page* **14**
LEARN MORE *look under* architecture; Egypt

saddles (horseback riding)
DISCUSSIONS
horses photograph *volume* **12** *page* **41**

Sagarmatha (mountain in Asia): *look under* Everest, Mount

Sahara (desert in Africa)
DISCUSSIONS
atlas *volume* **13** *page* **6**
Africa *volume* **8** *page* **7**
Algeria *volume* **8** *page* **44,** photograph *volume* **8** *page* **45**
Libya *volume* **8** *page* **58**
oasis *volume* **1** *page* **34,** photograph *volume* **1** *page* **35**
LEARN MORE *look under* deserts

Sahel (region in Africa)
DISCUSSIONS
Did you know? *volume* **4** *page* **72**

sailing ships
DISCUSSIONS
ships *volume* **2** *page* **94**

Saint Basil's Cathedral (church in Russia)
DISCUSSIONS
Russia photograph *volume* **6** *page* **68**

Saint Peter's Basilica (church in Vatican City)
DISCUSSIONS
religion photograph *volume* **5** *page* **43**
Vatican City *volume* **6** *page* **93,** photograph *volume* **6** *page* **92**

Saint Stephen's Cathedral (church in Vienna, Austria)
DISCUSSIONS
Vienna *volume* **6** *page* **51**

salamanders (animals)
DISCUSSIONS
amphibians *volume* **11** *page* **91**

salmon (fish)
ARTICLE *volume* **11** *page* **39**
LEARN MORE *look under* fish

Salt March (Indian history)
DISCUSSIONS
Mahatma Gandhi *volume* **4** *page* **95**

salt marshes
DISCUSSIONS
marshes *volume* **1** *page* **26**

salties (animals)
DISCUSSIONS
Did you know? *volume* **11** *page* **77**

Salzburg (city in Austria)
DISCUSSIONS
Austria *volume* **6** *page* **48,** photograph *volume* **6** *page* **49**

San Juan (city in Puerto Rico)
DISCUSSIONS
Puerto Rico photograph *volume* **9** *page* **56**

sand
ARTICLE *volume* **1** *page* **18**
DISCUSSIONS
Did you know? *volume* **1** *page* **21**
LEARN MORE *look under* rocks and minerals

sand dunes
DISCUSSIONS
sand photograph *volume* **1** *page* **18**

sand painting
DISCUSSIONS
painting *volume* **3** *page* **8,** photograph *volume* **3** *page* **8**

sandstone (rock)
DISCUSSIONS
canyons photograph *volume* **1** *page* **76,** photograph *volume* **1** *page* **77**

Santana, Carlos (Mexican-American musician)
ARTICLE *volume* **3** *page* **47**
LEARN MORE *look under* popular music

Santiago (city in Chile)
DISCUSSIONS
Chile *volume* **9** *page* **87**
LEARN MORE *look under* South America

Sarah (biblical person)
DISCUSSIONS
Abraham *volume* **5** *page* **52**

Sargassum (seaweed)
DISCUSSIONS
seaweed *volume* **10** *page* **93**

sari (clothing)
DISCUSSIONS
Did you know? *volume* **4** *page* **107**

Sarnath (archaeological site in India)
DISCUSSIONS
Ashoka photograph *volume* **4** *page* **33**

Satchmo (American musician): *look under* Armstrong, Louis

satellites (objects in space)
DISCUSSIONS
spacecraft *volume* **2** *page* **16**
television *volume* **2** *page* **104**

Saturn (planet)
ARTICLE *volume* **2** *page* **39**
DISCUSSIONS
solar system illustration *volume* **2** *page* **20**
LEARN MORE *look under* planets

satyagraha (non-violence)
DISCUSSIONS
Did you know? *volume* **4** *page* **95**

Saudi Arabia (country)
DISCUSSIONS
atlas *volume* **13** *page* **12**
Did you know? *volume* **5** *page* **65**
oasis *volume* **1** *page* **34**
LEARN MORE *look under* Mecca

Sava River (river in Europe)
DISCUSSIONS
Belgrade photograph *volume* **6** *page* **79**
LEARN MORE *look under* rivers

savannas (grasslands)
DISCUSSIONS
Guinea *volume* **8** *page* **14,** photograph *volume* **8** *page* **15**
Nigeria *volume* **8** *page* **20**

saw-whet owls, *also called* Aegolius acadicus (birds)
DISCUSSIONS
owls photograph *volume* **11** *page* **13**

scale carp (fish)
DISCUSSIONS
carp *volume* **11** *page* **37**
LEARN MORE *look under* fish

Scandinavia (region in Europe)
DISCUSSIONS
atlas *volume* **13** *page* **14**
peninsulas *volume* **1** *page* **22**
Vikings *volume* **4** *page* **62**
LEARN MORE *look under*
places: Denmark; Norway; Sweden
things: Norse mythology

scat (music)
DISCUSSIONS
Louis Armstrong *volume* **3** *page* **39**

Schiltach (village in Germany)
DISCUSSIONS
Germany photograph *volume* **6** *page* **42**

Schönbrunn Palace (palace in Vienna, Austria)
DISCUSSIONS
Vienna photograph *volume* **6** *page* **50**
LEARN MORE *look under* palaces

school: *look under* education

science
VOLUME **1, 2**
LEARN MORE *look under*
people: Burbank, Luther; Copernicus, Nicolaus; Curie, Marie; Darwin, Charles; Einstein, Albert; Galileo Galilei; Goodall, Jane; Kepler, Johannes; Newton, Sir Isaac; Pasteur, Louis
sciences: astronomy; geography; geology; medicine

science fiction (literature)
DISCUSSIONS
Jules Verne *volume* **3** *page* **66**

Scotland (country in the U.K.)
ARTICLE *volume* **6** *page* **21**
DISCUSSIONS
atlas *volume* **13** *page* **14**
flag *volume* **6** *page* **21**
LEARN MORE *look under*
animals: sheep
places: Edinburgh; England; Wales

scripts (literature)
DISCUSSIONS
theatre *volume* **3** *page* **72**

sculpture
ARTICLE *volume* **3** *page* **11**
DISCUSSIONS
Did you know? *volume* **1** *page* **19**
LEARN MORE *look under*
people: Michelangelo; Picasso, Pablo; Rodin, Auguste
types: moai

sea caves
DISCUSSIONS
caves *volume* **1** *page* **79**

sea horses (fish)
DISCUSSIONS
fish *volume* **11** *page* **35**
LEARN MORE *look under* marine animals

sea lettuce (seaweed)
DISCUSSIONS
seaweed *volume* **10** *page* **93**

sea snakes (animals)
DISCUSSIONS
snakes photograph *volume* **11** *page* **79**

sea turtles (animals)
DISCUSSIONS
turtles *volume* **11** *page* **88**

seas: *look under* oceans

seaweed
ARTICLE *volume* **10** *page* **93**
LEARN MORE *look under* oceans; plants

sediment (geology)
DISCUSSIONS
rocks and minerals *volume* **1** *page* **76**

sedimentary rocks
DISCUSSIONS
rocks and minerals *volume* **1** *page* **76**

seeds
DISCUSSIONS
Did you know? *volume* **8** *page* **35**
LEARN MORE *look under* food; nuts

Seeger, Pete (American singer)
DISCUSSIONS
folk music photograph *volume* **3** *page* **31**

Seine River (river in France)
DISCUSSIONS
atlas *volume* **13** *page* **14**
Paris *volume* **6** *page* **35**
LEARN MORE *look under* rivers

Senegal (country)
ARTICLE *volume* **8** *page* **23**
DISCUSSIONS
atlas *volume* **13** *page* **6**
flag *volume* **8** *page* **23**
LEARN MORE *look under*
places: Dakar; West Africa

Senghor, Léopold (Senegalese leader)
DISCUSSIONS
Did you know? *volume* **8** *page* **23**

Senso Temple (temple in Tokyo, Japan)
DISCUSSIONS
Japan photograph *volume* **7** *page* **17**

Seoul (city in South Korea)
ARTICLE *volume* **7** *page* **23**
DISCUSSIONS
atlas *volume* **13** *page* **12**
LEARN MORE *look under* Korean Peninsula

Serbia (country)
ARTICLE *volume* **6** *page* **76**
DISCUSSIONS
atlas *volume* **13** *page* **14**
flag *volume* **6** *page* **76**
LEARN MORE *look under*
places: Belgrade; Southern Europe

Serdica (city in Bulgaria): *look under* Sofia

Serengeti Plain (region in Africa)
DISCUSSIONS
gazelles photograph *volume* **12** *page* **54**

"Sesame Street" (television program)
DISCUSSIONS
Jim Henson *volume* **3** *page* **85**

Sevilla (city in Spain)
DISCUSSIONS
atlas *volume* **13** *page* **14**

Seville oranges (fruit)
DISCUSSIONS
oranges *volume* **10** *page* **49**

Seychelles (country)
ARTICLE *volume* **8** *page* **35**
DISCUSSIONS
atlas *volume* **13** *page* **6**
flag *volume* **8** *page* **35**
LEARN MORE *look under* Indian Ocean

Shabalala, Joseph (South African singer)
DISCUSSIONS
Ladysmith Black Mambazo *volume* **3** *page* **44**

Shah Jahan, *also called* Khurram (Mughal ruler)
DISCUSSIONS
Taj Mahal *volume* **7** *page* **52**

Shakespeare, William (English writer)
ARTICLE *volume* **4** *page* **23**
DISCUSSIONS
Did you know? *volume* **3** *page* **87,** *volume* **4** *page* **36,** *volume* **4** *page* **43**
LEARN MORE *look under* Elizabeth I; literature; theater

Shakti (Hindu god)
DISCUSSIONS
Hinduism *volume* **5** *page* **79**

shaman (religion): *look under* shamanism

shamanism (religion)
ARTICLE *volume* **5** *page* **91**
LEARN MORE *look under* Vodun

Shankar, Ravi (Indian musician)
ARTICLE *volume* **3** *page* **48**
LEARN MORE *look under* music
people: Khan, Nusrat Fateh Ali; Tagore, Rabindranath

sharks
ARTICLE *volume* **11** *page* **43**

LEARN MORE *look under* fish; marine animals

Shasta daisies (plants)
DISCUSSIONS
Luther Burbank *volume* **4** *page* **66**
LEARN MORE *look under* flowers

"Shatranj ke Khilari" (film by Ray): *look under* "Chess Players, The"

sheep
ARTICLE *volume* **12** *page* **57**
LEARN MORE *look under* Karakul sheep; Merino sheep; ungulates; wild goats
for more animals look under: farming

sheepdogs
DISCUSSIONS
sheep *volume* **12** *page* **57**

shells
DISCUSSIONS
mollusks *volume* **11** *page* **49**
turtles *volume* **11** *page* **88**
LEARN MORE *look under* chalk; marine animals

Sherpas (people)
DISCUSSIONS
Tenzing Norgay *volume* **4** *page* **108**
LEARN MORE *look under* Nepal; peoples

Shi'ah (Islam)
DISCUSSIONS
Iran *volume* **7** *page* **71**

Shinto (religion)
ARTICLE *volume* **5** *page* **77**
LEARN MORE *look under*
other Eastern religions: Buddhism; Confucianism; Daoism; Hinduism; Jainism; Sikhism

ships
ARTICLE *volume* **2** *page* **94**
DISCUSSIONS
excursion boat photograph *volume* **1** *page* **55**
icebergs *volume* **1** *page* **52**
Suez Canal photograph *volume* **8** *page* **57**
Vikings illustration *volume* **4** *page* **63**
LEARN MORE *look under* submarines; transportation

Shiva (Hindu god)
DISCUSSIONS
Hinduism *volume* **5** *page* **79**

Shona (people)
DISCUSSIONS
Zimbabwe *volume* **8** *page* **89**

shrines (religious buildings)
DISCUSSIONS
India *volume* **7** *page* **51**

shrub roses
DISCUSSIONS
roses *volume* **10** *page* **11**

shuttles (weaving)
DISCUSSIONS
weaving *volume* **2** *page* **108,** photograph *volume* **2** *page* **109**

Shwe Dagon Pagoda (temple in Myanmar)
DISCUSSIONS
Yangon *volume* **7** *page* **30,** photograph *volume* **7** *page* **30**
LEARN MORE *look under* temples

Siberia (region in Asia)
DISCUSSIONS
shamanism *volume* **5** *page* **91**
LEARN MORE *look under*
animals: Siberian tigers; wild goats

Siberian tigers
DISCUSSIONS
tigers *volume* **12** *page* **23,** photograph *volume* **12** *page* **23**

Siddhartha (founder of Buddhism): *look under* Buddha

sign language
DISCUSSIONS
deafness *volume* **2** *page* **96,** photograph *volume* **2** *page* **97**
Did you know? *volume* **12** *page* **10**
LEARN MORE *look under* language

Sikhism (religion)
ARTICLE *volume* **5** *page* **88**
LEARN MORE *look under*
other religions: Buddhism; Hinduism; Islam; Jainism

silent movies
DISCUSSIONS
cinema *volume* **3** *page* **75**

silk
DISCUSSIONS
spiders *volume* **11** *page* **72**
weaving *volume* **2** *page* **108**

silkworms (caterpillars)
DISCUSSIONS
Did you know? *volume* **4** *page* **84**
weaving *volume* **2** *page* **108**
LEARN MORE *look under* butterflies and moths

Simon, Paul (American musician)
DISCUSSIONS
Ladysmith Black Mambazo *volume* **3** *page* **44**

Sinai Peninsula (peninsula in Egypt)
DISCUSSIONS
peninsulas *volume* **1** *page* **22**

Singapore (island country and city)
ARTICLE *volume* **7** *page* **35**
DISCUSSIONS
atlas *volume* **13** *page* **12**
flag *volume* **7** *page* **35**
LEARN MORE *look under* Southeast Asia

Singh, Gobind (Indian religious teacher): *look under* Gobind Singh

Singha Palace (palace in Kathmandu, Nepal)
DISCUSSIONS
Kathmandu *volume* **7** *page* **56**

Singidunum (ancient fortress in Serbia): *look under* Kalemegdan

Sistine Chapel (chapel in Vatican City)
DISCUSSIONS
Italy *volume* **6** *page* **89**
Michelangelo *volume* **3** *page* **21,** photograph *volume* **3** *page* **21**
Vatican City *volume* **6** *page* **93**

sitars (musical instruments)
DISCUSSIONS
Ravi Shankar *volume* **3** *page* **48,** photograph *volume* **3** *page* **48**

Siwa Oasis (oasis in Egypt)
DISCUSSIONS
oasis *volume* **1** *page* **34**

skinks (reptiles)
DISCUSSIONS
lizards photograph *volume* **11** *page* **85**

slavery
DISCUSSIONS
Cuba *volume* **9** *page* **59**
Dakar *volume* **8** *page* **25**
Liberia *volume* **8** *page* **17**
Monrovia *volume* **8** *page* **19**
Senegal *volume* **8** *page* **23**
West Indies *volume* **9** *page* **54**

Slotsholmen (island in Denmark)
DISCUSSIONS
Copenhagen *volume* **6** *page* **62**

smog (air pollution)
DISCUSSIONS
pollution *volume* **1** *page* **73**

snails (animals)
DISCUSSIONS
mollusks photograph *volume* **11** *page* **49**

snake pits
DISCUSSIONS
Did you know? *volume* **11** *page* **79**

snakes (animals)
ARTICLE *volume* **11** *page* **78**
DISCUSSIONS
Ireland *volume* **6** *page* **24**
mongooses *volume* **12** *page* **36,** photograph *volume* **12** *page* **37**
South America photograph *volume* **9** *page* **60**
LEARN MORE *look under* anacondas; cobras; emerald tree boa; king cobras; reptiles

snapdragons (flowers)
DISCUSSIONS
Golden desert variety photograph *volume* **1** *page* **20**
LEARN MORE *look under* flowers

snow (weather)
DISCUSSIONS
clouds *volume* **1** *page* **56**

snow geese (birds)
DISCUSSIONS
geese *volume* **11** *page* **22,** photograph *volume* **11** *page* **22**

snowfield (glacier)
DISCUSSIONS
glaciers *volume* **1** *page* **54**

soccer (sport): *look under* association football

social dances
DISCUSSIONS
dance *volume* **3** *page* **70**

Socrates (Greek philosopher)
ARTICLE *volume* **4** *page* **24**

Socratic method (education)
DISCUSSIONS
Socrates *volume* **4** *page* **24**

Sofia, *also called* Serdica, *or* Sredets (city in Bulgaria)
ARTICLE *volume* **6** *page* **74**
DISCUSSIONS
atlas *volume* **13** *page* **14**
LEARN MORE *look under* Eastern Europe

software (computer science)
DISCUSSIONS
computers *volume* **2** *page* **79**

solar energy
DISCUSSIONS
thermal power *volume* **2** *page* **64**

solar oven
DISCUSSIONS
thermal power photograph *volume* **2** *page* **64**

solar system
ARTICLE *volume* **2** *page* **21**
DISCUSSIONS
Johannes Kepler *volume* **4** *page* **81**
Nicolaus Copernicus *volume* **4** *page* **69,** illustration *volume* **4** *page* **69**
LEARN MORE *look under* asteroids; comets; Earth; Jupiter; Mars; Mercury; Neptune; planets; Pluto; Saturn; Uranus; Venus

solids (state of matter): *look under* liquids, solids, and gases

Somalia (country)
ARTICLE *volume* **8** *page* **36**
DISCUSSIONS
atlas *volume* **13** *page* **6**
flag *volume* **8** *page* **36**
LEARN MORE *look under*
places: Eastern Africa

sonar
DISCUSSIONS
echoes *volume* **1** *page* **69**
submarines *volume* **2** *page* **99**

sonatas (music)
DISCUSSIONS
classical music *volume* **3** *page* **36**

sopranos (music)
DISCUSSIONS
Joan Sutherland *volume* **4** *page* **27**
Kiri Te Kanawa *volume* **3** *page* **92**

soul
DISCUSSIONS
shamanism *volume* **5** *page* **91**
Zoroastrianism *volume* **5** *page* **49**

sound
DISCUSSIONS
echoes *volume* **1** *page* **68**

South Africa (country)
ARTICLE *volume* **8** *page* **82**
DISCUSSIONS
atlas *volume* **13** *page* **6**
chameleons photograph *volume* **11** *page* **87**
cities *volume* **8** *page* **87**
diamonds *volume* **1** *page* **80**
flag *volume* **8** *page* **82**
history *volume* **8** *page* **85**
Namibia *volume* **8** *page* **78**
popular music photograph *volume* **3** *page* **33**
LEARN MORE *look under* Southern Africa
music: Ladysmith Black Mambazo
people: Mandela, Nelson

South America (continent)
ARTICLE *volume* **9** *page* **61**
DISCUSSIONS
atlas *volume* **13** *page* **11**
anacondas *volume* **11** *page* **81**
Andes *volume* **9** *page* **66**
continents *volume* **1** *page* **8,** map *volume* **1** *page* **8**
rainforests *volume* **1** *page* **24,** photograph *volume* **1** *page* **24**
LEARN MORE *look under*
countries: Argentina; Brazil; Chile; Colombia; Paraguay; Peru
other places: Amazon; Andes; Easter Island; Galapagos Islands; Machu Picchu
people: American Indians; Bolívar, Simón
animals: anoles; armadillos; bats; donkeys; llamas; manatees; monkeys; ocelots; opossums; piranhas; porcupines; raccoons; tapirs

South Asia: *look under*
places: Afghanistan; Bangladesh; Dhaka; India; Karakoram Range; Kathmandu; Nepal; Pakistan; Sri Lanka; Taj Mahal; Thimphu
religion: Buddhism; Hinduism; Islam; Jainism; Sikhism; Zoroastrianism
animals: buffalo; camels; elephants; king cobras; mongooses; pandas; wild goats; yaks
stories: "Poor Man and the Flask of Oil, The"

South Island (island in New Zealand)
DISCUSSIONS
atlas *volume* **13** *page* **16**
New Zealand *volume* **7** *page* **99**

South Korea (country)
DISCUSSIONS
atlas *volume* **13** *page* **12**
flag *volume* **7** *page* **19**
Korean Peninsula *volume* **7** *page* **19**
LEARN MORE *look under* Seoul

Southeast Asia: *look under*
places: Angkor Wat; Bangkok; Hanoi; Indonesia; Philippines; Phnom Penh; Singapore; Thailand; Vietnam; Yangon

animals: elephants; gibbons; king cobras; Komodo dragons
stories: Moni Mekhala and Ream Eyso

Southern Africa: *look under* Angola; Botswana; Good Hope, Cape of; Madagascar; Malawi; Namibia; South Africa; Victoria Falls; Zimbabwe

Southern Europe: *look under places:* Greece; Italy; Mediterranean Sea; Serbia; Spain

Southern Rhodesia (country): *look under* Zimbabwe

Soviet Union (historic nation in Eurasia): *look under* Union of Soviet Socialist Republics

Soweto (city in South Africa)
DISCUSSIONS
South African cities *volume* **8** *page* **87**

Soyinka, Wole, *also called* Akinwande Oluwole Soyinka (Nigerian writer)
ARTICLE *volume* **3** *page* **62**
LEARN MORE *look under* literature; theater
African folktales: "Ananse and the Wisdom Pot"; "Monkey Court, The"

space, *also called* outer space
DISCUSSIONS
astronauts *volume* **2** *page* **19**
gravity *volume* **2** *page* **50**
universe *volume* **2** *page* **8**
LEARN MORE *look under*
objects in space: asteroids; comets; galaxies; planets; stars

space shuttles
DISCUSSIONS
astronauts *volume* **2** *page* **19,** photograph *volume* **2** *page* **18**

spacecraft
ARTICLE *volume* **2** *page* **16**
DISCUSSIONS
Mars *volume* **2** *page* **35**
Mercury *volume* **2** *page* **30,** photograph *volume* **2** *page* **30**
Moon *volume* **2** *page* **27**
Neptune *volume* **2** *page* **42**
space shuttle launch photograph *volume* **2** *page* **18**
Uranus *volume* **2** *page* **40,** photograph *volume* **2** *page* **40**
Venus *volume* **2** *page* **33,** photograph *volume* **2** *page* **33**
LEARN MORE *look under* astronauts; transportation

spaceship: *look under* spacecraft

Spain (country)
ARTICLE *volume* **6** *page* **11**
DISCUSSIONS
atlas *volume* **13** *page* **14**
Asunción *volume* **9** *page* **85**
Buenos Aires *volume* **9** *page* **93**
Central America *volume* **9** *page* **45**
Chile *volume* **9** *page* **87**
Colombia *volume* **9** *page* **71**
Did you know? *volume* **4** *page* **45**
flag *volume* **6** *page* **11**
Mexico *volume* **9** *page* **41**
Nicaragua *volume* **9** *page* **49**
Panama City *volume* **9** *page* **50**
Puerto Rico *volume* **9** *page* **57**
Peru *volume* **9** *page* **75**
South America *volume* **9** *page* **61**
United States of America *volume* **9** *page* **27**
West Indies *volume* **9** *page* **54**
LEARN MORE *look under*
people: Goya, Francisco de; Magellan, Ferdinand; Picasso, Pablo
places: Madrid; Southern Europe; Western Europe

Spanish Armada
DISCUSSIONS
Did you know? *volume* **4** *page* **45**
Spain *volume* **6** *page* **11**

spectroscope (science)
DISCUSSIONS
universe *volume* **2** *page* **9**

"Spellbound" (film by Hitchcock)
DISCUSSIONS
cinema photograph *volume* **3** *page* **74**

sphinxes (mythology)
DISCUSSIONS
Africa photograph *volume* **8** *page* **6**

Spice Islands (islands in Southeast Asia): *look under* East Indies

spices (food)
DISCUSSIONS
peppers *volume* **10** *page* **34**
LEARN MORE *look under* food; frankincense; vanilla

spider monkeys (animals)
DISCUSSIONS
monkeys *volume* **12** *page* **15,** photograph *volume* **12** *page* **15**

spiders
ARTICLE *volume* **11** *page* **72**
LEARN MORE *look under* insects; spiderwebs
stories: "Ananse and the Wisdom Pot"

spiderwebs
DISCUSSIONS
Did you know? *volume* **1** *page* **64,** *volume* **2** *page* **109,** photograph *volume* **1** *page* **64**
spiders *volume* **11** *page* **72,** photograph *volume* **11** *page* **73**

spines: *look under* quills

spiny anteaters, *also called* echidnas (animals)
DISCUSSIONS
platypuses *volume* **12** *page* **84**

spirits (religious beings)
DISCUSSIONS
shamanism *volume* **5** *page* **91**
Vodun *volume* **5** *page* **92**
LEARN MORE *look under* kami

sponges (animals)
ARTICLE *volume* **11** *page* **47**
LEARN MORE *look under* marine animals

sports: *look under* association football; baseball; bullfighting; cycling; Olympic Games; rafting; surfing; wrestling
people: Freeman, Cathy; Nepomuceno, Rafael "Paeng"; Pelé

spring tides
DISCUSSIONS
tides *volume* **1** *page* **46**

Sredets (city in Bulgaria): *look under* Sofia

Sri Lanka, *also called* Ceylon (island country)
ARTICLE *volume* **7** *page* **62**
DISCUSSIONS
atlas *volume* **13** *page* **12**
elephants photograph *volume* **12** *page* **90**
flag *volume* **7** *page* **62**
LEARN MORE *look under* islands; South Asia
people: Bandaranaike, Sirimavo R. D.
religions: Buddhism; Hinduism

stage sets (plays)
DISCUSSIONS
theatre *volume* **3** *page* **72**

stagecoaches
DISCUSSIONS
transportation *volume* **2** *page* **106**

stained glass
DISCUSSIONS
God photograph *volume* **5** *page* **44**

Jesus Christ photograph *volume* **5** *page* **59**

stalactites (mineral formations)
DISCUSSIONS
caves *volume* **1** *page* **79,** photograph *volume* **1** *page* **78**

stalagmites (mineral formations)
DISCUSSIONS
caves *volume* **1** *page* **79**

Star of Bethlehem
DISCUSSIONS
Did you know? *volume* **2** *page* **32**

stars
ARTICLE *volume* **2** *page* **10**
DISCUSSIONS
Did you know? *volume* **2** *page* **28**
telescopes *volume* **2** *page* **103**
LEARN MORE *look under* space

starvation
DISCUSSIONS
Ethiopia *volume* **8** *page* **27**

Statue of Liberty (monument in New York City, U.S.)
DISCUSSIONS
New York City *volume* **9** *page* **37,** photograph *volume* **9** *page* **37**

steam
DISCUSSIONS
thermal power *volume* **2** *page* **64**

steam engines
DISCUSSIONS
transportation *volume* **2** *page* **106**

steamboats
DISCUSSIONS
ships *volume* **2** *page* **95**

Stockholm (city in Sweden)
DISCUSSIONS
atlas *volume* **13** *page* **14**
Sweden *volume* **6** *page* **66,** photograph *volume* **6** *page* **67**

Stonehenge (monument in England, U.K.)
ARTICLE *volume* **6** *page* **19**
DISCUSSIONS
Europe photograph *volume* **6** *page* **6**
LEARN MORE *look under* architecture; England

storage (computer science)
DISCUSSIONS
computers *volume* **2** *page* **79**

stories: *look under* fables; folktales; legends; myths

storms: *look under* cyclones; floods; Great Red Spot; thunder and lightning

Stratford (city in Canada)
DISCUSSIONS
Ontario *volume* **9** *page* **18**

stratus clouds
DISCUSSIONS
clouds *volume* **1** *page* **56**

strawberries (fruit)
ARTICLE *volume* **10** *page* **27**
LEARN MORE *look under* fruits and vegetables; plants

"Street in Bronzeville, A" (book by Brooks)
DISCUSSIONS
Gwendolyn Brooks *volume* **3** *page* **56,** photograph *volume* **3** *page* **56**

string quartet (music)
DISCUSSIONS
classical music photograph *volume* **3** *page* **36**

stringybark trees: *look under* eucalyptus trees

submarines (ships)
ARTICLE *volume* **2** *page* **99**
DISCUSSIONS
Jules Verne *volume* **3** *page* **66**
nuclear energy *volume* **2** *page* **62**
LEARN MORE *look under* ships; transportation

submersibles (underwater ships)
DISCUSSIONS
submarines *volume* **2** *page* **99**

Sudan, The (country)
ARTICLE *volume* **8** *page* **65**
DISCUSSIONS
atlas *volume* **13** *page* **6**
flag *volume* **8** *page* **65**
LEARN MORE *look under*
animals: camels
places: North Africa

"Sue" (dinosaur fossil)
DISCUSSIONS
tyrannosaurs photograph *volume* **1** *page* **93**

Suez Canal (canal in Egypt)
ARTICLE *volume* **8** *page* **56**
DISCUSSIONS
atlas *volume* **13** *page* **6**
Mediterranean Sea *volume* **1** *page* **44**
LEARN MORE *look under* canals; Egypt

suffering
DISCUSSIONS
Buddhism *volume* **5** *page* **81**

Sufism (Islam)
DISCUSSIONS
Did you know? *volume* **3** *page* **42**

sugarcane (plants)
ARTICLE *volume* **10** *page* **76**
DISCUSSIONS
Cuba *volume* **9** *page* **59**
West Indies *volume* **9** *page* **54**
LEARN MORE *look under* grasses

Sullivan, Anne (American teacher)
DISCUSSIONS
Helen Keller *volume* **4** *page* **97,** photograph *volume* **4** *page* **96**

Sullivan, Arthur (British composer)
DISCUSSIONS
opera *volume* **3** *page* **76**

Sumerians (people)
DISCUSSIONS
Did you know? *volume* **7** *page* **64**
LEARN MORE *look under* peoples

Sun
DISCUSSIONS
Did you know? *volume* **2** *page* **62**
planets *volume* **2** *page* **28**
solar system *volume* **2** *page* **21**
stars *volume* **2** *page* **10**
thermal power *volume* **2** *page* **64**
tides *volume* **1** *page* **46**

sunflowers (plants)
ARTICLE *volume* **10** *page* **7**
DISCUSSIONS
Vincent van Gogh photograph *volume* **3** *page* **26**
LEARN MORE *look under* flowers

Superior, Lake (lake in North America)
DISCUSSIONS
Great Lakes *volume* **9** *page* **23,** photograph *volume* **9** *page* **23**
LEARN MORE *look under* North America

"Supernatural" (CD by Santana)
DISCUSSIONS
Carlos Santana *volume* **3** *page* **47**

supernova (star phase)
DISCUSSIONS
stars *volume* **2** *page* **10**

surfing (sport)
DISCUSSIONS
waves photograph *volume* **1** *page* **48**

Surrealism (art)
DISCUSSIONS
Frida Kahlo *volume* **3** *page* **19**

survival of the fittest (biology): *look under* natural selection

Suryavarman II (Khmer ruler)
DISCUSSIONS
Angkor Wat *volume* **7** *page* **26**

Sutherland, Joan, *also called* "La Stupenda" (Australian opera singer)
ARTICLE *volume* **4** *page* **27**
LEARN MORE *look under* opera
other singers: Khan, Nusrat Fateh Ali; Te Kanawa, Kiri

swamps
ARTICLE *volume* **1** *page* **28**
LEARN MORE *look under* alligators and crocodiles; marshes; trees

swans
ARTICLE *volume* **11** *page* **24**
LEARN MORE *look under* birds

Sweden (country)
ARTICLE *volume* **6** *page* **66**
DISCUSSIONS
atlas *volume* **13** *page* **14**
flag *volume* **6** *page* **66**
LEARN MORE *look under* Scandinavia

sweet oranges (fruit): *look under* China oranges

sweet potatoes (plants)
DISCUSSIONS
yams *volume* **10** *page* **33**
LEARN MORE *look under* fruits and vegetables

swimming
DISCUSSIONS
Did you know? *volume* **4** *page* **40,** *volume* **6** *page* **31**

"Swinging Gibbon" (painting by Xia Gui)
DISCUSSIONS
Xia Gui illustration *volume* **3** *page* **29**

Switzerland (country)
ARTICLE *volume* **6** *page* **46**
DISCUSSIONS
atlas *volume* **13** *page* **14**
flag *volume* **6** *page* **46**
LEARN MORE *look under* Central Europe; mountains

Sydney (city in Australia)
ARTICLE *volume* **7** *page* **95**
DISCUSSIONS
atlas *volume* **13** *page* **16**
LEARN MORE *look under* Australia

Sydney Opera House (Australia)
DISCUSSIONS
Sydney *volume* **7** *page* **95,** photograph *volume* **7** *page* **95**

symphonies (music)
DISCUSSIONS
classical music *volume* **3** *page* **36**

synagogues (places of worship)
DISCUSSIONS
Judaism *volume* **5** *page* **50**
LEARN MORE *look under* churches; gurdwaras; mosques; temples

Syria (country)
DISCUSSIONS
flag *volume* **7** *page* **87**
LEARN MORE *look under* Damascus; Fertile Crescent



Ta Prohm (temple in Cambodia)
DISCUSSIONS
Angkor Wat photograph *volume* **7** *page* **27**

Table Mountain (mountain in South Africa)
DISCUSSIONS
South African cities *volume* **8** *page* **87,** photograph *volume* **8** *page* **86**
LEARN MORE *look under* mountains; South Africa

tadpoles, *also called* polliwogs (animals)
DISCUSSIONS
frogs *volume* **11** *page* **93,** photograph *volume* **11** *page* **93**
tadpole becoming frog illustration *volume* **11** *page* **90**

Taglioni, Marie (Italian dancer)
DISCUSSIONS
Fanny Elssler *volume* **4** *page* **13**

Tagore, Rabindranath (Indian poet)
ARTICLE *volume* **3** *page* **65**
LEARN MORE *look under* literature
people: Basho; Brooks, Gwendolyn; Dickinson, Emily; Shankar, Ravi; Walker, Kath

tahrs (animals)
DISCUSSIONS
wild goats *volume* **12** *page* **58**

Taillefer, Christian (French bicyclist)
DISCUSSIONS
Did you know? *volume* **1** *page* **55**

tails
DISCUSSIONS
Did you know? *volume* **12** *page* **14**

Taj Mahal (building in India)
ARTICLE *volume* **7** *page* **52**
DISCUSSIONS
Did you know? *volume* **5** *page* **69**
India *volume* **7** *page* **51**
LEARN MORE *look under* architecture

Taliban (Afghan group)
DISCUSSIONS
Afghanistan *volume* **7** *page* **45**

talkies (motion pictures)
DISCUSSIONS
cinema *volume* **3** *page* **75**

tall tales (folktales)
DISCUSSIONS
Paul Bunyan *volume* **5** *page* **39**

Tallchief, Maria (American dancer)
ARTICLE *volume* **3** *page* **91**
LEARN MORE *look under* ballet
other dancers: Ailey, Alvin; Elssler, Fanny

Tallchief, Marjorie (American dancer)
DISCUSSIONS
Did you know? *volume* **3** *page* **90**

tamarau (animals)
DISCUSSIONS
buffalo *volume* **12** *page* **49**

tango (dance)
DISCUSSIONS
Did you know? *volume* **9** *page* **91**

Tanzania (country)
ARTICLE *volume* **8** *page* **39**
DISCUSSIONS
atlas *volume* **13** *page* **6**
gazelles photograph *volume* **12** *page* **54**
hippopotamuses photograph *volume* **12** *page* **67**

Tao (Chinese philosophy): *look under* Dao

Taoism (religion and philosophy): *look under* Daoism

tap dance
DISCUSSIONS
Did you know? *volume* **3** *page* **71**

tapirs (animals)
ARTICLE *volume* **12** *page* **45**
DISCUSSIONS
Amazon *volume* **9** *page* **64**
LEARN MORE *look under* horses; ungulates

tauromaquia: *look under* bullfighting

Te Kanawa, Kiri, *also called* Dame Kiri Te Kanawa (New Zealand opera singer)
ARTICLE *volume* **3** *page* **92**
LEARN MORE *look under* opera
other singers: Khan, Nusrat Fateh Ali; Sutherland, Joan

tea
ARTICLE *volume* **10** *page* **39**
DISCUSSIONS
Bangladesh photograph *volume* **7** *page* **46**
LEARN MORE *look under*
places: China; England; Japan
things: coffee; leaves

tea roses
DISCUSSIONS
roses *volume* **10** *page* **11,** photograph *volume* **10** *page* **11**

teaching: *look under* education

technology: *look under*
inventions: airplanes; automobiles; Braille; calendars; computers; Internet and the World Wide Web; measurement; medicine; motion pictures; paper; photography; printing; radio; ships; spacecraft; submarines; telephones; telescopes; television; transportation; weaving
other things: astronauts; deafness; electricity; nuclear power plant; oil; pollution; thermal power; water power; wind power

Tehran (city in Iran)
DISCUSSIONS
atlas *volume* **13** *page* **12**
Iran photograph *volume* **7** *page* **70**

Telc (village in Czech Republic)
DISCUSSIONS
Czech Republic photograph *volume* **6** *page* **53**

telephones
ARTICLE *volume* **2** *page* **100**
DISCUSSIONS
radio *volume* **2** *page* **93**
LEARN MORE *look under*
communications

telescopes
ARTICLE *volume* **2** *page* **103**
DISCUSSIONS
astronomy *volume* **2** *page* **7**
Galileo Galilei *volume* **4** *page* **77,** illustration *volume* **4** *page* **76**
Sir Isaac Newton *volume* **4** *page* **83,** illustration *volume* **4** *page* **83**

television, *also called* TV
ARTICLE *volume* **2** *page* **104**
DISCUSSIONS
Albert Einstein *volume* **4** *page* **74**
Did you know? *volume* **2** *page* **80**
radio *volume* **2** *page* **93**
LEARN MORE *look under*
people: Dench, Judi; Henson, Jim

temperatures
ARTICLE *volume* **2** *page* **54**
DISCUSSIONS
Antarctica *volume* **1** *page* **10**
Did you know? *volume* **1** *page* **34**
energy *volume* **2** *page* **48**
liquids, solids, and gases *volume* **2** *page* **52**
LEARN MORE *look under* thermal power

temples (religious buildings)
DISCUSSIONS
Baha'i *volume* **5** *page* **70,** photograph *volume* **5** *page* **71**
Buddhism photograph *volume* **5** *page* **80**
Daoism photograph *volume* **5** *page* **75**
India *volume* **7** *page* **51,** photograph *volume* **7** *page* **50**
Roman Forum photograph *volume* **6** *page* **90**
LEARN MORE *look under* Abu Simbel; Angkor Wat; Durbar Square; Giant Jaguar, Temple of the; Literature, Temple of; Lotus Temple; Parthenon; Shwe Dagon Pagoda
other religious buildings: churches; gurdwaras; mosques; synagogues

Ten Commandments (Old Testament)
DISCUSSIONS
Judaism *volume* **5** *page* **50**
Moses *volume* **5** *page* **54**

"Ten Commandments, The" (film by DeMille)
DISCUSSIONS
Did you know? *volume* **3** *page* **74**

Ten Thousand Animals, Garden of (zoo in Beijing, China): *look under* Beijing Zoo

Tenochtitlán (ancient city in Mexico): *look under* Mexico City

tentacles
DISCUSSIONS
jellyfish *volume* **11** *page* **53**
octopuses *volume* **11** *page* **51**

Tenzing Norgay (Nepalese mountain climber)
ARTICLE *volume* **4** *page* **108**
LEARN MORE *look under* Nepal

teranga
DISCUSSIONS
Senegal *volume* **8** *page* **23**

Teresa, Mother, *also called* Agnes Gonxha Bojaxhiu (Roman Catholic nun)
ARTICLE *volume* **4** *page* **107**
LEARN MORE *look under* Roman Catholicism

terraces (agriculture)
DISCUSSIONS
rice photograph *volume* **10** *page* **72**
LEARN MORE *look under* farming

Teufelsberg (hill in Berlin, Germany)
DISCUSSIONS
Berlin *volume* **6** *page* **45**

Texas (state in the U.S.)
DISCUSSIONS
Did you know? *volume* **12** *page* **88**

textiles: *look under* cloth; weaving

Thailand (country)
ARTICLE *volume* **7** *page* **37**
DISCUSSIONS
atlas *volume* **13** *page* **12**
dance *volume* **3** *page* **70**
flag *volume* **7** *page* **37**
LEARN MORE *look under*
animals: tapirs
places: Bangkok; Southeast Asia

Thames, River (river in England)
DISCUSSIONS
atlas *volume* **13** *page* **14**
London *volume* **6** *page* **16**

Thant, U (leader of the United Nations)
ARTICLE *volume* **4** *page* **60**
LEARN MORE *look under*
beliefs: Buddhism
people: Arafat, Yasir; Begin, Menachem; King, Martin Luther, Jr.; Mandela, Nelson; Sadat, Anwar el-; Teresa, Mother

theater (arts)
ARTICLE *volume* **3** *page* **72**
DISCUSSIONS
Amman *volume* **7** *page* **79,** photograph *volume* **7** *page* **78**
Athens *volume* **6** *page* **85**
dance *volume* **3** *page* **70**

LEARN MORE *look under*
people: Bernhardt, Sarah; Dench, Judi; Henson, Jim; Shakespeare, William; Soyinka, Wole
places: Abbey Theatre; Broadway; Dionysus, Theater of; England; Ontario
things: opera

theatrical dance, *also called* character ballet
DISCUSSIONS
Fanny Elssler *volume* **4** *page* **13**
LEARN MORE *look under* ballet

thermal energy: *look under* thermal power

thermal power
ARTICLE *volume* **2** *page* **64**
DISCUSSIONS
energy *volume* **2** *page* **48**
Reykjavik photograph *volume* **6** *page* **58**
LEARN MORE *look under* nuclear energy; temperatures; water power; wind power

thermometer crickets
DISCUSSIONS
crickets *volume* **11** *page* **67**
LEARN MORE *look under* insects

thermometers (measuring instruments)
DISCUSSIONS
temperatures *volume* **2** *page* **55**

Thimphu (city in Bhutan)
ARTICLE *volume* **7** *page* **49**
DISCUSSIONS
atlas *volume* **13** *page* **12**
LEARN MORE *look under* South Asia

"Thinker, The" (sculpture by Rodin)
DISCUSSIONS
Auguste Rodin *volume* **3** *page* **24,** photograph *volume* **3** *page* **25**

Thomson's gazelles (animals)
DISCUSSIONS
gazelles photograph *volume* **12** *page* **55**

threads
DISCUSSIONS
weaving *volume* **2** *page* **108**

"Through the Looking-Glass" (book by Carroll)
DISCUSSIONS
Lewis Carroll *volume* **3** *page* **59**

thunder and lightning
ARTICLE *volume* **1** *page* **58**
DISCUSSIONS
clouds *volume* **1** *page* **56**
LEARN MORE *look under* electricity; weather
stories: Atlas; Moni Mekhala and Ream Eyso

Thunderbird (American Indian myth)
DISCUSSIONS
Did you know? *volume* **5** *page* **17**

thunderheads: *look under* cumulonimbus clouds

thunderstorms: *look under* thunder and lightning

Tiberias, Lake, *also called* Sea of Galilee (lake in Israel)
DISCUSSIONS
Israel *volume* **7** *page* **75,** photograph *volume* **7** *page* **74**
LEARN MORE *look under* lakes

Tibet (autonomous region in China)
DISCUSSIONS
atlas *volume* **13** *page* **12**
LEARN MORE *look under*
people: Tenzing Norgay
religion: Buddhism; Dalai Lama
animals: donkeys; giant pandas; yaks

tidal bores (waves in a river)
DISCUSSIONS
Did you know? *volume* **1** *page* **46**

tidal waves: *look under* tsunamis

tides
ARTICLE *volume* **1** *page* **46**
DISCUSSIONS
oceans *volume* **1** *page* **37**
sand *volume* **1** *page* **18**
LEARN MORE *look under* floods

"Tiger in the Trap, The" (Korean folktale)
ARTICLE *volume* **5** *page* **21**
LEARN MORE *look under*
other Asian stories: Moni Mekhala and Ream Eyso; "Poor Man and the Flask of Oil, The"; "Yeh-Shen"
other folktales: "Ananse and the Wisdom Pot"; "How Kangaroo Got His Tail"; "Monkey Court, The"; "Rabbit Throws Away His Sandal"; "Why Possum's Tail Is Bare"

tigers
ARTICLE *volume* **12** *page* **23**
LEARN MORE *look under* carnivores; cats; lions; ocelots
stories: "Tiger in the Trap, The"

timber wolves: *look under* gray wolves

"Titanic" (ship)
DISCUSSIONS
Did you know? *volume* **1** *page* **53**
submarines *volume* **2** *page* **99**

Tivoli Gardens (garden in Copenhagen, Denmark)
DISCUSSIONS
Copenhagen *volume* **6** *page* **62,** photograph *volume* **6** *page* **63**

toads (animals)
DISCUSSIONS
amphibians *volume* **11** *page* **91**
frogs *volume* **11** *page* **93**

tobacco (plant)
DISCUSSIONS
Lilongwe *volume* **8** *page* **77,** photograph *volume* **8** *page* **76**
LEARN MORE *look under* plants

Tobago (island in the Atlantic Ocean)
DISCUSSIONS
West Indies photograph *volume* **9** *page* **54,** photograph *volume* **9** *page* **55**
LEARN MORE *look under* West Indies

Togo (country)
DISCUSSIONS
atlas *volume* **13** *page* **6**
Vodun photograph *volume* **5** *page* **93**

Tokaido (ancient road in Japan)
DISCUSSIONS
Hiroshige *volume* **3** *page* **17**

Tokyo (city in Japan)
DISCUSSIONS
atlas *volume* **13** *page* **12**
Japan *volume* **7** *page* **16,** photograph *volume* **7** *page* **16**

"Tom Sawyer" (book by Twain)
DISCUSSIONS
Mark Twain *volume* **4** *page* **29**

tomatoes
ARTICLE *volume* **10** *page* **23**
LEARN MORE *look under* fruits and vegetables

Tonkin (city in Vietnam): *look under* Hanoi

Tonquin (city in Vietnam): *look under* Hanoi

Torah, *also called* Five Books of Moses, *or* Law, *or* Pentateuch (sacred text)
DISCUSSIONS
Bible *volume* **5** *page* **63,** photograph *volume* **5** *page* **63**
Judaism *volume* **5** *page* **50,** photograph *volume* **5** *page* **51**

Moses *volume* **5** *page* **54**

tornadoes (wind storms)
ARTICLE *volume* **1** *page* **61**
LEARN MORE *look under* weather

Toronto (city in Canada)
DISCUSSIONS
atlas *volume* **13** *page* **8**
Canada *volume* **9** *page* **10**
Ontario *volume* **9** *page* **18**
theatre photograph *volume* **3** *page* **73**

Torre, Mount (mountain in Argentina)
DISCUSSIONS
Andes photograph *volume* **9** *page* **67**
LEARN MORE *look under* mountains

tortoises, *also called* land turtles (reptiles)
DISCUSSIONS
Galapagos Islands *volume* **9** *page* **68,** photograph *volume* **9** *page* **69**
turtles *volume* **11** *page* **88**

totem pole
DISCUSSIONS
North America photograph *volume* **9** *page* **6**
LEARN MORE *look under* architecture

touchtone phones
DISCUSSIONS
telephones *volume* **2** *page* **100**

Tower of London (building in London, England, U.K.)
DISCUSSIONS
London *volume* **6** *page* **16**
LEARN MORE *look under* towers

Tower of the Juche Idea (Pyongyang, North Korea)
DISCUSSIONS
Pyongyang *volume* **7** *page* **20,** photograph *volume* **7** *page* **21**
LEARN MORE *look under* towers

towers: *look under* architecture; CN Tower; Eiffel Tower; Leaning Tower of Pisa; Tower of London; Tower of the Juche Idea

train
DISCUSSIONS
transportation *volume* **2** *page* **106**

trans-Alaska pipeline
DISCUSSIONS
Did you know? *volume* **2** *page* **84**

Transcaucasia (region in Europe and Asia): *look under*
places: Iran; Yerevan

transmitters
DISCUSSIONS
telephones *volume* **2** *page* **100**

transportation
ARTICLE *volume* **2** *page* **106**
LEARN MORE *look under* airplanes; automobiles; ships; spacecraft; submarines

tree frogs (animals)
DISCUSSIONS
amphibians *volume* **11** *page* **91**
frogs photograph *volume* **11** *page* **92**

trees
DISCUSSIONS
Did you know? *volume* **1** *page* **71**
leaves *volume* **1** *page* **67**
paper *volume* **2** *page* **87**
swamps *volume* **1** *page* **28**
LEARN MORE *look under*
food trees: apples; cacao; figs; jackfruit; lemons; mangoes; maple; nuts; olive; oranges; palms
other trees: bald cypress; bodhi trees; cedars; eucalyptus trees; pines; rubber trees
other things: forests; rainforests; swamps

triceratops (dinosaurs)
DISCUSSIONS
dinosaurs *volume* **1** *page* **88**

Trinity (God)
DISCUSSIONS
Christianity *volume* **5** *page* **57**

Tripoli (city in Libya)
ARTICLE *volume* **8** *page* **61**
DISCUSSIONS
atlas *volume* **13** *page* **6**
LEARN MORE *look under* Libya; North Africa

"Tristan und Isolde" (opera by Wagner)
DISCUSSIONS
opera *volume* **3** *page* **76**

Triton (moon of Neptune)
DISCUSSIONS
Neptune *volume* **2** *page* **42**

Trojan Horse, The (Greek legend): *look under*
other Greek stories: Aesop's fables; Atlas; "Odysseus and the Cyclops"
other legends: Bunyan, Paul; dragons; "Golem of Prague, The"; Knights of the Round Table

trumpets (musical instruments)
DISCUSSIONS
Louis Armstrong *volume* **3** *page* **39**
LEARN MORE *look under* musical instruments

Trung Sisters, Temple of the (temple in Hanoi, Vietnam)
DISCUSSIONS
Hanoi *volume* **7** *page* **42**

tsunamis, *also called* tidal waves
ARTICLE *volume* **1** *page* **50**
DISCUSSIONS
floods *volume* **1** *page* **32**
waves *volume* **1** *page* **49**
LEARN MORE *look under* weather

Tswana, *also called* Batswana (people)
DISCUSSIONS
Botswana *volume* **8** *page* **71**
LEARN MORE *look under* Botswana; peoples

tube worms
DISCUSSIONS
deep-sea life photograph *volume* **11** *page* **55**

tubers (parts of plants)
DISCUSSIONS
yams *volume* **10** *page* **33**

tulips (plants)
ARTICLE *volume* **10** *page* **9**
DISCUSSIONS
Did you know? *volume* **6** *page* **38**
LEARN MORE *look under* flowers

Turkey (country)
DISCUSSIONS
atlas *volume* **13** *page* **12**
flag *volume* **7** *page* **69**
tulips *volume* **10** *page* **9**
LEARN MORE *look under* Fertile Crescent; Istanbul

turrets (tower-like structures)
DISCUSSIONS
Did you know? *volume* **11** *page* **87**

turtles (animals)
ARTICLE *volume* **11** *page* **88**
LEARN MORE *look under* reptiles

tusks
DISCUSSIONS
elephants *volume* **12** *page* **91**
mammoths and mastodons *volume* **1** *page* **87,** illustration *volume* **1** *page* **86**
walruses *volume* **12** *page* **75,** photograph *volume* **12** *page* **74**

TV (broadcasting): *look under* television

Twain, Mark, *also called* Samuel Langhorne Clemens (American writer)
ARTICLE *volume* **4** *page* **29**
DISCUSSIONS
Did you know? *volume* **2** *page* **24**
LEARN MORE *look under* literature

"Twenty Thousand Leagues Under the Sea" (book by Verne)
DISCUSSIONS
Jules Verne *volume* **3** *page* **66,** illustration *volume* **3** *page* **67**

twins
DISCUSSIONS
Did you know? *volume* **8** *page* **20**

"Two Boys with Two Mastiffs" (painting by Goya)
DISCUSSIONS
Francisco de Goya illustration *volume* **4** *page* **15**

type, *also called* movable type (printing)
DISCUSSIONS
printing *volume* **2** *page* **90**

typhoons (wind storms): *look under* cyclones

tyrannosaurs, *also called* Tyrannosaurus rex (dinosaurs)
ARTICLE *volume* **1** *page* **92**
DISCUSSIONS
dinosaurs *volume* **1** *page* **88**
LEARN MORE *look under* fossils



UFOs, *also called* unidentified flying objects
DISCUSSIONS
extraterrestrial life *volume* **2** *page* **15**

Uganda (country)
ARTICLE *volume* **8** *page* **41**
DISCUSSIONS
atlas *volume* **13** *page* **6**
flag *volume* **8** *page* **41**
LEARN MORE *look under*
places: Eastern Africa; Kampala
animals: alligators and crocodiles; antelope; chimpanzees; elephants; giraffes; hippopotamuses; lions

ukiyo-e (Japanese art)
DISCUSSIONS
Hiroshige *volume* **3** *page* **17**

Ukraine (country)
ARTICLE *volume* **6** *page* **80**
DISCUSSIONS
atlas *volume* **13** *page* **14**
flag *volume* **6** *page* **80**
folk arts and crafts photograph *volume* **3** *page* **6**
LEARN MORE *look under* Eastern Europe; Russia

ungulates (animals with hooves): *look under* alpacas; bison; buffalo; camels; cattle; donkeys; elephants; gazelles; hippopotamuses; hooves; horses; llamas; mammoths and mastodons; pigs; sheep; tapirs; wild goats; yaks

unidentified flying objects: *look under* UFOs

uniform resource locator, *also called* URL (computer science)
DISCUSSIONS
Internet *volume* **2** *page* **80**

Union of Soviet Socialist Republics, *also called* Soviet Union, *or* U.S.S.R. (historic nation in Eurasia)
DISCUSSIONS
Cuba *volume* **9** *page* **59**
Russia *volume* **6** *page* **69**
Ukraine *volume* **6** *page* **80**
LEARN MORE *look under* communism

United Kingdom (island country)
DISCUSSIONS
atlas *volume* **13** *page* **14**
Ireland *volume* **6** *page* **24**
Mahatma Gandhi *volume* **4** *page* **95**
Nairobi *volume* **8** *page* **33**
Ottawa *volume* **9** *page* **14**
Quebec *volume* **9** *page* **17**
television *volume* **2** *page* **104**
United States of America *volume* **9** *page* **27**
Yangon *volume* **7** *page* **30**
LEARN MORE *look under*
people: Beatles, the; Carroll, Lewis; Cayley, Sir George; Christie, Agatha; Darwin, Charles; Dench, Judi; Dickens, Charles; Goodall, Jane; Halley, Edmond; Herschel, Sir William; Newton, Sir Isaac; Shakespeare, William
places: Belfast; Edinburgh; England; English Channel; London; Scotland; Stonehenge; Wales; Western Europe; White Cliffs of Dover
stories: Knights of the Round Table

United Nations (international organization)
DISCUSSIONS
U Thant *volume* **4** *page* **60**

United States of America (country)
ARTICLE *volume* **9** *page* **25**
DISCUSSIONS
atlas *volume* **13** *page* **8**
astronauts *volume* **2** *page* **19**
Cuba *volume* **9** *page* **59**
cultural melting pot *volume* **9** *page* **28**
Did you know? *volume* **1** *page* **58**
Fidel Castro *volume* **4** *page* **39**
flag *volume* **9** *page* **25**
folk music *volume* **3** *page* **31**
Grand Canyon photograph *volume* **9** *page* **33**
history *volume* **9** *page* **27**
jazz *volume* **3** *page* **35**
Liberia *volume* **8** *page* **17**
Monrovia *volume* **8** *page* **19**
nuclear power plant photograph *volume* **2** *page* **63**
Panama Canal *volume* **9** *page* **52**
peninsulas *volume* **1** *page* **22**
pigs photograph *volume* **12** *page* **65**
Puerto Rico *volume* **9** *page* **57**
Ruby Marshes in Nevada photograph *volume* **1** *page* **27**
swamps *volume* **1** *page* **28**
television *volume* **2** *page* **104**
LEARN MORE *look under*
people: Ailey, Alvin; Aldrin, Edwin E.; American Indians; Armstrong, Louis; Basie, Count; Blackwell, Elizabeth; Brooks, Gwendolyn; Burbank, Luther; Dickinson, Emily; Einstein, Albert; Ford, Henry; Henson, Jim; Keller, Helen; King, Martin Luther, Jr.; Pei, I. M.; Santana, Carlos; Tallchief, Maria; Twain, Mark; Wright brothers
places: Alaska; Boston; Death Valley; Florida; Grand Canyon; Great Lakes; Hawaii; Honolulu; New York City; Niagara Falls; Puerto Rico; Washington, D.C.
animals: armadillos; bison; coyotes; manatees; ocelots; opossums; porcupines; raccoons; wolves
stories: Bunyan, Paul

universe
ARTICLE *volume* **2** *page* **8**
DISCUSSIONS
Albert Einstein *volume* **4** *page* **74**
Kepler's model illustration *volume* **4** *page* **81**
LEARN MORE *look under* astronomy

Uranus, *also called* Georgium Sidus (planet)
ARTICLE *volume* **2** *page* **40**
DISCUSSIONS
solar system illustration *volume* **2** *page* **20**

URL (computer science): *look under* uniform resource locator

U.S.S.R. (historic nation): *look under* Union of Soviet Socialist Republics



valley glaciers (ice formations)
DISCUSSIONS
glaciers *volume* **1** *page* **54**

van Gogh, Vincent (Dutch painter)
ARTICLE *volume* **3** *page* **27**
DISCUSSIONS
Did you know? *volume* **3** *page* **9**
Netherlands, the *volume* **6** *page* **38**
LEARN MORE *look under* painting

vanilla
DISCUSSIONS
Did you know? *volume* **10** *page* **17**
LEARN MORE *look under* food; plants

vapor
DISCUSSIONS
dew *volume* **1** *page* **65**

Vatican City (city and state)
ARTICLE *volume* **6** *page* **93**
DISCUSSIONS
atlas *volume* **13** *page* **14**
Italy *volume* **6** *page* **89**
Rome *volume* **6** *page* **91**
LEARN MORE *look under* Europe

vaudeville
DISCUSSIONS
Count Basie *volume* **4** *page* **9**

Venezuela (country)
DISCUSSIONS
atlas *volume* **13** *page* **11**
Did you know? *volume* **4** *page* **88**
rainforests photograph *volume* **1** *page* **24**
LEARN MORE *look under* South America
people: Bolívar, Simón

Venus (planet)
ARTICLE *volume* **2** *page* **33**
DISCUSSIONS
solar system illustration *volume* **2** *page* **20**
LEARN MORE *look under* planets

Venus's-flytrap (plant)
DISCUSSIONS
carnivorous plants *volume* **10** *page* **19,** illustration *volume* **10** *page* **19**

Verne, Jules (French writer)
ARTICLE *volume* **3** *page* **66**
LEARN MORE *look under* literature; spacecraft; submarines

Vesuvius, Mount (volcano in Italy)
DISCUSSIONS
volcanoes *volume* **1** *page* **15**
LEARN MORE *look under* Italy; mountains

viceroy butterflies (insects)
DISCUSSIONS
Did you know? *volume* **11** *page* **63**

"Victoria" (ship)
DISCUSSIONS
Ferdinand Magellan illustration *volume* **4** *page* **101**

Victoria, Lake (lake in Africa)
DISCUSSIONS
Africa *volume* **8** *page* **7**
Uganda *volume* **8** *page* **41**
LEARN MORE *look under* Africa; lakes

Victoria amazonica (plants)
DISCUSSIONS
Colombia *volume* **9** *page* **71**
LEARN MORE *look under* plants; water lilies

Victoria Falls (waterfall in Africa)
ARTICLE *volume* **8** *page* **92**
DISCUSSIONS
atlas *volume* **13** *page* **6**
Zimbabwe *volume* **8** *page* **89**
LEARN MORE *look under* Southern Africa; waterfalls

Victoria Falls Bridge (bridge between Zambia and Zimbabwe)
DISCUSSIONS
Victoria Falls *volume* **8** *page* **92**
LEARN MORE *look under*
other bridges: Charles Bridge; Halfpenny Bridge

Vienna (city in Austria)
ARTICLE *volume* **6** *page* **51**
DISCUSSIONS
atlas *volume* **13** *page* **14**
LEARN MORE *look under*
people: Mozart, Wolfgang Amadeus
places: Austria

Vienna Boys' Choir
DISCUSSIONS
Vienna *volume* **6** *page* **51**

Vienna State Opera (Austria)
DISCUSSIONS
Vienna *volume* **6** *page* **51,** photograph *volume* **6** *page* **51**

Vietnam (country)
ARTICLE *volume* **7** *page* **40**
DISCUSSIONS
atlas *volume* **13** *page* **12**
LEARN MORE *look under*
places: Hanoi; Southeast Asia
religion: Daoism

Vietnam War
DISCUSSIONS
Hanoi *volume* **7** *page* **42**
Vietnam *volume* **7** *page* **40**

Viking (U.S. space probes)
DISCUSSIONS
Mars *volume* **2** *page* **35,** photograph *volume* **2** *page* **35**
LEARN MORE *look under* exploration; spacecraft

Vikings, *also called* Norsemen (Norse people)
ARTICLE *volume* **4** *page* **62**
DISCUSSIONS
Did you know? *volume* **9** *page* **9**
LEARN MORE *look under* exploration; Norse mythology; Scandinavia

vines (plants)
DISCUSSIONS
grapes *volume* **10** *page* **25**
LEARN MORE *look under* plants

vineyards
DISCUSSIONS
France photograph *volume* **6** *page* **33**

Virgin Mary (mother of Jesus): *look under* Mary

Vishnu (Hindu god)
DISCUSSIONS
Hinduism *volume* **5** *page* **79**

visual arts: *look under* architecture; folk arts and crafts; painting; sculpture

viticulture (farming)
DISCUSSIONS
grapes *volume* **10** *page* **25**

Vltava River (river in Czech Republic)
DISCUSSIONS
Prague *volume* **6** *page* **55,** photograph *volume* **6** *page* **54**

LEARN MORE *look under* Czech Republic; rivers

Vodun, *also called* Voodoo (religion)
ARTICLE *volume* **5** *page* **92**
LEARN MORE *look under* shamanism

volcanoes
ARTICLE *volume* **1** *page* **15**
DISCUSSIONS
Antarctica *volume* **1** *page* **11**
caves *volume* **1** *page* **79**
Did you know? *volume* **9** *page* **47**
floods *volume* **1** *page* **32**
islands *volume* **1** *page* **12**
Mars *volume* **2** *page* **35**
Mexico *volume* **9** *page* **41**
mountains *volume* **1** *page* **16**
rocks and minerals *volume* **1** *page* **76**
thermal power *volume* **2** *page* **64**
LEARN MORE *look under*
places: Honolulu; Italy; Japan; Krakatoa; Negro, Cerro; Nicaragua

Volga River (river in Russia)
DISCUSSIONS
atlas *volume* **13** *page* **14**
Russia *volume* **6** *page* **69**

Voodoo (religion): *look under* Vodun

Voyager (U.S. space probes)
DISCUSSIONS
Jupiter photograph *volume* **2** *page* **36**
Neptune *volume* **2** *page* **42,**
illustration *volume* **2** *page* **42**
Saturn *volume* **2** *page* **39**
Uranus *volume* **2** *page* **40,** photograph *volume* **2** *page* **40**
LEARN MORE *look under* exploration; spacecraft

vulcanization
DISCUSSIONS
Did you know? *volume* **10** *page* **91**



Wagner, Richard (German composer)
DISCUSSIONS
opera *volume* **3** *page* **76**

Waikiki Beach (beach in Honolulu, Hawaii, U.S.)
DISCUSSIONS
Honolulu photograph *volume* **9** *page* **34**

Wailing Wall (prayer site in Jerusalem): *look under* Western Wall

Wales, *also called* Cymru (country in the U.K.)
ARTICLE *volume* **6** *page* **28**
DISCUSSIONS
atlas *volume* **13** *page* **14**
flag *volume* **6** *page* **28**
LEARN MORE *look under* Cardiff; England; Scotland

Walker, Kath, *also called* Kathleen Jean Mary Ruska, *or* Oodgeroo Noonuccal (Australian writer)
ARTICLE *volume* **3** *page* **69**
LEARN MORE *look under* literature
other poets: Basho; Brooks, Gwendolyn; Dickinson, Emily; Tagore, Rabindranath
other famous Australians: Freeman, Cathy; Sutherland, Joan

walnuts (plants)
DISCUSSIONS
nuts *volume* **10** *page* **59**
LEARN MORE *look under* plants

walruses (animals)
ARTICLE *volume* **12** *page* **75**
LEARN MORE *look under* carnivores; hippopotamuses; manatees; marine animals; whales

"War of the Worlds, The" (radio drama by Welles)
DISCUSSIONS
Did you know? *volume* **2** *page* **93**

Warner Brothers (American film studio)
DISCUSSIONS
Did you know? *volume* **2** *page* **82**

warps (weaving)
DISCUSSIONS
weaving *volume* **2** *page* **108,** photograph *volume* **2** *page* **109**

warrens (burrows)
DISCUSSIONS
rabbits and hares *volume* **12** *page* **93**

Warsaw (city in Poland)
DISCUSSIONS
atlas *volume* **13** *page* **14**
Poland *volume* **6** *page* **57**

warty pigs
DISCUSSIONS
pigs *volume* **12** *page* **64**

Wase Rock (rock formation in Nigeria)
DISCUSSIONS
Wase Rock rises above the savannah photograph *volume* **8** *page* **20**

Washington (state in the U.S.)
DISCUSSIONS
atlas *volume* **13** *page* **8**
peninsulas *volume* **1** *page* **22**

Washington, George (American leader)
DISCUSSIONS
Did you know? *volume* **9** *page* **37**
United States of America *volume* **9** *page* **27**
Washington, D.C., U.S. *volume* **9** *page* **31**

Washington, March on (U.S. history)
DISCUSSIONS
Martin Luther King *volume* **4** *page* **98,** photograph *volume* **4** *page* **99**

Washington, D.C. (city in the U.S.)
ARTICLE *volume* **9** *page* **31**
DISCUSSIONS
United States of America *volume* **9** *page* **25**
LEARN MORE *look under* New York City

Washington Monument (monument in Washington, D.C., U.S.)
DISCUSSIONS
Washington, D.C. photograph *volume* **9** *page* **30**

Wat Pho (temples in Bangkok, Thailand)
DISCUSSIONS
Bangkok *volume* **7** *page* **39**

Wat Phra Kaeo (temple in Bangkok, Thailand)
DISCUSSIONS
Bangkok *volume* **7** *page* **39,** photograph *volume* **7** *page* **38**

water: *look under* acid rain; Antarctica; clouds; dew; floods; glaciers; icebergs; marshes; oasis; oceans; rivers; swamps; water power; waterfalls

water buffalo, *also called* Indian buffalo (animals)
DISCUSSIONS
buffalo *volume* **12** *page* **49,** photograph *volume* **12** *page* **48**

water lilies (plants)
ARTICLE *volume* **10** *page* **15**
LEARN MORE *look under* flowers; Victoria amazonica

water power
ARTICLE *volume* **2** *page* **67**
LEARN MORE *look under* nuclear energy; technology; thermal power; water; wind power

water wheels: *look under* waterwheels

waterfalls
DISCUSSIONS
rivers *volume* **1** *page* **31**
water power *volume* **2** *page* **67**
LEARN MORE *look under*
waterfalls: Angel Falls; Niagara Falls; Victoria Falls

waterways: *look under* Bosporus; Dardanelles; English Channel; Gibraltar, Strait of; Magellan, Strait of; Panama Canal; rivers; Suez Canal

waterwheels
DISCUSSIONS
water power *volume* **2** *page* **67,** photograph *volume* **2** *page* **67**

waves
ARTICLE *volume* **1** *page* **49**
DISCUSSIONS
sand *volume* **1** *page* **18**
LEARN MORE *look under* echoes; tsunamis

weather: *look under* clouds; cyclones; dew; rainbows; thunder and lightning; tsunamis; waves; wind power

weaving (cloth production)
ARTICLE *volume* **2** *page* **108**
DISCUSSIONS
Did you know? *volume* **2** *page* **79**
LEARN MORE *look under* technology

Web (computer science): *look under* Internet and the World Wide Web

weft (weaving)
DISCUSSIONS
weaving *volume* **2** *page* **108,** photograph *volume* **2** *page* **109**

Welles, Orson (American actor, director, and writer)
DISCUSSIONS
Did you know? *volume* **2** *page* **93**

Wellington (city in New Zealand)
ARTICLE *volume* **7** *page* **101**
DISCUSSIONS
atlas *volume* **13** *page* **16**
LEARN MORE *look under* New Zealand

Wenceslas Square (square in Prague, Czech Republic)
DISCUSSIONS
Prague *volume* **6** *page* **55**

West Africa
DISCUSSIONS
Vodun photograph *volume* **5** *page* **93**
LEARN MORE *look under*
places: Accra; Dakar; Ghana; Guinea; Liberia; Monrovia; Nigeria; Senegal
animals: manatees
stories: "Ananse and the Wisdom Pot"; "Monkey Court, The"

West Indies (island group in the Atlantic Ocean)
ARTICLE *volume* **9** *page* **54**
DISCUSSIONS
atlas *volume* **13** *page* **8**
LEARN MORE *look under*
places: Cuba; Haiti; Puerto Rico; Tobago
things: bananas; manatees; Vodun

West Pakistan (country): *look under* Pakistan

Western Australia (state in Australia)
ARTICLE *volume* **7** *page* **97**
DISCUSSIONS
atlas *volume* **13** *page* **16**
LEARN MORE *look under* Australia

Western Europe: *look under*
countries: Belgium; England; France; Ireland; Netherlands, the; Portugal; Scotland; Spain; United Kingdom
other places: English Channel; Stonehenge

Western Wall, *also called* Wailing Wall (prayer site in Jerusalem)
DISCUSSIONS
Jerusalem *volume* **7** *page* **77,** photograph *volume* **7** *page* **76**
LEARN MORE *look under* architecture

Westminster Abbey (church in London, England, U.K.)
DISCUSSIONS
London *volume* **6** *page* **16**

wetlands: *look under* marshes; swamps

whale shark (fish)
DISCUSSIONS
fish *volume* **11** *page* **35**
sharks *volume* **11** *page* **43,** photograph *volume* **11** *page* **43**
LEARN MORE *look under* sharks

whales
ARTICLE *volume* **12** *page* **76**
DISCUSSIONS
Antarctica *volume* **1** *page* **11**
Did you know? *volume* **1** *page* **40,** *volume* **12** *page* **7**
LEARN MORE *look under* dolphins; mammals; manatees; marine animals; walruses

wheat (grain)
ARTICLE *volume* **10** *page* **75**
LEARN MORE *look under* grasses

White Cliffs of Dover (cliffs in England, U.K.)
DISCUSSIONS
chalk *volume* **1** *page* **83,** photograph *volume* **1** *page* **82**
LEARN MORE *look under* England; English Channel

white-handed gibbons, *also called* Malayan lars (apes)
DISCUSSIONS
gibbons photograph *volume* **12** *page* **13**

"Why Possum's Tail Is Bare" (Cherokee folktale)
ARTICLE *volume* **5** *page* **36**
LEARN MORE *look under*
other American stories: Bunyan, Paul; "How Crow Brought Daylight to the World"; "Rabbit Throws Away His Sandal"
other folktales: "Ananse and the Wisdom Pot"; "How Kangaroo Got His Tail"; "Monkey Court, The"; "Poor Man and the Flask of Oil, The"; "Tiger in the Trap, The"; "Yeh-Shen"

wieners (sausages)
DISCUSSIONS
Did you know? *volume* **6** *page* **48**
LEARN MORE *look under* food

wild goats
ARTICLE *volume* **12** *page* **58**
DISCUSSIONS
sheep *volume* **12** *page* **57**
LEARN MORE *look under* ungulates

wild yaks (animals)
DISCUSSIONS
yaks *volume* **12** *page* **52**

wind
DISCUSSIONS
cyclones and tornadoes *volume* **1** *page* **61**
Neptune *volume* **2** *page* **42**
sand dunes photograph *volume* **1** *page* **18**
waves *volume* **1** *page* **49**
LEARN MORE *look under* wind power

wind power
ARTICLE *volume* **2** *page* **69**

LEARN MORE *look under* nuclear energy; thermal power; water power

wind turbines
DISCUSSIONS
wind power *volume* **2** *page* **69,** photograph *volume* **2** *page* **68**

Windhoek, *also called* Aigams (city in Namibia)
ARTICLE *volume* **8** *page* **81**
DISCUSSIONS
atlas *volume* **13** *page* **6**
LEARN MORE *look under* Germany; Namibia

windmills
DISCUSSIONS
Kinderdijk windmill photograph *volume* **6** *page* **39**
Netherlands, the *volume* **6** *page* **38**
wind power *volume* **2** *page* **69,** photograph *volume* **2** *page* **69**

wines
DISCUSSIONS
Did you know? *volume* **10** *page* **24**
France *volume* **6** *page* **32**

wireless telegraph
DISCUSSIONS
radio *volume* **2** *page* **93,** photograph *volume* **2** *page* **93**

wires
DISCUSSIONS
electricity *volume* **2** *page* **56**

wisdom
DISCUSSIONS
Confucius *volume* **5** *page* **72**
LEARN MORE *look under* *stories:* Aesop's fables; "Ananse and the Wisdom Pot"; "Monkey Court, The"; "Rabbit Throws Away His Sandal"

wisents, *also called* European bison (animals)
DISCUSSIONS
bison *volume* **12** *page* **50**

wolf: *look under* wolves

Wolof (people)
DISCUSSIONS
Senegal *volume* **8** *page* **23**
LEARN MORE *look under* peoples

wolves
ARTICLE *volume* **12** *page* **31**
LEARN MORE *look under* carnivores; coyotes; dogs

woma pythons (animals)
DISCUSSIONS
snakes photograph *volume* **11** *page* **78**

Woman's Medical College (New York City, New York, U.S.)
DISCUSSIONS
Elizabeth Blackwell *volume* **4** *page* **65**

wombats (animals): *look under* *stories:* "How Kangaroo Got His Tail"

women
DISCUSSIONS
Elizabeth Blackwell *volume* **4** *page* **65**
Kath Walker *volume* **3** *page* **69**
Marie Curie *volume* **4** *page* **71**
Mary *volume* **5** *page* **61**
LEARN MORE *look under* *people:* Bernhardt, Sarah; Brooks, Gwendolyn; Dench, Judi; Dickinson, Emily; Elizabeth I; Empress of China; Freeman, Cathy; Kahlo, Frida; Keller, Helen; Meir, Golda; Sutherland, Joan; Tallchief, Maria

wood pulp
DISCUSSIONS
paper *volume* **2** *page* **87**

Woodhenge (ancient structure in England, U.K.)
DISCUSSIONS
Did you know? *volume* **6** *page* **18**

woods: *look under* forests

wool
DISCUSSIONS
sheep *volume* **12** *page* **57**
weaving *volume* **2** *page* **108**

woolly mammoths (animals)
DISCUSSIONS
mammoths and mastodons *volume* **1** *page* **87,** illustration *volume* **1** *page* **86**

worker bees
DISCUSSIONS
bees *volume* **11** *page* **61**

World Chess Federation
DISCUSSIONS
Did you know? *volume* **6** *page* **76**

World Heritage sites
DISCUSSIONS
Did you know? *volume* **7** *page* **27**
Galapagos Islands *volume* **9** *page* **68**
Grand Canyon *volume* **9** *page* **32**
Great Barrier Reef *volume* **7** *page* **92**
Great Wall *volume* **7** *page* **13**
Panama City *volume* **9** *page* **50**
Pompeii and Herculaneum *volume* **1** *page* **15**
Stonehenge *volume* **6** *page* **19**
Taj Mahal *volume* **7** *page* **52**
Victoria Falls *volume* **8** *page* **92**

world music: *look under* worldbeat

World Trade Center (building complex formerly in New York City, U.S.)
DISCUSSIONS
New York City *volume* **9** *page* **37**

World War II
DISCUSSIONS
Anne Frank *volume* **4** *page* **91**
Berlin *volume* **6** *page* **45**
Did you know? *volume* **6** *page* **57,** *volume* **6** *page* **63**
Germany *volume* **6** *page* **43**
Hirohito *volume* **4** *page* **49**
Honolulu *volume* **9** *page* **35**

World Wide Web: *look under* Internet and the World Wide Web

worldbeat, *also called* world music (music)
DISCUSSIONS
Did you know? *volume* **8** *page* **24**
popular music *volume* **3** *page* **32**

worship (religion)
DISCUSSIONS
Baha'i *volume* **5** *page* **70**
Christianity *volume* **5** *page* **57**
Hinduism *volume* **5** *page* **79**
Islam *volume* **5** *page* **64**
Jainism *volume* **5** *page* **87,** photograph *volume* **5** *page* **87**
Judaism *volume* **5** *page* **50**
Roman Catholicism photograph *volume* **5** *page* **43**
Shinto *volume* **5** *page* **77**
Sikhism *volume* **5** *page* **88,** photograph *volume* **5** *page* **89**

wrestling (sport)
DISCUSSIONS
Did you know? *volume* **7** *page* **21**

Wright brothers, *also called* Orville and Wilbur Wright (American aviators)
DISCUSSIONS
airplanes *volume* **2** *page* **71,** photograph *volume* **2** *page* **70**

writing
DISCUSSIONS
Mayan civilization *volume* **4** *page* **103**
LEARN MORE *look under* literature

Writings (sacred text)
DISCUSSIONS
Bible *volume* **5** *page* **63**

WWW (computer science): *look under* Internet and the World Wide Web



Xia Gui (Chinese painter)
ARTICLE *volume* **3** *page* **28**
LEARN MORE *look under* painting

Xochimilco (neighborhood in Mexico City, Mexico)
DISCUSSIONS
Mexico City *volume* **9** *page* **43,** photograph *volume* **9** *page* **43**



Yahweh (name for God)
DISCUSSIONS
Judaism *volume* **5** *page* **50**
Moses *volume* **5** *page* **54**
LEARN MORE *look under* God

yaks (animals)
ARTICLE *volume* **12** *page* **52**
LEARN MORE *look under* bison; buffalo; cattle; ungulates

yams (plants)
ARTICLE *volume* **10** *page* **33**
LEARN MORE *look under* fruits and vegetables; potatoes

Yang (philosophy): *look under* Yin and Yang

Yangon, *also called* Rangoon (city in Myanmar)
ARTICLE *volume* **7** *page* **30**
DISCUSSIONS
atlas *volume* **13** *page* **12**
LEARN MORE *look under* Myanmar

Yangtze River (river in China)
DISCUSSIONS
atlas photograph *volume* **13** *page* **13**
LEARN MORE *look under* rivers

yard (measurement)
DISCUSSIONS
measurement *volume* **2** *page* **59**

"Yeh-Shen" (Chinese folktale)
ARTICLE *volume* **5** *page* **14**
LEARN MORE *look under*
other Asian stories: Moni Mekhala and Ream Eyso; "Poor Man and the Flask of Oil, The"; "Tiger in the Trap, The"
other folktales: "Ananse and the Wisdom Pot"; "How Kangaroo Got His Tail"; "Monkey Court, The"; "Rabbit Throws Away His Sandal"; "Why Possum's Tail Is Bare"

yellow anacondas (snakes)
DISCUSSIONS
anacondas *volume* **11** *page* **81,** photograph *volume* **11** *page* **80**

yellow mongooses, *also called* meerkats (animals)
DISCUSSIONS
mongooses photograph *volume* **12** *page* **36,** photograph *volume* **12** *page* **37**

Yellowstone National Park (U.S.)
DISCUSSIONS
bison photograph *volume* **12** *page* **50**

Yerevan (city in Armenia)
ARTICLE *volume* **7** *page* **67**
DISCUSSIONS
atlas *volume* **13** *page* **12**
LEARN MORE *look under* Asia

"Yesterday" (song by McCartney and Lennon)
DISCUSSIONS
Did you know? *volume* **3** *page* **33**

Yeti (legend): *look under* Abominable Snowman

Yin and Yang (philosophy)
DISCUSSIONS
Daoism *volume* **5** *page* **74,** illustration *volume* **5** *page* **74**

Yoruba (people)
DISCUSSIONS
Did you know? *volume* **3** *page* **63**
LEARN MORE *look under* peoples

Yucatán Peninsula (peninsula in Mexico)
DISCUSSIONS
atlas *volume* **13** *page* **8**
peninsulas *volume* **1** *page* **22**
LEARN MORE *look under* Mayan Civilization

Yugoslavia (historical country)
DISCUSSIONS
Serbia *volume* **6** *page* **76**



Zambezi River (river in Africa)
DISCUSSIONS
Victoria Falls *volume* **8** *page* **92**
Zimbabwe *volume* **8** *page* **89**
LEARN MORE *look under* rivers

Zealand (island in Denmark)
DISCUSSIONS
Denmark photograph *volume* **6** *page* **60**

Zeus (Greek god)
DISCUSSIONS
Atlas *volume* **5** *page* **29**
Parthenon *volume* **6** *page* **87**
LEARN MORE *look under* Greek mythology

Zhongshan Park (park in Beijing, China)
DISCUSSIONS
Beijing *volume* **7** *page* **11**

Zimbabwe, *also called* Southern Rhodesia (country)
ARTICLE *volume* **8** *page* **89**
DISCUSSIONS
atlas *volume* **13** *page* **6**
flag *volume* **8** *page* **89**
LEARN MORE *look under* Harare; Southern Africa

Zionism (nationalistic movement)
DISCUSSIONS
Golda Meir *volume* **4** *page* **57**
Menachem Begin *volume* **4** *page* **35**
LEARN MORE *look under* Israel

Zócalo (square in Mexico City, Mexico)
DISCUSSIONS
Mexico City *volume* **9** *page* **43,** photograph *volume* **9** *page* **42**

zombis (religion)
DISCUSSIONS
Vodun *volume* **5** *page* **92**

zoology (study of animals): *look under* animals

Zoroaster (religious leader)
DISCUSSIONS
Zoroastrianism *volume* **5** *page* **49**
LEARN MORE *look under*
other prophets and founders of religions:
Abraham; Baha Ullah; Buddha; Confucius; Jesus Christ; Mahavira; Moses; Muhammad; Nanak, Guru

Zoroastrianism (religion)
ARTICLE *volume* **5** *page* **49**
DISCUSSIONS
Did you know? *volume* **7** *page* **71**
LEARN MORE *look under*
other Middle Eastern religions:
Christianity; Islam; Judaism

Zulu (African people)
DISCUSSIONS
popular music photograph *volume* **3** *page* **33**
LEARN MORE *look under* peoples

Cover photo credits (first row, left): illustration by Joseph Taylor; (center): hot-air balloons, Albuquerque, New Mexico, © Joseph Sohm—ChromoSohm Inc./Corbis; (right): Kermit the Frog, © & TM 2003 The Jim Henson Company. THE MUPPET SHOW mark & logo, MUPPET, MUPPETS, KERMIT, characters and elements are trademarks of The Jim Henson Company. All Rights Reserved. (Second row, left): Egyptian relief of Cleopatra VII, © Bettmann/Corbis; (center): illustration by Joseph Taylor; (right): the face of tower clock Big Ben in London, © Corbis; (third row, left): Taj Mahal, Agra, India, © Galen Rowell/Corbis; (center): river running through Masai Mara National Reserve, Kenya, © Galen Rowell/Corbis; (right): Statue of Liberty, New York City, © Richard Berenholtz/Corbis; (fourth row, left): sunflower, © Ron Watts/Corbis; (center): chameleon, © David Aubrey/Corbis; (right): tiger, © Randy Wells/Corbis

Enrich your journey through *My First Britannica* with the REFERENCE GUIDE AND INDEX, featuring a glossary and a mini-atlas


Volume 1: **The Earth and Earth Sciences**


Volume 2: **Physical Sciences and Technology**


Volume 3: **The Arts**


Volume 4: **People in History**


Volume 5: **Folklore and Religions**


Volume 6: **Europe**


Volume 7: **Asia, Australia, and New Zealand**


Volume 8: **Africa**


Volume 9: **The Americas**


Volume 10: **Plants**


Volume 11: **Birds, Insects, Reptiles, and Aquatic Life**


Volume 12: **Mammals**


Volume 13: **Reference Guide and Index**

ENCYCLOPÆDIA
Britannica®

AV