Guide to Reading

Consider What You Know

News accounts of natural disasters in Latin America describe the destruction caused by hurricanes, earthquakes, and volcanic eruptions. What geographic factors might make the region vulnerable to such natural disasters?

Read to Find Out

- How do geographers divide the large region known as Latin America?
- What factors have shaped the formation of Latin America’s landforms?
- How has the Latin American landscape influenced patterns of human settlement?
- What natural resources make Latin America an economically important region?

Terms to Know

- cordillera
- altiplano
- escarpment
- llano
- pampa
- gaucho
- hydroelectric power
- estuary

Places to Locate

- Amazon River
- Middle America
- Central America
- West Indies
- South America
- Sierra Madre
- Andes
- Mexican Plateau
- Patagonia
- Mato Grosso Plateau
- Rio Grande
- Rio de la Plata

The Land

A Geographic View

On the Amazon

I watched the river. Each boat carried a tiny cross-section of Amazon society… Canoes drifted past. Small wooden passenger boats or traders mumbled their smoky way downstream. No matter how blue the sky, the river never caught the color in its reflection; it was loaded with sediment carved from the Andes. Logs and brush and whirlpools moved past in endless flow, and river dolphins rolled ahead of us.


From the headwaters of the Peruvian Andes to the Atlantic coast of Brazil, the Amazon River winds about 4,000 miles (6,400 km) through the heart of South America. This mighty river, the world’s second longest, is only one prominent feature of Latin America’s large and varied landscape. In this section you will explore the region’s physical geography: mountains, islands, coastal lowlands, plains, and waterways.

A Vast Region

Located in the Western Hemisphere south of the United States, Latin America has a land area of about 8 million square miles (20,720,000 sq. km)—nearly 16 percent of Earth’s land surface. The countries of the region share a heritage of settlement by Europeans, especially those from Spain and Portugal. Most of these settlers spoke Spanish or Portuguese—languages based on Latin, the language of the Roman Empire, which gives the region its name.
Geographers usually divide Latin America into three areas—Middle America, the Caribbean, and South America. Middle America consists of Mexico and the seven countries of Central America, the stretch of land that links the landmasses of North and South America. The Caribbean islands, also known as the West Indies, fall into three groups—the Bahamas, the Greater Antilles, and the Lesser Antilles. The continent of South America is by far the largest land area of Latin America. Among South America’s 13 countries, Brazil is the largest in both land area and population.

Mountains and Plateaus

One of Latin America’s most distinctive landforms is its towering mountains. Thrusting upward in countless folds and ridges, this mountainous profile begins in North America as the Rocky Mountains and extends all the way to South America’s southern tip. The mountains’ names change as you move south. In Mexico they are the Sierra Madre; in Central America, the Central Highlands; and in South America, the Andes.

Latin America has such a rugged landscape because much of the region sits along the Pacific Ring of Fire, where plates of the earth’s crust have collided for billions of years. These collisions have formed mountains and volcanoes and have caused tremendous earthquakes. They continue to change the landscape today. In 1999, for example, a strong earthquake reduced to rubble many towns and villages in northwestern South America.

Despite obstacles, the mountains and plateaus of Latin America have been places of human settlement for thousands of years. People wanting to escape the heat of the lowland areas have been drawn to cooler mountain climates. They also have been attracted by the mountains’ rich natural resources—water, volcanic soil, timber, and minerals. Historically, Latin America’s rugged terrain has tended to block movement and trade and to isolate regions and peoples. In recent decades radio, television, air transport, and the Internet have begun to break down old physical barriers.

Mountains of Mexico, Central America, and the Caribbean

Look at the physical-political map on page 195. Notice that Mexico’s Sierra Madre consists of two mountain ranges—the Sierra Madre Oriental (“Eastern”) and the Sierra Madre Occidental (“Western”)—that meet near Mexico City to form the sharp-peaked Sierra Madre del Sur (“of the South”). These ranges surround the densely populated Mexican Plateau, which covers much of central Mexico. In the plateau’s southern area, the mild climate, fertile volcanic soil, and adequate rainfall have attracted human settlement for thousands of years.

Farther south, the Central Highlands, a chain of volcanic mountains, rise like a backbone across Central America. Many Caribbean islands are also part of this mountain range, which extends across the bed of the Caribbean Sea. The islands are actually volcanic peaks that rise above sea level. Some of these volcanoes are still active, which can make living on these islands hazardous.

Andes of South America

None of Latin America’s other mountains compare with the 4,500-mile (7,242-km) stretch of the Andes along the western edge of South America. Their extent makes the Andes the world’s longest mountain range, as well as one of the highest, with some peaks rising to more than 20,000 feet (6,096 m) above sea level. The Andes consist of several ranges that run parallel to one another like deep folds in a carpet. Such parallel ranges are called cordilleras (KAWR•duhl•YEHR•uhhs).

In Peru and Bolivia, the spectacular Andes peaks encircle a region called the altiplano, which means “high plain.” In southern Argentina, hills and lower flatlands form the plateau of Patagonia.
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Elevations
Feet Meters
10,000 3,000
5,000 1,500
2,000 600
1,000 300

National boundary
Mountain peak

Geography Skills for Life
1. Interpreting Maps What physical features surround the Mexican Plateau?
2. Applying Geography Skills Which South American rivers flow through highlands areas? Lowlands areas?

Find NGS online map resources @ www.nationalgeographic.com/maps
Wildlife expert William Franklin describes the windswept Patagonia region at the southern end of South America:

“\[quote\\]The sky is full of mountains in this country. I often get a sore neck from admiring these Andean peaks as we trek on foot and horseback over the plains and hills. The wind is our constant companion; locals advise that if you want to see Patagonia, just stand still and it will all blow past you.\\[quote\]\\n

Highlands of Brazil

Eastern South America is marked by broad plateaus and valleys. The Mato Grosso Plateau, a sparsely populated plateau of forests and grasslands, spreads over much of Brazil and across the west to Bolivia and Peru. East of the Mato Grosso Plateau lie the Brazilian Highlands, a plateau so vast that it spans several climate and vegetation zones. On the eastern edge of the Brazilian Highlands, the plateau plunges sharply to the Atlantic Ocean, forming a steep cliff or slope called an escarpment.

Lowlands and Plains

Narrow coastal lowlands wind their way along the Gulf of Mexico and the Caribbean and also along the Atlantic and Pacific coasts of South America. One of the longest strips of coastal plain in Latin America lies along Brazil’s Atlantic coast. In northeastern Brazil, this plain is about 40 miles (60 km) wide but narrows considerably as it winds southward. Between Rio de Janeiro and the southeastern seaport of Santos, the plain disappears entirely, only to reappear and widen again near Brazil’s borders with Uruguay and Argentina. Hemmed in by highland escarpment, Brazil’s coastal plain has been a major area of settlement and economic activity since the 1500s.

Inland areas of South America hold vast grasslands: the llanos (la\(\text{h}^\text{n}\)\(\text{o}\)hs) of Colombia and Venezuela, and the pampas of Argentina and
Uruguay. Both plains areas provide wide grazing lands for beef cattle. Ranchers on large estates employ cowhands, called *llaneros* in the llanos and *gauchos* in the pampas, to drive great herds of cattle across the rolling terrain. Known for its fertile soil, the pampas region is one of the world’s major “breadbaskets,” producing an abundance of wheat and corn. Many people in the pampas region grow crops on small- and medium-sized farms.

**Water Systems**

Like a massive circulatory system, Latin America’s many waterways serve as arteries that transport people and goods to different parts of the region and the world. Most of the region’s major rivers are in South America. One important exception is the Rio Grande, or Rio Bravo del Norte (“Wild River of the North”), which forms part of the long border between Mexico and the United States.

**Rivers of South America**

Middle America’s rivers are generally small, but the rivers that cross South America are gigantic. The Amazon is the Western Hemisphere’s longest river and carries ten times the water volume of the Mississippi River. Hundreds of smaller rivers join the Amazon as it journeys from the Andes to the Atlantic Ocean. These rivers together form the Amazon Basin, which drains parts of Bolivia, Peru, Ecuador, Colombia, and Venezuela, as well as Brazil. Despite the tremendous force of water at its mouth, the Amazon is navigable. Oceangoing ships can travel upstream as far as 2,300 miles (3,701 km) from the Atlantic coast.

The Paraná, Paraguay, and Uruguay Rivers together form the second-largest river system in Latin America. This system drains the rainy eastern half of South America. Important commercial highways, these three rivers provide inland water routes and hydroelectric power—electricity generated from the energy of water—for Argentina, Bolivia, Brazil, Paraguay, and Uruguay. After coursing through inland areas, the three rivers flow into a broad estuary, an area where the tide meets a river.
current. This estuary, the Rio de la Plata ("River of Silver"), meets the Atlantic Ocean. Buenos Aires, the capital of Argentina, and Montevideo, the capital of Uruguay, lie along the Rio de la Plata.

Lakes
Latin America has few large lakes. The region does include the world's highest navigable lake, Lake Titicaca (tee•tee•KAH•kah), in the Andes of Bolivia and Peru. Lake Titicaca lies about 12,500 feet (3,810 km) above sea level. The area surrounding Lake Titicaca was one of the centers of early Native American civilization. It holds many architectural remains from the distant past. Lake Maracaibo (MAH•rah•KY•boh) in Venezuela is regarded as South America's largest lake, even though it is actually an inlet of the Caribbean Sea. Lake Maracaibo and the surrounding area contain the most important oil fields in Venezuela. The largest lake in Central America is Lake Nicaragua, which lies between Nicaragua and Costa Rica.

Natural Resources
Latin America has significant natural resources, including minerals, forests, farmland, and water. Major deposits of oil and natural gas lie in rock beds located in mountain valleys and in offshore areas, especially along the Gulf of Mexico and in the southern Caribbean Sea. These deposits help make Mexico and Venezuela leading oil producers.

Latin America's mineral wealth was first mined by Native American peoples and later by European colonists. The foothills along Venezuela's Orinoco River contain large amounts of gold. Brazil also is rich in gold, while Peru and Mexico are known for silver. Mines in Colombia have been producing the world's finest emeralds—precious green stones composed of beryllium—for more than 1,000 years. Even Latin America's nonprecious minerals have great economic value. Chile is the world's largest exporter of copper, and Jamaica is a leading source of bauxite, the main ore of aluminum. Bolivia and Brazil have large reserves of tin.

Not all of Latin America's countries share equally in this bounty. Geographic inaccessibility, lack of capital for development, and deep social and political divisions keep many of the region's natural resources from being developed fully or distributed evenly. The challenge for Latin Americans in the future is how to overcome these obstacles and make the best use of the region's natural resources.

### TAKS Practice

#### Checking for Understanding

1. **Define** cordillera, altiplano, escarpment, llano, pampa, gaucho, hydroelectric power, estuary.

2. **Main Ideas** Use a table like the one below to describe Latin America's three main geographic areas. Then choose one area and explain how it differs from the other two.

<table>
<thead>
<tr>
<th>Geographic Area</th>
<th>Physical Features</th>
</tr>
</thead>
</table>

### Critical Thinking

3. **Identifying Cause and Effect** How do the physical features of Latin America affect everyday life? Give examples.

4. **Drawing Conclusions** Why does much of South America have the potential to produce hydroelectric power?

5. **Making Inferences** What factors make Latin America important to the global economy?

### Analyzing Maps

6. **Region** Study the physical-political map on page 195. What part of South America is dominated by mountains?

### Applying Geography

7. **Effects of Landforms** Think about the physical features of South America. Write a descriptive paragraph explaining how landforms affect the course of South America's water systems.
Guide to Reading

Consider What You Know

Most of Latin America's people live in an area between the Tropic of Cancer and the Tropic of Capricorn, an area that includes the Equator. What types of climate and vegetation would you expect to find in this broad area?

Need to Find Out

- Which climate regions are represented in Latin America?
- How do Latin America's location and landforms affect climates even within particular regions?
- How are the natural vegetation and agriculture of Latin America influenced by climatic factors?

Terms to Know

- canopy
- tierra caliente
- tierra templada
- tierra fría

Places to Locate

- Amazon Basin
- Colombia
- Venezuela
- Argentina
- Uruguay
- Atacama Desert

Climate and Vegetation

Diverse climates make Latin America a region of sharp contrasts. To reach the glacial peaks of Chile's Cordillera Sarmiento, for example, climbers must trek through thick, nearly impenetrable vegetation. Steamy rain forests, arid deserts, grassy plains, and sandy beaches are all part of the region. In this section you will learn about Latin America's various climate regions and how the region's climates and landforms together influence natural vegetation and the growing of crops.

Climate and Vegetation Regions

Much of Latin America lies between the Tropic of Cancer and the Tropic of Capricorn. As a result, vast areas of the region have some form of tropical climate with lush green vegetation. Yet, even within the Tropics, mountain ranges and wind patterns create a variety of climates and natural vegetation in Latin America.

NATIONAL GEOGRAPHIC

A Geographic View

Exploring Chile's Mountains

Green was the color we least expected when we landed on (Chile's) Sarmiento [ranges]... Mosses and lichens carpeted the rocks above an iceberg-littered bay... After several days of exploring, our progress thwarted by glacial canyons and snarly ice-falls, we discovered a route to the peaks... To reach the ridge, we had to hack through rain forest, our skis catching on limbs, our boots slipping off logs.

—Jack Miller, "Chile's Uncharted Cordillera Sarmiento," National Geographic, April 1994
maps above show Latin America's climate regions and natural vegetation zones.

**Tropical Regions**

A tropical rain forest climate and vegetation dominate southern Mexico, eastern Central America, some Caribbean islands, and parts of South America. Hot temperatures and abundant rainfall occur year-round. In the Amazon Basin, this combination results from the area's location on the Equator and the patterns of the prevailing winds.

**The Rain Forest**

Wet tropical areas of Latin America have a dense cover of rain forest, or selva as it is called in Brazil. Latin American rain forests contain a variety of trees, including tropical hardwoods, palms, tree ferns, and bamboos. In Latin America's tropical rain forest areas, broad-leaved and needle-leaved evergreen trees are so close together that their crowns form a dense canopy, or a continuous layer of leaves. The canopy may soar to 130 feet (40 m) and is so dense that sunlight seldom reaches the forest floor. Plants beneath the canopy must be shade tolerant.

The Amazon Basin, with Earth's largest rain forest, covers about one-third of South America. It is also the world's wettest tropical plain. Heavy rains drench much of the densely forested lowlands throughout the year, but especially between January and June. During the months of heavy rainfall, large areas crossed by the Amazon River are often severely flooded. In Brazil, the width of the river ranges between 1 and 6 miles (1.6 and
The Amazon rain forest shelters more species of plants and animals per square mile than anywhere else on Earth. One journalist described a recent survey by scientists from the Smithsonian Institution in Washington, D.C.:

"Here at this one site on the Equator, in about 1,500 acres, scientists have counted 3,000 species of plants, 530 species of birds, nearly 80 species of bats, and 11 species of primates. There are jaguars and other wild cats, tapir, deer, otters, capybaras, and agoutis..."

Virginia Morell, "The Variety of Life," National Geographic, February 1999

The Amazon rain forest is also a habitat for many reptiles. The snakes there include boas and anacondas. Iguanas and crocodiles also are found in many rain forests. Rivers and streams teem with varied and abundant freshwater fish.

**Tropical Savanna**

A tropical savanna climate is typical of the coast of southwestern Mexico, most Caribbean islands, and north-central South America. These areas have hot temperatures and abundant rainfall but also experience an extended dry season. In many tropical savanna areas, vast grasslands flourish. Some of these grasslands, such as the llanos of Colombia and Venezuela, are covered with scattered trees and are considered transition zones between grasslands and forests.

**History**

**The Humid Subtropics**

A humid subtropical climate prevails over much of southeastern South America, from Rio de Janeiro, Brazil, to the pampas of Argentina and Uruguay. In this area, winters are short and mild, and summers are long, hot, and humid. Summers occasionally bring short dry periods.

The vast pampas today consist primarily of short grasses but once had scattered trees. Spanish settlers brought cattle and horses to the pampas and cut down trees to set up ranches. Overgrazing...
eventually left only short clumps of grass to anchor the pampas soil, and dust storms periodically swept over the region. Argentine farmers now plant alfalfa, corn, and cotton to hold the topsoil in place.

**Desert and Steppe Areas**

Parts of northern Mexico, coastal Peru and Chile, and the southeastern coast of Argentina have desert climates and vegetation. In Chile the rain shadow effect of the Andes has produced the Atacama Desert, a region so arid that in some places no rainfall has ever been recorded. In the desert areas of Latin America, vegetation is sparse. Prickly cacti and drought-resistant shrubs, however, have adapted to the harsh environment.

Parts of Latin America—northern Mexico, northeastern Brazil, and south central South America—receive little rainfall but do not have desert climates and vegetation. Instead, they have steppe climates—hot summers, cool winters, and light rainfall—and grassy or lightly forested vegetation.

**Elevation and Climate**

Although Latin America lies in the Tropics, its varied climates are more affected by elevation than by distance from the Equator. Throughout the region, Spanish terms are used to describe three different vertical climate zones that occur as elevation increases. Each of these three zones has its own characteristic natural vegetation and crops.

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**GRAPH STUDY**

Comparing Climate Regions: Argentina and the United States

**Geography Skills for Life**

1. **Interpreting Graphs** What is the average September temperature in each city?

2. **Applying Geography Skills** How might climate affect patterns of economic conditions in Argentina? In Texas?
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The tierra caliente, or “hot land,” lies at eleva­
tions between sea level and 2,500 feet (760 m).
Average annual temperatures in these coastal
areas and foothills range from 68° to 91°F (20° to
33°C). In the rain forests of the tierra caliente, the
main crops include bananas, sugar, rice, and cacao.

The tierra templada, or “temperate land,” lies
between 2,500 and 6,500 feet (760 and 2,000 m).
In this zone temperatures range between 60° and
72°F (16° and 22°C). Broad-leaved evergreen trees
at lower levels give way to needle-leaved, cone­
bearing evergreens at upper levels. In the tierra tem­
plada, the most densely populated of the vertical
climate zones, coffee and corn are the main crops.

Land at 6,500 to 10,000 feet (2,000 to 3,048 m) is
known as the tierra fria, or “cold land.” At this ele­
vation, frosts are common during winter months.
However, crops such as potatoes and barley grow
well here. Above the tierra fria, conditions are more
difficult for agriculture or human habitation.
Identifying Cause-and-Effect Relationships

Identifying cause-and-effect relationships involves considering how and why an event occurred. A cause is the action or situation that leads to the event. An effect is the result or consequence of an action or situation.

Learning the Skill

Cause-and-effect relationships may be simple or complex. Several causes can produce a single effect. For example, a forest fire may be caused by a series of events or conditions. Hot weather and lack of rain make grass and wood dry and flammable. The day the fire started might have been windy, and the wind might have blown sparks from a camper's fire to some dry grass.

Similarly, one event can produce several effects. A large forest fire can destroy animal habitats. It can also suddenly reduce plant cover, making the land more susceptible to erosion from wind and rain. A large fire can also be expensive to fight and damaging to homes and businesses, harming the economy of an entire region.

Sometimes one event causes several other events in a chain reaction. A traffic accident on a highway may cause another accident, which causes another accident, and so on. Strings of causal relationships are called cause-and-effect chains.

Follow these steps to identify cause-and-effect relationships:

- Ask questions about why events occur.

Practicing the Skill

Identify one cause and one effect associated with each of the events or conditions listed below.

1. The 1999 earthquake in Colombia
2. The formation of several Caribbean islands
3. Limited access to the rich mineral resources of the Amazon Basin
4. Cold temperatures in the tierra fria

Applying the Skill

Use the library or the Internet to research volcanic activity in Latin America. Then explain the causes and effects of a volcanic eruption by creating a graphic like the one above.
SECTION 1

The Land (pp. 193–198)

Terms to Know
• cordillera
• altiplano
• escarpment
• llano
• pampa
• gaucho
• hydroelectric power
• estuary

Key Points
• Latin America includes Middle America, the Caribbean, and South America.
• Latin America's physical features include high mountain ranges, less rugged highlands, vast central plains, and volcanic islands.
• The water systems of Latin America, especially the mighty rivers of South America, are key to human activity in the region.
• Although the region is rich in natural resources, geographic, political, and economic obstacles have kept resources from being developed fully or shared equally.

Organizing Your Notes
Create a table like the one below to help you organize information about the physical features of Latin America.

<table>
<thead>
<tr>
<th>Physical Feature</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mexican Plateau</td>
<td></td>
</tr>
<tr>
<td>Andes</td>
<td></td>
</tr>
<tr>
<td>Rio Grande</td>
<td></td>
</tr>
<tr>
<td>Amazon River</td>
<td></td>
</tr>
<tr>
<td>Rio de la Plata</td>
<td></td>
</tr>
</tbody>
</table>

SECTION 2

Climate and Vegetation (pp. 199–203)

Terms to Know
• canopy
• tierra caliente
• tierra templada
• tierra fria

Key Points
• Much of Latin America lies in the Tropics; however, landforms and wind patterns give the region great climatic diversity.
• Tropical climates such as tropical forest and tropical savanna are the most common climates in Latin America.
• The natural vegetation of Latin America consists mainly of rain forests and grasslands.
• The tropical highlands in Latin America include three vertical climate zones that are based on latitude and elevation.

Organizing Your Notes
Create an outline using the format below to help you organize your notes for this section.

Climate and Vegetation
I. Climate and Vegetation Regions
   A. Tropical Regions
      1. The Rain Forest
Reviewing Key Terms

Write the key term that best completes each of the following sentences. Refer to the Terms to Know in the Summary & Study Guide on page 205.

1. The Andes consist of parallel mountain ranges, or ________.

2. The high plain encircled by the Andes of Bolivia and Peru is known as the ________.

3. The plateau of the Brazilian Highlands plunges sharply to the Atlantic Ocean, forming a steep cliff called an ________.

4. Cattle are raised on the broad grasslands called ________ in Colombia and Venezuela and ________ in Argentina and Uruguay.

5. The Rio de la Plata is typical of an ________, an area where the tide meets a river current.

6. Highlands climates are divided into vertical zones, including the hot ________, the temperate ________, and the cold ________.

Reviewing Facts

SECTION 1

1. What are the three major geographic areas within Latin America?

2. What three island groups make up the West Indies?

3. Which three rivers flow into the Rio de la Plata?

SECTION 2

4. What are the eight climate regions of Latin America?

5. What factors determine why Latin America’s highlands climate is divided into three zones?

6. Where is the world’s largest rain forest located?

7. What are South America’s two main grassland areas called?
Using the Regional Atlas
Refer to the Regional Atlas on pages 182–185.

1. **Location** What river makes up a major part of the boundary between Mexico and the United States?

2. **Place** In terms of land use, why is there little to no activity along much of the Pacific coast of South America?

Thinking Like a Geographer
Review the economic activity map on page 187. Analyze the effects of physical and human geographic processes on the development of Latin America's resources. Make three practical suggestions for improving resource development in the region.

Problem-Solving Activity
**Problem-Solution Proposal** Working with a group, contact media services to find out more about a recent natural disaster in Latin America. Investigate accounts of the disaster to determine whether human activity made the disaster worse. In a report, describe the disaster's impact and propose ways to reduce the potential for damage in the future.

GeoJournal
**Descriptive Writing** Using the information you logged in your GeoJournal as you read, write a descriptive paragraph about one of the physical features of the region. Use your textbook and the Internet as resources to make your descriptions vivid, accurate, and interesting.

Technology Activity
**Building an Electronic Database** Collect facts about the countries of Latin America, such as natural resources, climate, average annual temperature, average annual rainfall, and natural vegetation. Create a database to organize and analyze the data. From the database, develop a table that presents your analysis.

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**TAKS Test Practice**
Use the climograph below and your knowledge of geography to answer the question.

**São Paulo, Brazil**

![Climograph](image)

1. Based on the information shown in the climograph, which statement about the months of April and November is accurate?
   - A The average temperature and amount of rainfall are about the same.
   - B It is hotter and drier in November.
   - C The average temperature is about the same, but it is wetter in November.
   - D The amount of rainfall is about the same, but it is hotter in November.

**Test-Taking Tip**
Study the information shown on the climograph for average temperature and monthly precipitation. Then look carefully at the data for the months of April and November. Compare the amount of precipitation for the two months. As a result, you will be able to eliminate some of the statements.
Senior Author
Richard G. Boehm, Ph.D.

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2003