

# THE GOLDEN SPIKE

## Building America's First Transcontinental Railroad

NATIONAL  
GEOGRAPHIC  
SOCIETY  
COMPUTER COURSEWARE

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## WHAT'S IN THIS KIT

☐ Computer software—two disks

*Sacramento to Promontory*: a simulation that re-creates the construction of the western section of America's first transcontinental railroad

*Omaha to Promontory*: a simulation that re-creates the construction of the eastern section of the railroad

☐ A backup copy of each disk

☐ Fifteen copies of the color booklet *Maps, Trains, and People*

☐ One filmstrip, *Linking the Nation*, with audiocassette

☐ Library catalog cards

☐ Teacher's Guide with reproducible activity sheets and information for ordering replacement parts and lab packs

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## OVERVIEW OF THE GOLDEN SPIKE

The GOLDEN SPIKE is a multimedia courseware adventure in history and geography for students in grades five through nine. Using the construction of the first transcontinental railroad as its theme, the GOLDEN SPIKE contains a wealth of historical and geographical information. It develops skills in map reading and research, creates an awareness of the complexities involved in designing and executing a mammoth construction project, and improves proficiency in problem solving. The emphasis throughout is on student involvement—students use information that they have been given to make decisions as they build their railroads.

Two interactive simulation games form the core of the kit. The simulations can be played by individuals or by small groups. The program on Disk 1, *Sacramento to Promontory*, re-creates the building of the western section of the transcontinental railroad. The program on Disk 2, *Omaha to Promontory*, re-creates the building of the eastern portion of the railroad. In each simulation, students construct their own railroads, following either the historical route or a route of their own choosing.

Although the structure of the two programs is similar, the terrain differs along each route. Therefore, students have very different decisions to make in each game. To take maximum educational advantage of this kit, students should use both disks. Both programs contain a large randomized data bank. This ensures that no two simulations are identical and that players will be presented with different information and choices each time they play a game.

The other components of the kit provide students with information that will help them make informed decisions when they build their railroads. The filmstrip, *Linking the Nation*, provides background information on the historical period during which the railroad was built. It also contains photographs of workers and underscores the human contribution to the immense undertaking. The filmstrip should be viewed just before students play the simulations.

The color booklet—*Maps, Trains, and People*—provides specific information about the construction of the railroad and contains detailed colored maps of the land through which the railroad passed. Students should use the booklet maps to help them

plot their routes at the computer. Both the filmstrip and the booklet can be used independently of the software to supplement the curriculum in classes in American history, geography, or the development of technology.

The GOLDEN SPIKE provides a rich supply of materials and activities, enough to keep an entire class actively involved in learning—whether you have many computers or only one. The software gives students the directions and guidance they need to work independently at the computer while the teacher and the rest of the class are engaged in other activities.

This Teacher's Guide is designed to assist teachers in planning how to use the GOLDEN SPIKE. For each software program and for the filmstrip, the Guide contains a separate section that provides a description of the program, learning objectives, and suggestions for introductory and follow-up activities. Many of these exercises are on reproducible Activity Sheets, which are included at the end of the Guide. Instructions for operating your computer and for saving or deleting unfinished games can also be found in this Guide.



## TIPS FOR CLASSROOM MANAGEMENT

The GOLDEN SPIKE can be used in a variety of teaching situations. Here are some suggestions for using the kit in your classroom.

### DEVELOPING A TEACHING UNIT

The entire kit can be used to develop a unit on the building of the transcontinental railroad. The length of the unit will depend on your schedule. A sample unit is outlined below.

- ☐ Show the filmstrip and discuss the history of the period.
- ☐ Review map skills using the maps in the color booklet and relevant activity sheets.
- ☐ Assign teams of students to play the simulation game at the computer while the rest of the class uses activity sheets.
- ☐ Assign follow-up activities and have students present reports to the class.

### INTEGRATING THE GOLDEN SPIKE INTO THE CURRICULUM

If the transcontinental railroad itself is not an important topic in your curriculum, the GOLDEN SPIKE can be used to supplement units about other topics. It will illumine many facets of the history of the United States in the 1850s and 1860s, particularly westward expansion and the industrial revolution. Geography teachers can use the GOLDEN SPIKE to illustrate the impact of geography on history, technology, and human society. Finally, the kit can be used in conjunction with a study of such large-scale construction projects as the Suez or Panama canals, Roman roads and aqueducts, or the Egyptian pyramids.

### TIME SAVERS

Read this introductory section of the Guide to get an overall sense of the GOLDEN SPIKE. Decide how much of the kit you wish to use.

Use the sections of this Guide that relate to the disks and the filmstrip as aids in lesson planning. Each section is organized sequentially and includes many optional activities to provide maximum flexibility.

If time is limited, focus on the simulation games and have students work in teams of four. Games need not be completed in one session. Students can save incomplete games on a storage disk and finish them when time permits. For directions on saving games, see page 43 (Apple) or 51 (IBM) in the Operating Your Computer section of this Guide.

### RECORD KEEPING

Prepare a master chart to schedule and record students' use of the programs in the GOLDEN SPIKE. Mark the chart to indicate which students have games in progress and which students have completed their games.

Duplicate all the activity sheets that you plan to use and give a set to each student.

If you are using more than one disk to store incomplete games, number each disk. When students save games, remind them to note the number of their disk and to return to the same disk when they resume play.

### NOT ENOUGH COMPUTERS?

Do as much or as little of the GOLDEN SPIKE as you wish. Skim the Teacher's Guide. Select the programs and the activities that best meet your needs.

Schedule computer use throughout the day. Directions for the programs are on the disks. Small groups of students may work independently at the computer while the rest of the class does other assignments.

Have students do optional activities while they are waiting for a turn at the computer.

### COMPUTER LABS

Do as much or as little of the GOLDEN SPIKE as you wish. Skim the Teacher's Guide. Select the programs and activities that best fit your lab situation.

Divide the class into groups. Assign off-computer activities to groups waiting for turns at the computers.

*continued*

Because the two programs are played the same way, you can introduce both at once. In addition, each disk contains directions for playing the game, so students can use the software without assistance from the teacher.

Order lab packs of the GOLDEN SPIKE so that more students can use the programs at the same time. Information on how to order lab packs can be found on page 57 in the Appendix of this Guide.

Divide activities between the classroom and the computer lab. The GOLDEN SPIKE is designed to fit into the regular curriculum—and many activities can be done without a computer.





## INTRODUCTION TO LINKING THE NATION

- ☐ **Type of program:** Filmstrip with audiocassette
- ☐ **Subject matter:** The building of the first transcontinental railroad
- ☐ **Running time:** 14 minutes
- ☐ **Grade range:** 5 to 9
- ☐ **Group size:** Individuals, small groups, entire class
- ☐ Most construction supplies came from manufacturers in the East. Supplies for the western section of the railroad were sent by ship around South America.
- ☐ Completed in 1869, the railroad—which stretched nearly 1,800 miles across desert, mountains, and plains—was a major engineering feat of the 19th century.
- ☐ The first transcontinental railroad—and others built soon after—improved travel and commerce and speeded settlement of the West.

### DESCRIPTION OF THE PROGRAM

*Linking the Nation* provides background information on the historical period during which the transcontinental railroad was built. The filmstrip shows how the westward movement created a need for a transcontinental railroad. It also explains how railroad legislation was delayed in Congress when the railroad became entwined with regional and political disputes of the day. Illustrations of mountains, plains, and deserts along the route show the impact of geography on the monumental construction project. Historical photographs of men at work on the railroad bring the story to life.

The filmstrip highlights many of the obstacles that builders had to overcome to construct the railroad. Students will face similar problems when they build their railroads at the computer. *Linking the Nation* should be viewed just before students play the simulation game.

### KEY POINTS

- ☐ The Pacific Railroad Act of 1862 authorized construction of the first transcontinental railroad, which extended from Omaha, Nebraska, to Sacramento, California.
- ☐ Two companies, the Central Pacific Railroad and the Union Pacific Railroad, employed thousands of workers to construct the transcontinental railroad. Many workers were immigrants from Ireland and from China.

### OBJECTIVES

After viewing this filmstrip, students should be able to:

- ☐ Tell why a transcontinental railroad was needed in the mid-1800s.
- ☐ Trace the route of the transcontinental railroad from Nebraska to California on a map.
- ☐ Identify a mountain range that the railroad passed through.
- ☐ Discuss some of the obstacles that railroad builders had to overcome.
- ☐ Tell how railroads improved western travel.
- ☐ Describe how railroads changed the lives of the Plains Indians.



## BACKGROUND INFORMATION

In 1830, the nation's first scheduled passenger train carried 141 passengers over 6 miles of track near Charleston, South Carolina. Newspaper accounts of the event reported that the steam-powered locomotive "darted forth like a silver rocket, scattering sparks and flames on either side." Within a year, steam engines were transporting people and goods in several other locations. Travelers, farmers, and merchants—who had endured the hardships of wagons stuck on muddy roads and boats locked in frozen canals—welcomed the new form of land transportation.

The first railroads were financed both by state money and by private funds. Many people living along proposed routes were eager to invest in railroads, which brought growth and prosperity to most regions they served. By 1850, railroads linked every state east of the Mississippi River and had become the nation's dominant form of transportation.

By mid-century, the California gold rush and the availability of free land had lured many Americans to the Far West. In the 1850s, Congress considered a number of proposals to extend rail service to the Pacific coast. But petitions for a transcontinental railroad were deadlocked by the intense sectional rivalries then dividing the nation. Southerners, who wished to extend slavery to western territories, demanded a southern route for a transcontinental railroad. Northerners, who opposed the extension of slavery, argued for a northern route.

In 1861, civil war erupted between the North and the South. The following year, President Abraham Lincoln signed the Pacific Railroad Act. This bill authorized two companies to construct a transcontinental railroad along a northern route. The Union Pacific Railroad would build westward from Omaha, Nebraska, and the Central Pacific Railroad would work eastward from Sacramento, California. Both companies held ground-breaking ceremonies in 1863. But construction was delayed by the Civil War, which absorbed most of the nation's manufactured goods, investment capital, and labor force. Construction speeded up in 1865, when the Civil War ended.

The Pacific Railroad Act provided loans and land grants from the federal government to help finance the railroad. But both companies had to raise capital to begin construction. Unlike eastern railroads, the transcontinental railroad was

regarded as a very risky investment. Many people doubted that a railroad could be built through the deserts and towering mountains of the West. Other people thought it foolhardy to build a railroad through miles of unsettled country.

To raise capital, the directors of both the Central Pacific and the Union Pacific devised complex financial schemes. Thomas Durant, principal director of the Union Pacific, staged publicity stunts to popularize the railroad and attract investors. One of his most flamboyant events was a three-day celebration in the Nebraska prairie in 1866. Guests were carried by train to the end of the Union Pacific line. There they were entertained by Indians whom Durant had hired to perform dances and to stage mock battles. As a grand finale, the prairie was set afire. Spectators watched in awe as flames raced across the plains and leapt into the night sky. Extensive newspaper coverage of the event brought much money into the company treasury.

The determined directors and workers of the Central Pacific and the Union Pacific proved the skeptics wrong and successfully completed the transcontinental railroad in May 1869. The meeting of the rails at Promontory was celebrated across the nation. Soon other transcontinental lines were built, and westward migration accelerated. By the close of the century, the passenger train, which first appeared in 1830, had carried settlers to every part of the nation.



## FILMSTRIP TEXT

1 *No narration*

2 A steam-powered train carries tourists on a scenic route through Colorado mountains. Railroads have played a vital role in the development of the United States. Today, thousands of miles of railroads link our cities.

3 But in the mid-1800s, trains served only the eastern United States. Nevertheless, many Americans sought land and opportunity in the West.

4 Settlers traveled west in covered wagons like the ones used in this re-creation of pioneer days. The journey took several months, and travelers endured many hardships.

5 In 1848, gold was discovered in California. Thousands of people headed west with dreams of striking it rich. By 1850, California had become a state. To connect the newest state and other western settlements with eastern cities, a railroad was needed.

6 In the 1850s, an artist created this vision of a railroad that would extend from the nation's heartland across vast plains to the Pacific coast. A transcontinental railroad would link East and West, and it would open rich lands to settlement and growth.

7-9 *Title frames*

10 In the mid-1800s, the vast majority of Americans lived east of the Mississippi River. Towns and cities were linked by railroads and waterways, the major forms of transportation at that time.

11 The black lines on this map represent the 30,000 miles of railroad that served the nation in 1860. The regions shown in red are territories—lands owned by the United States government but not yet organized into states. The territories were populated primarily by Indians, whose ancestors had lived on the land for centuries.

12 The government encouraged settlement of territories by offering free land to settlers. These people are Mormons, members of a religious group that settled near the Great Salt Lake in Utah territory. As more people moved west . . .

13 . . . petitions for a transcontinental railroad were introduced here in the United States Senate in the 1850s. During that period, northern and southern Congressmen were bitterly divided on many issues, including slavery, states' rights, and the railroad. Northerners demanded a northern route for the railroad; Southerners insisted on a southern course. To determine the best route . . .

14 . . . Congress sponsored surveys of western lands, including the Sierra Nevada mountains, which extend nearly the entire length of California. In 1855, surveyors presented their recommendations to Congress, but members still failed to agree.

15 Theodore Judah, a railroad engineer, was a leading supporter of the railroad. Judah identified the best route through the Sierra and arranged financial backing from private investors. He also urged Congress to pass legislation supporting the railroad.

16 In 1861, the Civil War broke out between northern and southern states. President Abraham Lincoln, wishing to link the wealthy state of California to the northern cause, selected a northern route for the transcontinental railroad.

17 In 1862, President Lincoln signed the Pacific Railroad Act, which authorized two companies to construct a railroad and a telegraph line that would extend from California to Nebraska. The Act awarded grants of land and government loans to builders. These were based on the amount of track each company completed.

18 The Central Pacific Railroad built the portion of track shown on this map. Starting near Sacramento, California, the company worked eastward to the Great Salt Lake.

19 The Union Pacific Railroad laid track westward from Omaha, Nebraska, to the Great Salt Lake. To receive the maximum amount of government land and loans, both companies raced to lay as much track as possible.

20 Thomas Durant, principal director of the Union Pacific, raised millions of dollars from private investors to help finance the railroad. Construction began in 1865.

21 The Union Pacific Railroad started in the Great Plains, where buffalo grazed on prairie grass. Advance crews moved across the plains creating the roadbed—the level surface where track was laid.

22 Track crews placed wooden crossties and iron rails in position on the roadbed. Both companies used the newly developed art of photography to record the building of the historic railroad.

23 The Union Pacific ordered rails, tools, and other supplies from manufacturers in the East. Trains carried supplies to workers at the end of the track. Horse-drawn wagons delivered materials to advance crews.

24 Two workmen cling to poles as they string telegraph line beside the track. Railroad superintendents used the telegraph to communicate with company headquarters, to order supplies, and to receive news of the day. When it was completed, the telegraph speeded communications from coast to coast.

25 The Union Pacific Railroad passed through the hunting grounds of the Plains Indians. For centuries, these tribes had depended on buffalo for food and clothing. The railroad hired hunters to shoot buffalo to feed workmen.

26 Some Indians resisted the invasion of their hunting grounds by tearing up track and attacking workers. The army sent cavalry to protect the railroad and work crews. Fierce fighting between Indians and soldiers brought many deaths to both sides.

27 The railroad was built with hand tools and human muscle. At the peak of construction, the Union Pacific employed about 10,000 workers. Most were Civil War veterans, many of them Irish. The men toiled from dawn until dusk for about \$3.00 a day—a good wage at that time. The company also supplied food, which was mainly meat, bread, and coffee.

28 Workers lived in boxcars, in tents, or in temporary towns like this one, which were abandoned when the railroad moved on. Work camps were rowdy places where many men spent their free time gambling, drinking, and fighting.

29 Working westward, the Union Pacific reached the Rocky Mountains in Wyoming territory. In the Rockies, the railroad climbed gradually to an elevation of about 8,200 feet, the highest point on the transcontinental route.

30 In June 1868, the Union Pacific had completed 573 miles of track and had opened the line to passengers. Here, a locomotive sporting antlers stands beside a station outside Laramie, Wyoming.

31 The Union Pacific reached Weber River in eastern Utah in January 1869. There, workers blasted a tunnel through a canyon wall and built a bridge across the river. From this point, the Union Pacific had about 85 miles to go before meeting the Central Pacific.

32 The Central Pacific was owned and directed by Mark Hopkins, Collis Huntington, Leland Stanford, and Charles Crocker—four prosperous California merchants. The “Big Four,” as they were known, encountered many difficulties while building the railroad. The first was getting supplies.

33 Like the Union Pacific, the Central Pacific ordered rails, trains, and tools from manufacturers in the East. These supplies traveled to the West Coast by ship—a hazardous journey that took about five months. This map shows the route around South America to San Francisco. From San Francisco . . .

34 . . . supplies were transported to Sacramento, capital of California. The Central Pacific began laying track near Sacramento in 1863. A labor shortage delayed construction. To supplement their work force . . .

35 . . . the Central Pacific hired thousands of Chinese workers, such as the man shown here. Some already lived in California; others were recruited from China. The Chinese carved the roadbed through incredibly rugged terrain. For their dangerous and backbreaking labor, they received about \$1.00 a day—a meager wage even for that time.

36 The Sierra Nevada mountains posed the greatest challenge to engineers and workers. The route through the Sierra was much steeper than the route through the Rockies. And the Sierra are mostly granite, a very hard rock that required blasting with dangerous explosives.

37 At Bloomer Cut, in the foothills of the Sierra, workers blasted a deep passage nearly 800 feet long. Crews had to cut more than a dozen tunnels through the Sierra, where the pace of construction slowed to inches a day.

38 Severe winters also delayed construction. Heavy snowfalls and high winds produced 40-foot drifts in the mountains. Avalanches and blizzards endangered workers' lives.

39 Crews built wooden snowsheds to protect workers and track from snowslides. Some snowsheds extended for more than 30 miles. Inside them, construction continued year-round.

40 In 1867, the Central Pacific reached the deserts of Nevada. On this flat terrain, construction proceeded at a much faster pace.

41 On April 28, 1869, workers set a record by laying more than ten miles of track in one day. Advance crews from both railroads actually passed each other as they competed to win government loans for the final section of track. To stop the race and link the rails, Congress established a meeting point . . .

42 . . . at Promontory, Utah. Here, on May 10, 1869, engines of the Union Pacific and Central Pacific stood nose to nose as company officials celebrated with speeches and toasts. The Union Pacific had built 1,085 miles of track; the Central Pacific 690 miles. The telegraph flashed the news across the country as officials drove ceremonial spikes of gold and silver for the last rail.

43 The ceremonial spikes, including this one, were removed from the rail for display in museums. The spikes bear the date May 8 rather than May 10. The ceremony had to be postponed for two days because Thomas Durant of the Union Pacific failed to arrive. His train was delayed by angry workers, who had not been paid.

44 With the completion of the transcontinental railroad, midwestern cities such as Chicago became busy centers for travelers heading west. A trip that had taken three months by covered wagon in the 1850s could be made in about five days by rail in 1870.

45 Some early trains had no dining cars. Passengers ate hurried meals at dining stations such as this one, which were located at train stops.

46 Members of an excursion party pose along the Central Pacific route. A few wealthy passengers rode the railroad as sightseers. Most passengers, however, were settlers seeking land where they could establish homes. Many people benefited from the railroad . . .

47 . . . but it also had unfortunate effects. In the 1870s, hunting buffalo from trains became a popular sport. The mass slaughter of buffalo by sportsmen and by professional hunters caused the near extinction of the species.

48 The destruction of buffalo deprived the Plains Indians of their livelihood. And as trains brought more settlers into the territories, Indians were forced to move to special government lands called reservations. Their life on the open plains was lost forever.

49 As the population of the West increased, more transcontinental railroads were needed. Chinese workers such as these helped to build railroads that stretched across the northwestern United States to the Pacific coast.

50 A train snakes around a mountain in Colorado. By 1883, transcontinental railroads extended through Colorado and the Southwest. These railroads were a great boon . . .


51 . . . to cattlemen. With railroads close by, cowboys no longer needed to drive cattle hundreds of miles to market.

52 Towns like Cheyenne, Wyoming, grew up beside railroads. From such towns, crops and livestock were shipped to eastern markets. Many railroad towns prospered and became thriving cities.

53 This map shows the railroads that crisscrossed the nation in 1893. On this busy network, passengers, manufactured goods, and farm products traveled speedily and economically to every section of the country. Railroads had brought many settlers into territories. As their populations increased, several territories had become states.

54 Leaving a trail of smoke, a steam-powered train travels along a riverbank. Similar trains carried passengers on the first transcontinental railroad. Stretching nearly 1,800 miles across mountains and plains, the transcontinental railroad was an engineering marvel that linked the nation.

55 *Title frame*



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**NOTE:** For historical authenticity, the terms "buffalo" and "Indian" have been used in the computer simulations in this kit, and metric equivalents have been omitted. For consistency, the filmstrip follows the same usage.



## FOLLOW-UP ACTIVITIES

The following activities help reinforce and expand knowledge that students have gained through viewing *Linking the Nation*. The activities also build specific skills in a number of curriculum areas. Select the activities that best fit your students' needs and your own particular educational setting.

### ☐ Railroad Directors

**Curriculum area:** History

**Skills:** Recalling facts, critical thinking

When students play the computer simulation game, they will assume the roles of directors of railroad companies. To start them thinking about the decisions they will have to make, review the problems that faced the builders of the first transcontinental railroad. How did they finance their railroads? Where did they get workers? How did they house and feed workers? What problems did they have getting supplies? What are some of the major construction problems that they confronted?

Record students' responses on the board. Then ask students if they would have done anything differently if they had been one of the original directors.

### ☐ Working on the Railroad

**Curriculum area:** Language Arts

**Skills:** Creative writing

Both the Central Pacific and the Union Pacific employed thousands of workers to build the transcontinental railroad. Ask students to imagine themselves in a railroad job, such as tracklayer, surveyor, cook, or paymaster. Then ask students to write a letter home to their families describing their work. They should also describe the people they work with, what they eat, where they sleep, and how they spend their leisure time.

### ☐ Settlers and Indians

**Curriculum area:** Language Arts

**Skills:** Critical thinking, oral expression

The westward movement produced violent clashes between settlers and Indians over land. Divide the class in half and have one group represent settlers and the other group Indians. Ask each group to present an argument supporting its claims to the disputed land. As a class, evaluate each argument and decide which side was more convincing. Then discuss the historical treatment of the Indians. Ask students to suggest ways that the government might have dealt more fairly with the Indians.



## INTRODUCTION TO SACRAMENTO TO PROMONTORY

- ☐ **Type of program:** Simulation on computer disk.
- ☐ **Subject matter:** Construction of the western portion of America's first transcontinental railroad.
- ☐ **Running time:** Approximately one hour. Players can save unfinished games on a separate disk and complete them in a later turn at the computer.\*
- ☐ **Grade range:** 5 to 9.
- ☐ **Group size:** *Sacramento to Promontory* can be played by individuals or by groups of two to four students.
- ☐ **Special features:** Players may choose to follow the historical route or to build their own route. Large bank of interactive messages provides variation each time the game is played.

### DESCRIPTION OF THE PROGRAM

*Sacramento to Promontory* re-creates a dramatic event in the history of the United States, the building of the western portion of the first transcontinental railroad. Students can choose either to retrace the historical route or to discover a route of their own. In either case, the object of the simulation is the same—to reach Promontory before running out of time or money.

In both versions of the game, players select their path on a screen made up of squares that contain icons. The icons represent the terrain along the route. In the historical version, the icons are always visible. In the other version, the icons are covered by question marks. Players must “scout,” or uncover, several squares before selecting their path.

After choosing a route, players begin to build. As building proceeds, the program presents players with a series of events and messages. Some messages require players to make decisions that affect the progress of their railroads.

The information that students need to build their railroads can be found in two sources. The filmstrip *Linking the Nation*, which should be viewed before players attempt the simulation, gives important information about railroad construction. The map on the back cover of the color booklet *Maps, Trains, and People* will assist students in plotting their route. In addition, the program allows students to consult “experts” who offer advice about building and about dealing with workers.

As building proceeds, students can see the portion of track they have completed on the main map screen, which shows the land between Sacramento and Promontory. If students fail to complete their railroads in the allotted class time, they can save unfinished railroads on a separate disk.\* *Sacramento to Promontory* is a challenging, interactive game that requires students to assimilate information and apply it in making decisions.

### OBJECTIVES

*Sacramento to Promontory* is designed to teach students historical information about the construction of the transcontinental railroad, to make them more familiar with geographical features of the western United States, and to build the following skills:

- ☐ Understanding relationships between geography and history
- ☐ Reading a physical map
- ☐ Using latitude and longitude to locate points on a map
- ☐ Budgeting money and allocating resources
- ☐ Assimilating information and using it to make decisions

\*See page 43 (Apple) or 51 (IBM) in the *Operating Your Computer* section of this Guide.



## INTRODUCTORY ACTIVITIES

The following activities introduce *Sacramento to Promontory* to your students and help create a stimulating environment for learning. Students may do optional activities while waiting for a turn at the computer. Select the activities that best fit your students' needs and your own particular instructional setting.

### GETTING STARTED

To play *Sacramento to Promontory*, students will need information contained in the color booklet *Maps, Trains, and People*. Distribute copies of the booklet and give students time to familiarize themselves with its contents. Then ask students to turn to the map on the back cover of the booklet. This map will help students plot their routes as they build their railroads. Point out that the orange line on the map shows the route of the Central Pacific Railroad—the course students must follow if they select the historical version of the game.

### PREVIEWING THE PROGRAM WITH STUDENTS\*

The teacher should preview the disk and review the sample screens on the following pages before introducing *Sacramento to Promontory* to the class. Directions for the game, in the form of an introductory lesson called "Learn How to Play," may be selected at the beginning of the program. Review the introductory lesson with the class before students play the game. Emphasize that the object of the game is to reach Promontory before running out of time or money. *Sacramento to Promontory* requires strategy and skill. The following information will alert students to issues they should consider as they play the game.

Before starting to play, students should think about the number of workers and the amount of supplies they will need. In the simulation, as in history, the number of available workers varies from year to year. The more workers a player hires, the faster construction will proceed. Remind students that the average wage for workers on the Central Pacific was about \$1.00 a day; the average for workers on the Union Pacific was about \$3.00 a day.

The optimum amount of supplies varies according to the terrain and the number of workers. Students will need to experiment to determine the proper balance. An excess of supplies wastes money, while running out of supplies delays construction. As building proceeds, players should monitor supplies and workers carefully to see if an adjustment is needed.

In the historical version of the game, players are charged \$2,000 to choose a square. Students following their own route are charged \$200 to scout a square and \$2,000 to choose a square. To save money, players should use the maps in the color booklet to calculate their position. In mountainous terrain, many stretches are impassable. Careful map reading in these areas will enable students to locate passes or to find a route around the mountains.

In either version of *Sacramento to Promontory*, as in any good simulation, the first attempt to play the game is largely experimental. Students should play the game several times if time permits. Repeated play will present new challenges and provide opportunities to perfect game strategy. It also will enable students to become more familiar with the geographical features of the West.

### OPTIONAL ACTIVITIES

#### ☐ Mapping the Route

**Curriculum area:** United States Geography

**Skills:** Map reading

**Materials:** Activity Sheets 1A and 1B;\*\* a map of the United States; *Maps, Trains, and People*

Activity Sheet 1A is an outline map of the 48 contiguous states showing lines of latitude and longitude. Activity Sheet 1B lists several exercises designed to familiarize students with the maps in the color booklet *Maps, Trains, and People* and to show students where these lands lie in relation to the country as a whole. As students complete their railroads, they may add their route to the outline map.

\*For instructions on loading the disk, see pages 41 and 42 (Apple) or 47-49 (IBM) in the *Operating Your Computer* section of this Guide.

\*\*See the *Activity Sheets* section of this Guide.

### □ Spike

**Materials:** Activity Sheets 2A-2D,\* small pieces of paper to use as markers, glue

In *Sacramento to Promontory*, students will use latitude and longitude numbers to help locate their position on a map. The map is made up of small icons, or pictures, that stand for different types of terrain. To familiarize students with the icons and with a grid system, have them play "Spike," a game similar to bingo. The game can be played by small groups or by the entire class.

To play "Spike," you will need multiple copies of the game board (Activity Sheet 2A) and of the icon sheet (2B) and one copy each of the chance card sheets (2C and 2D). Distribute copies of the game board and icon sheets to all players. Tell students to construct game boards by cutting apart the icons and gluing them in any order in the squares on the game board. Then cut apart the chance cards.

To begin play, shuffle the chance cards and lay them face down in a pile. Designate a caller, and have that person read the letter, number, and type of terrain printed on each card. As each card is read, players should check their game boards and cover the appropriate square with a marker if they have a match. The object of the game is to connect a path between the squares containing the houses. The path may connect horizontally, vertically, or diagonally. As in the computer simulation, students may not pass through a square containing a lake or an impassable mountain.

The first player to connect a path between the houses may signify a win by shouting "Spike!" In the event of a tie, uncover the squares on the path and add the numbers in the corners of each square. The player with the lower sum wins.




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\*See the Activity Sheets section of this Guide.

## SAMPLE SCREENS

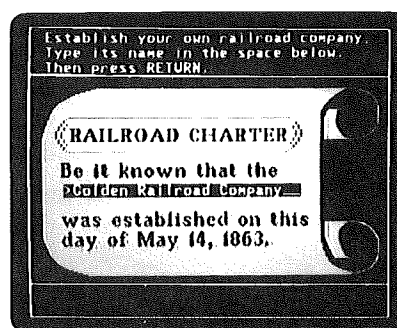
At the beginning of the simulation, students choose one of the following options: to learn how to play, to race against history by following the route of the Central Pacific Railroad, to build their own route, or to continue work on an "old" (previously saved) game.



Learn How to Play is an introductory lesson that explains both versions of the simulation and gives players information about finances. Students also learn the mechanics of the game, such as how to move on the screen, how to scout and choose a route, how to buy supplies, and how to hire workers.

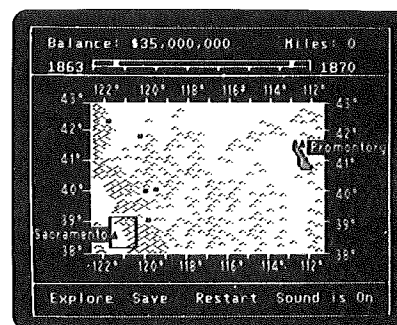


Before starting a new game, students name their railroad, enter the name on the railroad charter, and press the Return key. (In the Apple version only, students are then asked to turn the disk to Side B. You may wish to show them how to do this.)

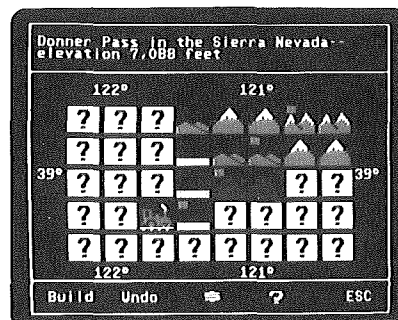


The main map screen for both versions of the game shows a section of the western United States extending from Sacramento, California, to Promontory, Utah. Around the map are latitude and longitude numbers that help players plot their course. Options offered at the bottom of the screen allow players to explore, to save a game in progress, to restart the program, or to turn the sound on or off. Players select Explore to zoom in for a close look at a section of the map.

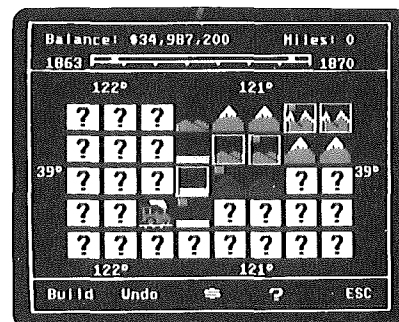
**NOTE:** Sample screens shown in this Guide are from the Apple version of the GOLDEN SPIKE simulation.



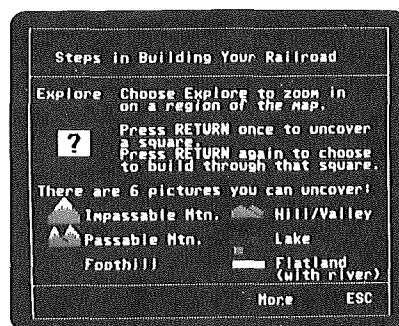
In the Build Your Own Route version of the game, students must "scout" squares of unknown territory. Players choose a square by moving the cursor to it and pressing the Return key. This uncovers a small icon, or picture, representing the terrain in that area.



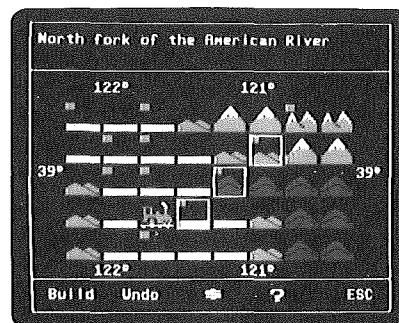
After scouting, students choose a path for their railroad by moving the flashing cursor to a square and pressing the Return key. The chosen square is then highlighted. Each square chosen must connect with the previous square horizontally, vertically, or diagonally. At any time, players may choose ? (for help) from the menu at the bottom of the screen.



The ? (help) option consists of two consecutive screens that explain the terrain icons and review instructions for playing the game.



In the Race Against History version of the game, the terrain icons are always visible. No scouting is necessary, but students must follow the actual route of the Central Pacific Railroad, which is shown on the back cover of the booklet *Maps, Trains, and People*. After selecting a route, players choose Build from the menu at the bottom of the screen.

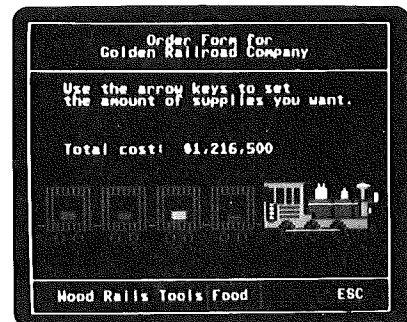




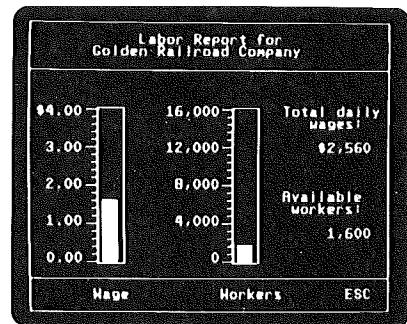
At the top of the Build screen are numbers that indicate available funds and the number of miles of track completed. A time line reflects the passing years as construction proceeds. The menu at the bottom of the screen offers these options: Start, to begin construction; Buy, to order supplies; Hire, to employ workers; \$, to see a financial summary; ?, to review instructions; or ESC, to go back to the previous screen.



Before they can build, players must order supplies—Wood, Rails, Tools, and Food. Players use the up arrow key to increase a supply and the down arrow key to decrease a supply. Selecting ESC will return students to the Build screen.



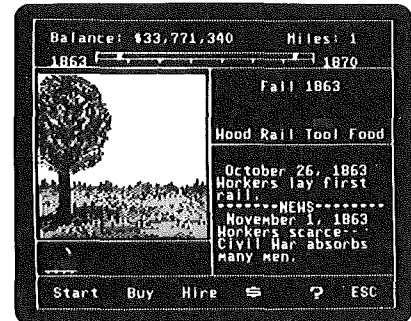
Players hire workers and set wages on the Hire screen. The wage level and the number of workers may be raised or lowered by using the up or down arrow keys. A horizontal line across the worker bar indicates the available labor supply, which varies during the game as it did in history.



As building proceeds, messages appear. Some messages convey information and require no response from players. Certain events, however, require students to make decisions. In some cases, students have the option of consulting an "expert" for advice before deciding.



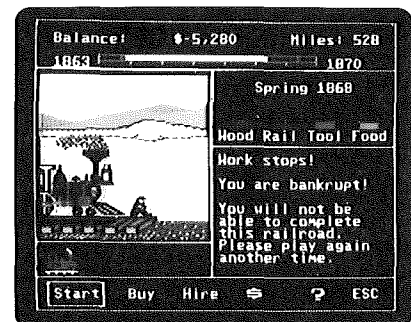
Occasionally, students will see a news flash. If the sound is on, they will hear a short Morse code signal preceding the news. These news flashes inform players of historical events or events related to railroad construction. At any time, players may select \$ from the menu at the bottom of the screen to see a financial report on their railroad.



The financial report is a balance sheet that summarizes expenses and income to date. Sources of income include government loans for each mile of track completed and money earned from business ventures undertaken during the game.

Financial Report for Golden Railroad Company	
Starting Balance:	
Fall 1863	\$35,000,000
Expenses:	
Scouting Costs	-12,800
Supply Costs	-3,690,700
Wages/Payroll	-706,445
Other Expenses	-100
Income:	
Other Income	0
Government Loans	368,000
Current Balance:	\$30,957,955
ESC	

If players run out of time or money before reaching Promontory, they will see a message that the game is over. The message encourages students to try again.



If players reach Promontory within the allotted time and budget, they will see a message that congratulates them and announces that they have won the Golden Spike.



## FREQUENTLY ASKED QUESTIONS

### **Where do students get the information they need to build a railroad?**

The filmstrip *Linking the Nation* and the booklet *Maps, Trains, and People* contain information on railroad construction. The booklet also contains a map that helps students plot their course. In addition, the game contains a "consult" option that allows players to seek advice on certain decisions from the appropriate "expert"—a banker, a foreman, a worker, or an Indian.

### **How do students learn to play the game?**

At the beginning of *Sacramento to Promontory*, students may select an introductory lesson, Learn How to Play. This lesson gives complete directions for the game and allows students to practice key elements.

### **Is there more than one level of difficulty?**

**Yes.** Students may choose either to retrace the historical route or to build their own route. The first option is easier and can usually be finished in one class period. The second option takes more time because it offers students the additional challenge of analyzing the terrain and plotting their own course.

### **Is it possible to turn off the sound?**

**Yes.** This option is offered on the main map screen near the beginning of the program.

### **Icons are used to represent landforms along the route. Will students always know what these symbols represent?**

The icons are explained in the introductory lesson at the beginning of the program. After play begins, students may review the meaning of the icons by selecting ? (for help) on the Explore screen or the Build screen.

### **How do students indicate their decisions as they are playing the game?**

Students use arrow keys to move a box to their choice and then press the Return key. Players can also move the box by using a mouse (Apple version only) or a joystick if either is connected to the computer.

### **Can students change their route after they have selected it?**

**Yes.** Students can cancel the last square chosen by positioning the box over the Undo option and pressing the Return key. Repeated presses of the Return key will cancel the squares one at a time in the order they were chosen.

### **What happens if students have already built in the wrong direction?**

Students may "backtrack" by building over previously laid track in order to change direction.

### **How does the game end?**

The game ends if students run out of time or money before reaching Promontory. Students win the game if they reach Promontory within the allotted time and budget. Players who win the game will see a worker pounding the golden spike and then two trains approaching each other to symbolize the meeting of the rails at Promontory.

### **Can students restart the program at any time?**

**Yes.** Students can escape to the main map screen, where they can position the box over the Restart option and press the Return key.

### **Can students save unfinished games?**

**Yes.** Incomplete games can be saved on a separate disk. For instructions on saving games, see page 43 (Apple) or 51 (IBM) in the Operating Your Computer section of this Guide.

### **Can students play the game more than once?**

**Yes.** *Sacramento to Promontory* contains a large bank of data. Players will be presented with some new decisions—and some repetition—each time they play the game. Because the game requires skill and strategy, repeated play will allow students to improve their performance.





## FOLLOW-UP ACTIVITIES

The following optional activities help reinforce and expand knowledge that students have gained through using *Sacramento to Promontory*. The activities also build specific skills in a number of curriculum areas. Select the activities that best fit your students' needs and your own particular instructional setting.

### ☐ Fun with Railroad Slang

**Curriculum areas:** Language Arts, History

**Skills:** Creative thinking and expression

**Materials:** Activity Sheets 3A-3D\*

Railroad workers developed a special language characterized by colorful, irreverent, and often humorous expressions. A list of such terms appears in the glossary on Activity Sheets 3A and 3B. Ask students to read through the glossary to familiarize themselves with the terms. Then have students use the glossary to complete Activity Sheet 3C, "Railroad Talk," which asks students to translate a group of sentences into everyday language. Activity Sheet 3D, "Railroad Romance," presents a short story as it might be told by a railroad worker. Students are asked to rewrite the story in their own words. You may give students the option of using standard English or contemporary teenage slang.

To extend the activity, ask students to write their own short story using terms from the glossary. Students may also enjoy compiling a glossary of teenage slang or of truck drivers' slang.

### ☐ Chinese Workers

**Curriculum areas:** Social Studies,  
Language Arts

**Skills:** Research, written and oral expression

Most of the workmen for the Central Pacific Railroad were Chinese. Divide the class into groups and ask students to prepare reports on Chinese immigration. Some students should study the history of China in the 1850s and the 1860s to discover what events during that period might have caused many Chinese to leave the country in search of jobs. Other students should investigate Chinese immigration in the 1850s and 1860s. Why did Chinese come to the United States, and how did they get here? Where did they settle, what kinds of jobs did they do, and how were they regarded by other Americans?

More advanced students can gather additional information on the Chinese who worked for the Central Pacific Railroad. What role did the company play in bringing workers to the United States? How were the Chinese fed and housed? What was their relationship with non-Chinese workers? What did the Chinese do after the first transcontinental railroad was completed? Have representatives of each group present their findings to the class as oral reports.

### ☐ Gold

**Curriculum areas:** Social Studies, Language Arts, Geography

**Skills:** Research, critical thinking, written and oral expression, map skills

A golden spike has come to symbolize the completion of the first transcontinental railroad. And the California gold rush was one of the events that lead to its construction. Explore with the class the human fascination with gold. Ask students to tell why they think people desire gold and are willing to take great risks to discover it. Have students describe their personal attitudes towards gold.

Then have students do research to answer the following questions: What are the properties of gold? Why has it been highly valued throughout history? How is the value of gold determined? Why was gold for many years the standard for the international monetary system? When students have completed their research, lead a class discussion on their findings. To extend the activity, have several students prepare a world map showing the major gold-producing countries of the world.

### ☐ The Value of Gold

**Curriculum areas:** Social Studies, Mathematics

**Skills:** Solving word problems, calculating percentages

**Materials:** Activity Sheet 4\*

This activity may be used independently or as a follow-up to the previous activity. Students learn that the price of gold fluctuates and calculate the value of gold coins at several different prices. They also learn to apply a formula for calculating the percentage of gold in an alloy.


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\*See the Activity Sheets section of this Guide.

☐ **Golden Spike Certificate**

**Materials:** Activity Sheet 7\*

If players complete their railroad within the allotted time and budget, they are eligible for a Golden Spike award. Activity Sheet 7 is a certificate of achievement that players may fill out and keep.



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\*See the *Activity Sheets* section of this Guide.

## INTRODUCTION TO OMAHA TO PROMONTORY

- ☐ **Type of program:** Simulation on computer disk.
- ☐ **Subject matter:** Construction of the eastern portion of America's first transcontinental railroad.
- ☐ **Running time:** Approximately one hour. Players can save unfinished games on a separate disk and complete them in a later turn at the computer.\*
- ☐ **Grade range:** 5 to 9.
- ☐ **Group size:** *Omaha to Promontory* can be played by individuals or by groups of two to four students.
- ☐ **Special features:** Players may choose to follow the historical route or to build their own route. Large bank of interactive messages provides variation each time the game is played.

### DESCRIPTION OF THE PROGRAM

*Omaha to Promontory* re-creates a dramatic event in the history of the United States, the building of the eastern portion of the first transcontinental railroad. Students can choose either to retrace the historical route or to discover a route of their own. In either case, the object of the simulation is the same—to reach Promontory before running out of time or money.

In both versions of the game, players select their path on a screen made up of squares that contain icons. The icons represent the terrain along the route. In the historical version, the icons are always visible. In the other version, the icons are covered by question marks. Players must “scout,” or uncover, several squares before selecting their path.

After choosing a route, players begin to build. As building proceeds, the program presents players with a series of events or messages. Some messages require players to make decisions that affect the progress of their railroads.

The information that students need to build their railroads can be found in two sources. The filmstrip *Linking the Nation*, which should be viewed before players attempt the simulation, gives important information about railroad construction. The map on pages six and seven of the color booklet *Maps, Trains, and People* will assist students in plotting their route. In addition, the program allows students to consult “experts” who offer advice about building and about dealing with workers and with Indians.

As building proceeds, students can see the portion of track they have completed on the main map screen, which shows the land between Omaha and Promontory. If students fail to complete their railroads in the allotted class time, they can save unfinished railroads on a separate disk.\* *Omaha to Promontory* is a challenging, interactive game that requires students to assimilate information and apply it in making decisions.

### OBJECTIVES

*Omaha to Promontory* is designed to teach students historical information about the construction of the transcontinental railroad, to make them more familiar with geographical features of the western United States, and to build the following skills:

- ☐ Understanding relationships between geography and history
- ☐ Reading a physical map
- ☐ Using latitude and longitude to locate points on a map
- ☐ Budgeting money and allocating resources
- ☐ Assimilating information and using it to make decisions

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\*See page 43 (Apple) or 51 (IBM) in the *Operating Your Computer* section of this Guide.





## INTRODUCTORY ACTIVITIES

The mechanics of the game *Omaha to Promontory* and the optional activities that introduce it are identical to those given for Disk 1. The follow-up activities are different. Students who have already been introduced to *Sacramento to Promontory* may play *Omaha to Promontory* without further explanation.

### GETTING STARTED

To play *Omaha to Promontory*, students will need information contained in the color booklet *Maps, Trains, and People*. Distribute copies of the booklet and give students time to familiarize themselves with its contents. Then ask students to turn to the map on pages six and seven of the booklet. This map will help students plot their routes as they build their railroads. Point out that the orange line on the map shows the route of the Union Pacific Railroad—the course students must follow if they select the historical version of the game.

### PREVIEWING THE PROGRAM WITH STUDENTS\*

The teacher should preview the disk and review the sample screens on the following pages before introducing *Omaha to Promontory* to the class. Directions for the game, in the form of an introductory lesson called “Learn How to Play,” may be selected at the beginning of the program. Review the introductory lesson with the class before students play the game. Emphasize that the object of the game is to reach Promontory before running out of time or money. *Omaha to Promontory* requires strategy and skill. The following information will alert students to issues they should consider as they play the game.

Before starting to play, students should think about the number of workers and the amount of supplies they will need. In the simulation, as in history, the number of available workers varies from year to year. The more workers a player hires, the faster construction will proceed. Remind students that the average wage for workers on the Union Pacific was about \$3.00 a day; the average for workers on the Central Pacific was about \$1.00 a day.

The optimum amount of supplies varies according to the terrain and the number of workers. Students will need to experiment to determine the proper balance. An excess of supplies wastes money, while running out of supplies delays construction. As building proceeds, players should monitor supplies and workers carefully to see if an adjustment is needed.

In the historical version of the game, players are charged \$2,000 to choose a square. Students following their own route are charged \$200 to scout a square and \$2,000 to choose a square. To save money, players should use the map in the color booklet to calculate their position. In mountainous terrain, many stretches are impassable. Careful map reading in these areas will enable students to locate passes or to find a route around the mountains.

In either version of *Omaha to Promontory*, as in any good simulation, the first attempt to play the game is largely experimental. Students should play the game several times if time permits. Repeated play will present new challenges and provide opportunities to perfect game strategy. It also will enable students to become more familiar with the geographical features along the route.

## OPTIONAL ACTIVITIES

### ☐ Mapping the Route

**Curriculum area:** United States Geography

**Skills:** Map reading

**Materials:** Activity Sheets 1A and 1B;\*\* a map of the United States; *Maps, Trains, and People* Activity Sheet 1A is an outline map of the 48 contiguous states showing lines of latitude and longitude. Activity Sheet 1B lists several exercises designed to familiarize students with the maps in the color booklet *Maps, Trains, and People* and to show students where these lands lie in relation to the country as a whole. As students complete their railroads, they may add their route to the outline map.

\*For instructions on loading the disk, see pages 41 and 42 (Apple) or 47-49 (IBM) in the *Operating Your Computer* section of this Guide.

\*\*See the *Activity Sheets* section of this Guide.

### □ Spike

**Materials:** Activity Sheets 2A-2D, \* small pieces of paper to use as markers, glue

In *Omaha to Promontory*, students will use latitude and longitude numbers to help locate their position on a map. The map is made up of small icons, or pictures, that stand for different types of terrain. To familiarize students with the icons and with a grid system, have them play "Spike," a game similar to bingo. The game can be played by small groups or by the entire class.

To play "Spike," you will need multiple copies of the game board (Activity Sheet 2A) and of the icon sheet (2B) and one copy each of the chance card sheets (2C and 2D). Distribute copies of the game board and icon sheets to all players. Tell students to construct game boards by cutting apart the icons and gluing them in any order in the squares on the game board. Then cut apart the chance cards.

To begin play, shuffle the chance cards and lay them face down in a pile. Designate a caller, and have that person read the letter, number, and type of terrain printed on each card. As each card is read, players should check their game boards and cover the appropriate square with a marker if they have a match. The object of the game is to connect a path between the squares containing the houses. The path may connect horizontally, vertically, or diagonally. As in the computer simulation, students may not pass through a square containing a lake or an impassable mountain.

The first player to connect a path between the houses may signify a win by shouting "Spike!" In the event of a tie, uncover the squares on the path and add the numbers in the corners of each square. The player with the lower sum wins.

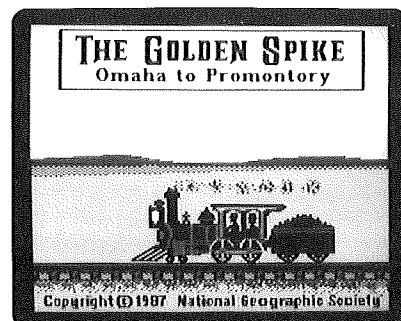



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\*See the Activity Sheets section of this Guide.

## SAMPLE SCREENS

In *Omaha to Promontory*, players encounter different terrain and different decisions from those in *Sacramento to Promontory*. But the rules and mechanics of both games are essentially the same. Students who have used Disk 1 can play *Omaha to Promontory* without additional instruction.



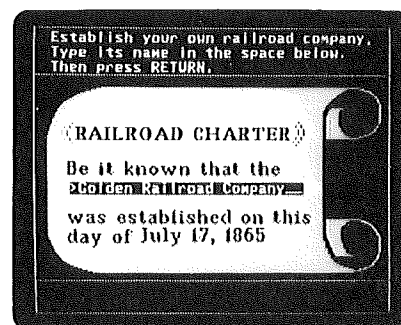
At the beginning of the simulation, students choose one of the following options: to learn how to play, to race against history by following the route of the Union Pacific Railroad, to build their own route, or to continue work on an "old" (previously saved) game.



Learn How to Play is an introductory lesson that explains both versions of the simulation and gives players information about finances. Students also learn the mechanics of the game, such as how to move on the screen, how to scout and choose a route, how to buy supplies, and how to hire workers.

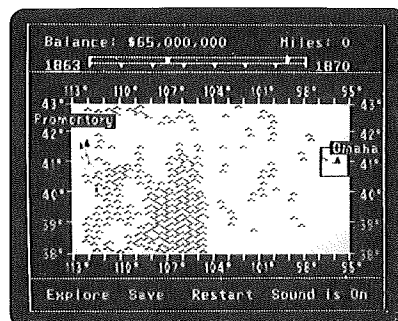


Before starting a new game, students name their railroad, enter the name on the railroad charter, and press the Return key. (In the Apple version only, students are then asked to turn the disk to Side B. You may wish to show them how to do this.)

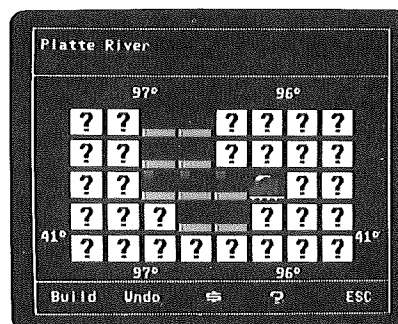


**NOTE:** Sample screens shown in this Guide are from the Apple version of the GOLDEN SPIKE simulation.

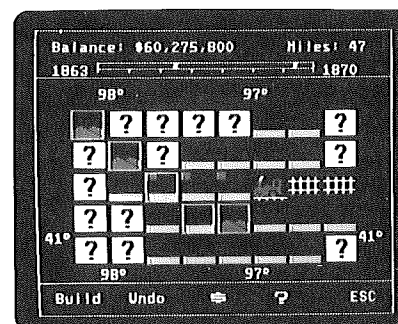
The main map screen for both versions of the game shows a section of the western United States extending from Omaha, Nebraska, to Promontory, Utah. Around the map are latitude and longitude numbers that help players plot their course. Options offered at the bottom of the screen allow players to explore, to save a game in progress, to restart the program, or to turn the sound on or off. Players select Explore to zoom in for a close look at a section of the map.



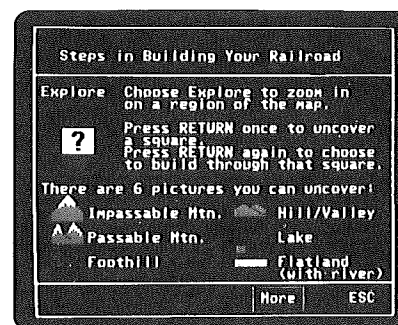
In the Build Your Own Route version of the game, students must "scout" squares of unknown territory. Players choose a square by moving the cursor to it and pressing the Return key. This uncovers a small icon, or picture, representing the terrain in that area.



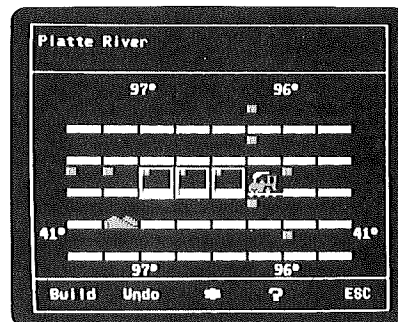
After scouting, students choose a path for their railroad by moving the flashing cursor to a square and pressing the Return key. The chosen square is then highlighted. Each square chosen must connect with the previous square horizontally, vertically, or diagonally. At any time, players may choose ? (for help) from the menu at the bottom of the screen.



The ? (help) option consists of two consecutive screens that explain the terrain icons and review instructions for playing the game.



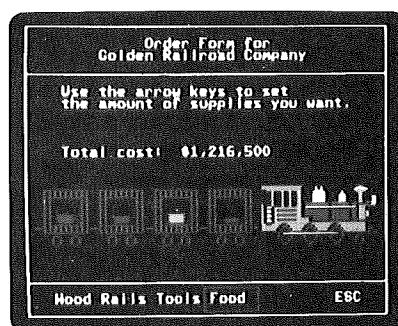
In the Race Against History version of the game, the terrain icons are always visible. No scouting is necessary, but students must follow the actual route of the Union Pacific Railroad, which is shown on pages six and seven of the booklet *Maps, Trains, and People*. After selecting a route, players choose Build from the menu at the bottom of the screen.



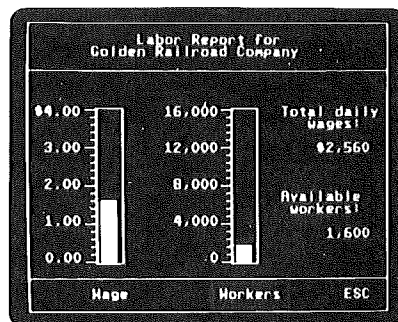
At the top of the Build screen are numbers that indicate available funds and the number of miles of track completed. A time line reflects the passing years as construction proceeds. The menu at the bottom of the screen offers these options: Start, to begin construction; Buy, to order supplies; Hire, to employ workers; \$, to see a financial summary; ?, to review instructions; or ESC, to go back to the previous screen.



Before they can build, players must order supplies—Wood, Rails, Tools, and Food. Players use the up arrow key to increase a supply and the down arrow key to decrease a supply. Selecting ESC will return students to the Build screen.



Players hire workers and set wages on the Hire screen. The wage level and the number of workers may be raised or lowered by using the up or down arrow keys. A horizontal line across the worker bar indicates the available labor supply, which varies during the game as it did in history.



As building proceeds, messages appear. Some messages convey information and require no response from players. Certain events, however, require students to make decisions. In some cases, students have the option of consulting an "expert" for advice before deciding.



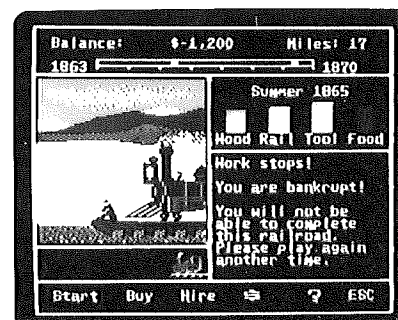
Occasionally, students will see a news flash. If the sound is on, they will hear a short Morse code signal preceding the news. These news flashes inform players of historical events or events related to railroad construction. At any time, players may select \$ from the menu at the bottom of the screen to see a financial report on their railroad.



The financial report is a balance sheet that summarizes expenses and income to date. Sources of income include government loans for each mile of track completed and money earned from business ventures undertaken during the game.

Financial Report for Golden Railroad Company	
Starting Balance:	
Summer 1865	\$65,000,000
Expenses:	
Scouting Costs	-10,600
Supply Costs	-3,837,000
Wages/Payroll	-2,590,000
Other Expenses	-10,000
Income:	
Other Income	380,000
Government Loans	1,840,000
Current Balance:	\$60,758,560
ESC	

If players run out of time or money before reaching Promontory, they will see a message that the game is over. The message encourages students to try again. If players reach Promontory within the allotted time and budget, they will see a message that congratulates them and announces that they have won the Golden Spike.



## FREQUENTLY ASKED QUESTIONS

### **Where do students get the information they need to build a railroad?**

The filmstrip *Linking the Nation* and the booklet *Maps, Trains, and People* contain information on railroad construction. The booklet also contains a map that helps students plot their course. In addition, the game contains a "consult" option that allows players to seek advice on certain decisions from the appropriate "expert"—a banker, a foreman, a worker, or an Indian.

### **How do students learn to play the game?**

At the beginning of *Omaha to Promontory*, students may select an introductory lesson, Learn How to Play. This lesson gives complete directions for the game and allows students to practice key elements.

### **Is there more than one level of difficulty?**

**Yes.** Students may choose either to retrace the historical route or to build their own route. The first option is easier and can usually be finished in one class period. The second option takes more time because it offers students the additional challenge of analyzing the terrain and plotting their own course.

### **Is it possible to turn off the sound?**

**Yes.** This option is offered on the main map screen near the beginning of the program.

### **Icons are used to represent landforms along the route. Will students always know what these symbols represent?**

The icons are explained in the introductory lesson at the beginning of the program. After play begins, students may review the meaning of the icons by selecting ? (for help) on the Explore screen or the Build screen.

### **How do students indicate their decisions as they are playing the game?**

Students use arrow keys to move a box to their choice and then press the Return key. Players can also move the box by using a mouse (Apple version only) or a joystick if either is connected to the computer.

### **Can students change their route after they have selected it?**

**Yes.** Students can cancel the last square chosen by positioning the box over the Undo option and pressing the Return key. Repeated presses of the Return key will cancel the squares one at a time in the order they were chosen.

### **What happens if students have already built in the wrong direction?**

Students may "backtrack" by building over previously laid track in order to change direction.

### **How does the game end?**

The game ends if students run out of time or money before reaching Promontory. Students win the game if they reach Promontory within the allotted time and budget. Players who win the game will see a worker pounding the golden spike and then two trains approaching each other to symbolize the meeting of the rails at Promontory.

### **Can students restart the program at any time?**

**Yes.** Students can escape to the main map screen, where they can position the box over the Restart option and press the Return key.

### **Can students save unfinished games?**

**Yes.** Incomplete games can be saved on a separate disk. For instructions on saving games, see page 43 (Apple) or 51 (IBM) in the Operating Your Computer section of this Guide.

### **Can students play the game more than once?**

**Yes.** *Omaha to Promontory* contains a large bank of data. Players will be presented with some new decisions—and some repetition—each time they play the game. Because the game requires skill and strategy, repeated play will allow students to improve their performance.







## FOLLOW-UP ACTIVITIES

The following optional activities help reinforce and expand knowledge that students have gained through using *Omaha to Promontory*. The activities also build specific skills in a number of curriculum areas. Select the activities that best fit your students' needs and your own particular instructional setting.

### ☐ Transcontinental Railroad Time Line

**Curriculum area:** History

**Skills:** Research

**Materials:** Activity Sheet 5\*

For students to understand the significance of the first transcontinental railroad, it is important that they relate it to the history of the period. Activity Sheet 5 lists seven major events that occurred between 1863 and 1869. Students are asked to list each event under the proper year and to consult their history books to find another important event that occurred in the same year.

For older students, this activity can be expanded into a lesson in horizontal history—a comparison of events that occurred in different parts of the world during a specific time period. Ask each student to select a country to study. (Make sure that China and Ireland are included and that at least three continents are represented.) Then have students read about the history of their chosen countries in the 1860s and select three major events from that decade.

As students report the events to the class, list them on the board under the name of the appropriate continent. Ask students to study the list and ask themselves the following questions: Were similar things happening in different places at the same time? Were there other major construction projects in other countries during that period? How might events in one country have influenced what was happening in another country?

### ☐ Mystery Places

**Curriculum area:** United States Geography

**Skills:** Using latitude and longitude

**Materials:** Activity Sheet 6\* and an atlas, map, or globe

This activity is designed for students who have a basic understanding of latitude and longitude. Activity Sheet 6 asks students to use geographical coordinates to locate physical features and place names on a map of the 48 contiguous states. When students have identified a feature, they write its name in the space provided on the sheet. The first letters of the answers spell out two mystery words.

### ☐ Irish Workers

**Curriculum areas:** History, Language Arts

**Skills:** Research, critical thinking, written and oral expression

Many of the workmen for the Union Pacific Railroad were of Irish descent. Assign students to do research to determine why there were so many Irish available to work on the railroad. Some students should prepare reports on the history of Ireland in the 1850s and 1860s. Why did many Irish come to the United States during that period? Other students can investigate the experience of Irish immigrants after they arrived in the United States. Where did they settle, what kinds of jobs did they do, and how were they regarded by other Americans? Have representatives of each group present their findings to the class as oral reports.

### ☐ Golden Spike Certificate

**Materials:** Activity Sheet 8\*

If players complete their railroad within the allotted time and budget, they are eligible for a Golden Spike award. Activity Sheet 8 is a certificate of achievement that players may fill out and keep.

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\*See the Activity Sheets section of this Guide.



## USING **GOLDEN SPIKE** DISKS ON YOUR APPLE COMPUTER

### EQUIPMENT YOU WILL NEED

To run either of the **GOLDEN SPIKE** disks, you will need the following equipment:

- 1 A computer—Apple® IIe (minimum 128K), Apple IIc, or Apple IIGS\*
- 2 A computer monitor or TV (color preferred)
- 3 One 5<sup>1</sup>/<sub>4</sub>-inch disk drive

You may also use any of the following optional equipment:

- 1 A joystick or mouse (You must have an Apple Mouse Card to use a mouse with the Apple IIe.)
- 2 One or more storage disks for saving unfinished games (You may use any single- or double-sided, double-density 5<sup>1</sup>/<sub>4</sub>-inch disk.)
- 3 A second 5<sup>1</sup>/<sub>4</sub>-inch disk drive for convenience in saving games

### HOW TO LOAD DISKS

The program on each disk begins, on Side A. To load Side A, follow these steps:

#### If the Computer Is Off

- 1 Open the disk drive door. (If the system has more than one drive, use Drive 1.)
- 2 Hold the disk so that Side A is facing up.
- 3 Slowly insert the disk into the disk drive, making sure that the arrow on the disk cover is pointing in.
- 4 Close the disk drive door.
- 5 Turn on the monitor (or TV) and the computer.

#### If the Computer Is On

- 1 Open the disk drive door. (If the system has more than one drive, use Drive 1.)
- 2 Hold the disk so that Side A is facing up.
- 3 Slowly insert the disk into the disk drive, making sure that the arrow on the disk cover is pointing in.
- 4 Close the disk drive door.
- 5 Hold down the Control (Ctrl) key and the Open Apple key and press the Reset key.

**NOTE:** Never insert or remove a disk while the disk drive's red light is on.

#### How To Turn Over a Disk

At a certain point in each program, you will be asked to turn the disk to Side B. To do so, follow these steps:

- 1 Leave the computer and monitor on.
- 2 Open the disk drive door.
- 3 Gently remove the disk and turn it over so that Side B is facing up.
- 4 Slowly insert the disk into the drive, making sure that the arrow on the disk cover is pointing in.
- 5 Close the disk drive door.
- 6 Press the Return key.

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\*Apple is a registered trademark of Apple Computer, Inc.

### **How To Restart a GOLDEN SPIKE Program**

To restart a program or to begin the other program, follow these steps:

- 1 Make sure the disk is in Drive 1 with Side A facing up.
- 2 Hold down the Control (Ctrl) key and press the Reset key.

The GOLDEN SPIKE programs offer a time-saving alternative for restarting when a game is in progress. Choose the Restart option from the main map screen to bypass the title screens when beginning a new game.

### **HOW TO MOVE ON THE SCREEN**

Students maneuver a box around the screen to indicate choices.

#### **Keyboard**

Use the four directional arrow keys to move the box. To enter a decision, press the Return key.

#### **Optional Equipment**

Players have the option of using a joystick or a mouse. Make sure the joystick or mouse is plugged in before turning on the computer.

- 1 Joystick: Push the stick in the direction that you want to move. To enter a decision, you may press a button on the joystick instead of pressing the Return key.
- 2 Mouse: Slide the mouse along a flat surface in the direction that you want to move. To enter a decision, you may click the button on the mouse instead of pressing the Return key.

**WARNING:** Do not leave a mouse card in the computer unless a mouse is attached.

## SAVING A GAME ON A STORAGE DISK

If students do not have time to complete a game, they may save it on any single- or double-sided, double-density 5¼-inch disk. One disk can store eight unfinished games.

The first time a storage disk is used to save a GOLDEN SPIKE game, a warning will appear. The warning states that saving a game will erase any data stored on the disk and asks players if they want to erase the disk. If you have given students blank storage disks or ones that contain dispensable data, you can instruct them to type Y (for Yes) when they see the warning. After the first game has been saved, the warning will not reappear.

Students may save a game at any time by choosing Save from the main map screen. Games can be saved using either a single-drive or a dual-drive computer system.

### Single-drive System

When students choose Save from the main map screen, the program guides them through the saving process as follows:

- 1 Students are asked to remove the GOLDEN SPIKE game disk from Drive 1 and to insert their storage disk into Drive 1.
- 2 If the disk has not been used previously to save a GOLDEN SPIKE game, players are asked if they want to erase the disk. They indicate their answer by typing Y (for Yes) or N (for No). If students choose N, they will be instructed to insert into Drive 1 the disk on which they want to save their game. If students choose Y, their game is saved on the storage disk.

If the disk already contains a stored GOLDEN SPIKE game, no warning appears, and the game is saved immediately.

- 3 Once the game has been saved, students may quit playing, or they may continue to play by reinserting Side B of the GOLDEN SPIKE game disk and pressing the Return key.

### Dual-drive System

When students choose Save from the main map screen, the program guides them through the saving process as follows:

- 1 Students are asked to insert their storage disk into Drive 2.
- 2 If the disk has not been used previously to save a GOLDEN SPIKE game, players are asked if they want to erase the disk. They indicate their answer by typing Y (for Yes) or N (for No). If students choose N, they will be instructed to insert into Drive 2 the disk on which they want to save their game. If they choose Y, their game is saved on the disk in Drive 2.

If the disk already contains a stored GOLDEN SPIKE game, no warning appears, and the game is saved immediately.

- 3 Once the game has been saved, students may quit playing, or they may continue to play by pressing the Return key.

The teacher may prepare storage disks so that students do not see the warning message. To prepare a disk, start a game and save it on that disk.

Students can save games from either GOLDEN SPIKE program on the same storage disk. When a disk contains eight games, students will see a message telling them that the disk is full and asking them to insert a different disk. If the class requires more than one storage disk, you may want to number the disks and ask each group of students to note the number of the disk they use to save their game.

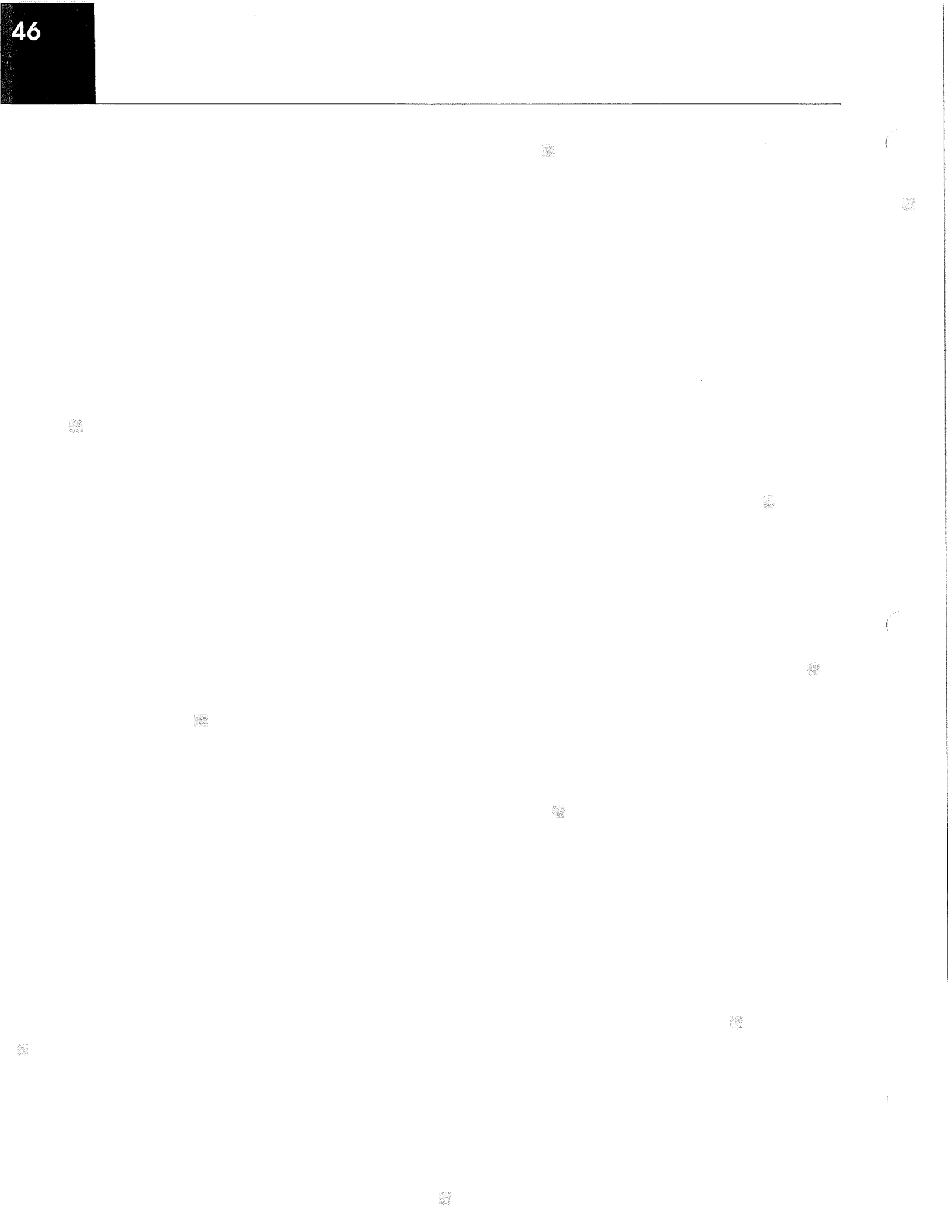
In their next turn at the computer, students can resume work on a saved game by selecting "Get an Old Game" at the beginning of the GOLDEN SPIKE program. Remind students to use the appropriate GOLDEN SPIKE program when they resume play.



## DELETING FROM DISKS

A storage disk can hold eight incomplete GOLDEN SPIKE games. After students have finished their games, any work they have saved remains on the disk. If you wish to delete this material, follow these steps:

- 1 Load a GOLDEN SPIKE game disk.
- 2 Choose "Get an Old Game" from the list of options that appears at the beginning of the program.
- 3 Follow the directions that ask you to insert a storage disk. A list of all the games saved on that disk will appear on the screen.
- 4 Move the box to indicate the game you want to delete. Do **NOT** press the Return key.
- 5 Hold down the Control (Ctrl) key and press D (for Delete). A message will ask if you want to delete the game. Type Y (for Yes) to continue. After a few seconds, the selected game will be deleted from the disk.
- 6 To delete another game, repeat steps 4 and 5.





## USING **GOLDEN SPIKE** DISKS ON YOUR IBM COMPUTER

### EQUIPMENT YOU WILL NEED

To run either of the **GOLDEN SPIKE** disks, you will need the following equipment:

- 1 A computer—IBM® PC (minimum 128K) or IBM PCjr. The disks also run on IBM Portable PC, IBM PC XT, Tandy® 1000EX, or Tandy 1000SX.\*
- 2 An IBM Color/Graphics Adapter or equivalent display adapter (not necessary with the IBM PCjr, Tandy 1000EX, or Tandy 1000SX)
- 3 A computer monitor or TV (color preferred) that is compatible with the display adapter
- 4 One 5¼-inch double-sided disk drive
- 5 PC-DOS (Disk Operating System) or MS-DOS®\*\*—any version from 2.10 through 3.30

You may also use any of the following optional equipment:

- 1 A joystick and a game port adapter card compatible with your computer system
- 2 One or more storage disks for saving unfinished games (You may use any double-sided, double-density 5¼-inch disk.)
- 3 A second 5¼-inch double-sided disk drive for convenience in setting up disks and saving games

### SETTING UP SELF-STARTING GAME DISKS

The information your computer needs to start and to run disks is found on your Disk Operating System (DOS) disk. You must transfer this information to your **GOLDEN SPIKE** game disks before these disks can start and run. You need to perform this procedure only once with each disk.

Self-starting **GOLDEN SPIKE** game disks may be set up using a single-drive, a dual-drive, or a fixed (hard) disk system.

#### Single-drive or Fixed (Hard) Disk System

- 1 Insert your DOS disk in Drive A, making sure that the label faces up.
- 2 Turn on the monitor and the computer.
- 3 You will see a message asking for the date. Type the date, following the format shown, and press the Enter key—or simply press the Enter key.\*\*\*
- 4 You will see a message asking for the time. Type the time, following the format shown, and press the Enter key—or simply press the Enter key.
- 5 When you see the prompt A>, type "B:SETUP" and press the Enter key.
- 6 You will see a message asking you to insert the disk for Drive B. Remove the DOS disk from Drive A and insert the **GOLDEN SPIKE** game disk into Drive A, making sure that the label faces up and that the arrow on the disk cover points into the drive. Press the Enter key.
- 7 Follow the directions that appear on the screen. When the directions refer to the disk for Drive A, they mean the DOS disk—the disk that would be in Drive A in a dual-drive system. When the directions refer to the disk for Drive B, they mean the **GOLDEN SPIKE** game disk—the disk that would be in Drive B in a dual-drive system.
- 8 Once the disk has been set up, you will be offered the option of setting up another **GOLDEN SPIKE** game disk. Follow the directions that appear on the screen. When the directions refer to the disk for Drive B, they mean the next **GOLDEN SPIKE** game disk.
- 9 After setting up a **GOLDEN SPIKE** game disk, put a write-protect tab over the notch on the disk to avoid erasing the disk accidentally.

\*IBM is a registered trademark of International Business Machines Corporation. Tandy is a registered trademark of Tandy Corporation.

\*\*MS-DOS is a registered trademark of Microsoft Corporation.

\*\*\*On some IBM computers, the Enter key is designated by a bent arrow that points to the left.

### Dual-drive System

- 1 Insert your DOS disk in Drive A, making sure that the label faces up.
- 2 Turn on the monitor and the computer.
- 3 You will see a message asking for the date. Type the date, following the format shown, and press the Enter key—or simply press the Enter key.\*
- 4 You will see a message asking for the time. Type the time, following the format shown, and press the Enter key—or simply press the Enter key.
- 5 You will see the prompt A>. Insert the GOLDEN SPIKE game disk in Drive B, making sure that the label faces up and that the arrow on the disk cover points into the drive.
- 6 Type "B:SETUP" and press the Enter key.
- 7 Once the disk has been set up, you will be offered the option of setting up another GOLDEN SPIKE game disk. To do so, remove the game disk from Drive B. Insert the next GOLDEN SPIKE game disk and press the Enter key.
- 8 After setting up a GOLDEN SPIKE game disk, put a write-protect tab over the notch on the disk to avoid erasing the disk accidentally.

**NOTE:** Follow these procedures with each disk before using the disk for the first time. All other references to GOLDEN SPIKE game disks in this section of the Guide refer to the self-starting disks created through these procedures.

### HOW TO LOAD DISKS

After you have created a self-starting GOLDEN SPIKE game disk, you may load the program from that disk. To load a program, follow these steps:

#### If the Computer Is Off

- 1 Open the disk drive door. (If the system has more than one drive, use Drive A.)
- 2 Hold the disk so that the label is facing up.
- 3 Slowly insert the disk into the disk drive, making sure that the arrow on the disk cover is pointing in.
- 4 Close the disk drive door.
- 5 Turn on the monitor (or TV) and the computer.

#### If the Computer Is On

- 1 Open the disk drive door. (If the system has more than one drive, use Drive A.)
- 2 Hold the disk so that the label is facing up.
- 3 Slowly insert the disk into the disk drive, making sure that the arrow on the disk cover is pointing in.
- 4 Close the disk drive door.
- 5 Hold down the Control (Ctrl) key and the Alternate (Alt) key and press the Delete (Del) key.

**NOTE:** Never insert or remove a disk while the disk drive's red light is on.

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\*On some IBM computers, the Enter key is designated by a bent arrow that points to the left.

### **How to Restart a GOLDEN SPIKE Program**

To restart a program or to begin the other program, follow these steps:

- 1 Make sure the disk is in Drive A with the label facing up.
- 2 Hold down the Control (Ctrl) key and the Alternate (Alt) key and press the Delete (Del) key.

The GOLDEN SPIKE programs offer a time-saving alternative for restarting when a game is in progress. Choose the Restart option from the main map screen to bypass the title screens when beginning a new game.

## **HOW TO MOVE ON THE SCREEN**

Students maneuver a box around the screen to indicate choices.

### **Keyboard**

Use the four directional arrow keys to move the box. To enter a decision, press the Enter key.

### **Optional Equipment**

Players have the option of using a joystick instead of the arrow keys. When using a joystick, make sure that the adapter card is installed and that the joystick is plugged in before turning on the computer. Push the joystick in the direction that you want to move. To enter a decision, you may press a button on the joystick instead of pressing the Enter key.



## SAVING A GAME ON A STORAGE DISK

If students do not have time to complete a game, they may save it on any double-sided, double-density 5 $\frac{1}{4}$ -inch disk. One disk can store eight unfinished games.

The first time a storage disk is used to save a GOLDEN SPIKE game, a warning will appear. The warning states that saving a game will erase any data stored on the disk and asks players if they want to erase the disk. If you have given students blank storage disks or ones that contain dispensable data, you can instruct them to type Y (for Yes) when they see the warning. After the first game has been saved, the warning will not reappear.

Students may save a game at any time by choosing Save from the main map screen. Games can be saved using a single-drive, a dual-drive, or a fixed (hard) disk computer system.

### Single-drive or Fixed (Hard) Disk System

When students choose Save from the main map screen, the program guides them through the saving process as follows:

- 1 Students are asked to remove the GOLDEN SPIKE game disk from Drive A and to insert their storage disk into Drive A.
- 2 If the disk has not been used previously to save a GOLDEN SPIKE game, players are asked if they want to erase the disk. They indicate their answer by typing Y (for Yes) or N (for No). If students choose N, they will be instructed to insert into Drive A the disk on which they want to save their game. If students choose Y, their game is saved on the storage disk.

If the disk already contains a stored GOLDEN SPIKE game, no warning appears, and the game is saved immediately.

- 3 Once the game has been saved, students may quit playing, or they may continue to play by reinserting the GOLDEN SPIKE game disk and pressing the Enter key.

### Dual-drive System

When students choose Save from the main map screen, the program guides them through the saving process as follows:

- 1 Students are asked to insert their storage disk into Drive B.
- 2 If the disk has not been used previously to save a GOLDEN SPIKE game, players are asked if they want to erase the disk. They indicate their answer by typing Y (for Yes) or N (for No). If students choose N, they will be instructed to insert into Drive B the disk on which they want to save their game. If students choose Y, their game is saved on the disk in Drive B.

If the disk already contains a stored GOLDEN SPIKE game, no warning appears, and the game is saved immediately.

- 3 Once the game has been saved, students may quit playing, or they may continue to play by pressing the Enter key.

The teacher may prepare storage disks so that students do not see the warning message. To prepare a disk, start a game and save it on that disk.

Students can save games from either GOLDEN SPIKE program on the same storage disk. When a disk contains eight games, students will see a message telling them that the disk is full and asking them to insert a different disk. If the class requires more than one storage disk, you may want to number the disks and ask each group of students to note the number of the disk they use to save their game.

In their next turn at the computer, students can resume work on a saved game by selecting "Get an Old Game" at the beginning of the GOLDEN SPIKE program. Remind students to use the appropriate GOLDEN SPIKE program when they resume play.



## DELETING FROM DISKS

A storage disk can hold eight incomplete GOLDEN SPIKE games. After students have finished their games, any work they have saved remains on the disk. If you wish to delete this material, follow these steps:

- 1 Load one of the GOLDEN SPIKE disks.
- 2 Choose "Get an Old Game" from the list of options that appears on the screen.
- 3 Follow the directions that ask you to insert the disk of saved games. A list of all the games saved on that disk will appear.
- 4 Move the box to indicate the game you want to delete. Do **NOT** press the Enter key.
- 5 Hold down the Control (Ctrl) key and press D (for Delete). A message will ask if you want to delete the game. Type Y (for Yes) to continue. After a few seconds, the selected game will be deleted from the list.
- 6 To delete another game, repeat steps 4 and 5.





## CREDITS

### Staff Credits

*THE GOLDEN SPIKE: Building America's First Transcontinental Railroad*, produced through the worldwide resources of the National Geographic Society, Gilbert M. Grosvenor, President and Chairman of the Board; Robert L. Breeden, Senior Vice President, Publications and Educational Media.

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*Sacramento to Promontory*—5 disks  
*Omaha to Promontory*—5 disks
- ☐ Lab Pack of 10 IBM disks (80306)  
*Sacramento to Promontory*—5 disks  
*Omaha to Promontory*—5 disks

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- ☐ Package of 15 student booklets (80290)
- ☐ Filmstrip (80288)
- ☐ Audiocassette (80289)
- ☐ Teacher's Guide and Activity Sheets  
in Binder (80293)

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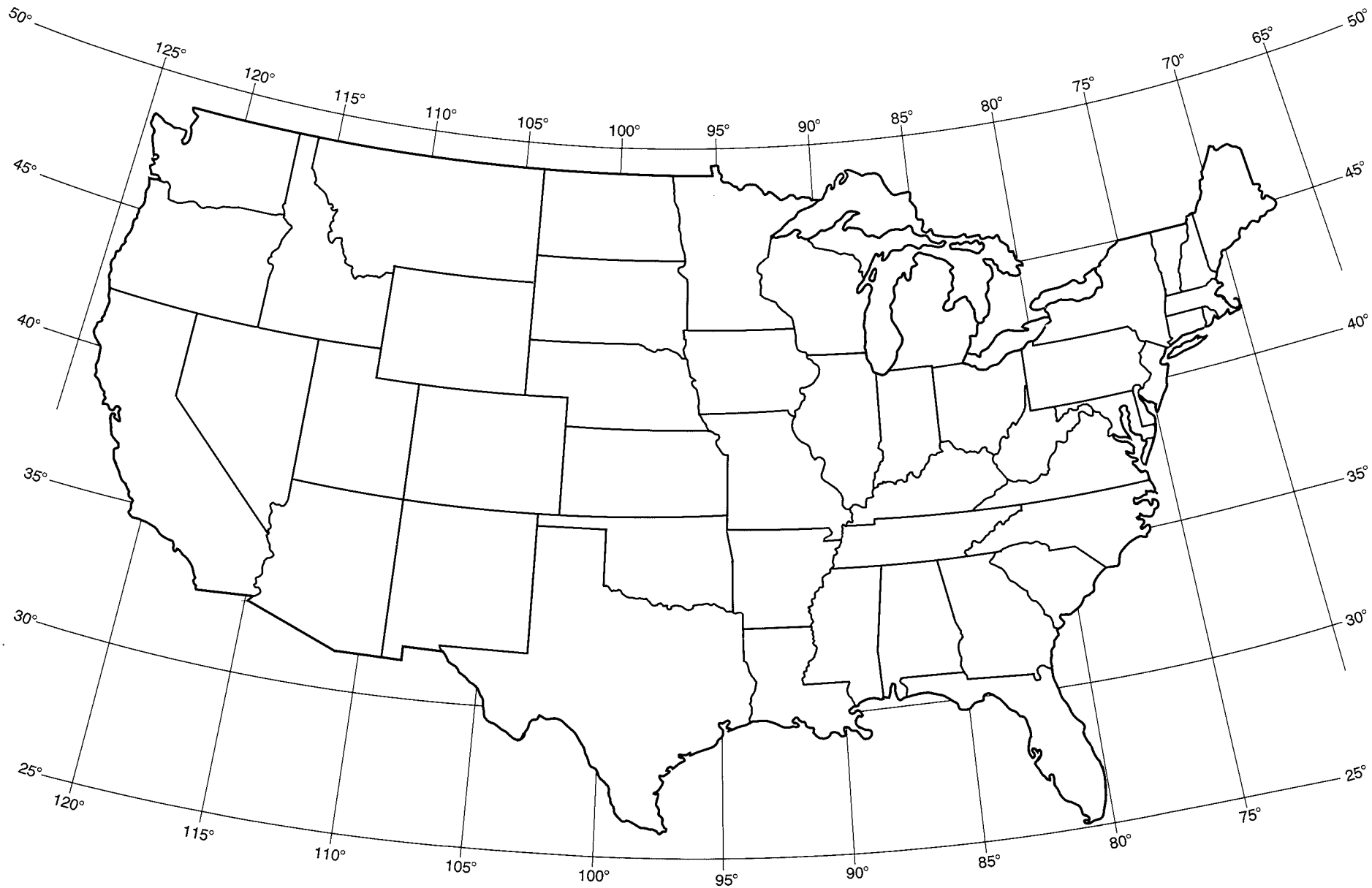
Or call **TOLL FREE (800) 368-2728** weekdays  
8:30 am to 4:30 pm Eastern time. In Maryland and  
Alaska, call **(301) 921-1330**.



ACTIVITY SHEET 1A

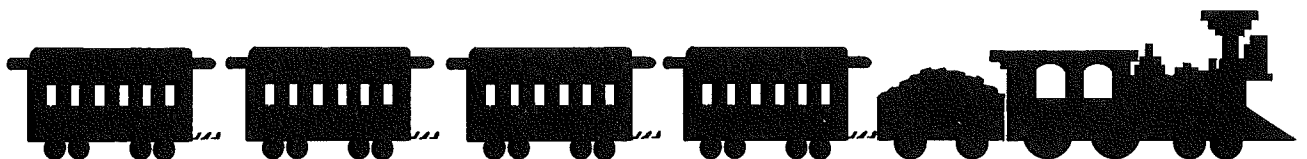
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For Use with Activity Sheet 1B



## Mapping the Route

1. Turn to pages six and seven in *Maps, Trains, and People*. Shade in the area shown in the booklet map on the map on Activity Sheet 1A. Use the latitude and longitude lines and numbers as a guide. When you finish, your map should look like the small map at the top of page seven.
2. Turn to page eight in *Maps, Trains, and People*. Shade in the area shown in the booklet map on the map on Activity Sheet 1A. Use the latitude and longitude lines and numbers as a guide. When you finish, your map should look like the small map at the top of page eight.
3. Label Sacramento, California; Promontory, Utah; and Omaha, Nebraska. Then label the states included in the shaded areas.
4. Using a colored pen or pencil, draw the historical route of the Central Pacific Railroad and the Union Pacific Railroad on your map.



Name \_\_\_\_\_

ACTIVITY SHEET 2A

For directions on how to play Spike, see page 20 or page 32 in the Teacher's Guide.

# Spike

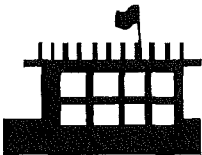
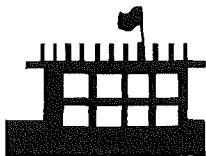
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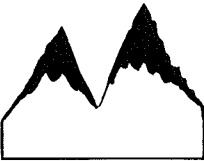
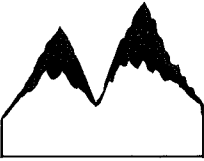

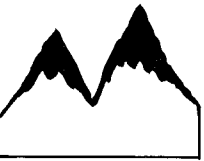










I

K

E

1					
2					
3					
4					
5					

# Game Pieces for **Spike**

	Hill/Valley 2 	Hill/Valley 2 	Hill/Valley 2 	Hill/Valley 2 
Flatland 1 	Flatland 1 	Flatland 1 	Flatland 1 	Flatland 1 
Passable Mountain 4 	Passable Mountain 4 	Passable Mountain 4 	Passable Mountain 4 	Foothill 3 
Foothill 3 	Foothill 3 	Foothill 3 	Lake 	Lake 
Lake 	Impassable Mountain 	Impassable Mountain 	Impassable Mountain 	



## Chance Cards for **Spike**

<b>S2</b> FLATLAND	<b>S4</b> FLATLAND	<b>P1</b> FLATLAND	<b>P3</b> FLATLAND	<b>P5</b> FLATLAND	<b>I2</b> FLATLAND	<b>I4</b> FLATLAND
<b>S2</b> FOOTHILL	<b>S4</b> FOOTHILL	<b>P1</b> FOOTHILL	<b>P3</b> FOOTHILL	<b>P5</b> FOOTHILL	<b>I2</b> FOOTHILL	<b>I4</b> FOOTHILL
<b>S2</b> HILL/VALLEY	<b>S4</b> HILL/VALLEY	<b>P1</b> HILL/VALLEY	<b>P3</b> HILL/VALLEY	<b>P5</b> HILL/VALLEY	<b>I2</b> HILL/VALLEY	<b>I4</b> HILL/VALLEY
<b>S2</b> PASSABLE MOUNTAIN	<b>S4</b> PASSABLE MOUNTAIN	<b>P1</b> PASSABLE MOUNTAIN	<b>P3</b> PASSABLE MOUNTAIN	<b>P5</b> PASSABLE MOUNTAIN	<b>I2</b> PASSABLE MOUNTAIN	<b>I4</b> PASSABLE MOUNTAIN
<b>S3</b> FLATLAND	<b>S5</b> FLATLAND	<b>P2</b> FLATLAND	<b>P4</b> FLATLAND	<b>I1</b> FLATLAND	<b>I3</b> FLATLAND	<b>I5</b> FLATLAND
<b>S3</b> FOOTHILL	<b>S5</b> FOOTHILL	<b>P2</b> FOOTHILL	<b>P4</b> FOOTHILL	<b>I1</b> FOOTHILL	<b>I3</b> FOOTHILL	<b>I5</b> FOOTHILL
<b>S3</b> HILL/VALLEY	<b>S5</b> HILL/VALLEY	<b>P2</b> HILL/VALLEY	<b>P4</b> HILL/VALLEY	<b>I1</b> HILL/VALLEY	<b>I3</b> HILL/VALLEY	<b>I5</b> HILL/VALLEY
<b>S3</b> PASSABLE MOUNTAIN	<b>S5</b> PASSABLE MOUNTAIN	<b>P2</b> PASSABLE MOUNTAIN	<b>P4</b> PASSABLE MOUNTAIN	<b>I1</b> PASSABLE MOUNTAIN	<b>I3</b> PASSABLE MOUNTAIN	<b>I5</b> PASSABLE MOUNTAIN

Chance Cards for **Spike**

K1 FLATLAND	K3 FLATLAND	K5 FLATLAND	E2 FLATLAND	E4 FLATLAND
K1 FOOTHILL	K3 FOOTHILL	K5 FOOTHILL	E2 FOOTHILL	E4 FOOTHILL
K1 HILL/VALLEY	K3 HILL/VALLEY	K5 HILL/VALLEY	E2 HILL/VALLEY	E4 HILL/VALLEY
K1 PASSABLE MOUNTAIN	K3 PASSABLE MOUNTAIN	K5 PASSABLE MOUNTAIN	E2 PASSABLE MOUNTAIN	E4 PASSABLE MOUNTAIN
K2 FLATLAND	K4 FLATLAND	E1 FLATLAND	E3 FLATLAND	
K2 FOOTHILL	K4 FOOTHILL	E1 FOOTHILL	E3 FOOTHILL	
K2 HILL/VALLEY	K4 HILL/VALLEY	E1 HILL/VALLEY	E3 HILL/VALLEY	
K2 PASSABLE MOUNTAIN	K4 PASSABLE MOUNTAIN	E1 PASSABLE MOUNTAIN	E3 PASSABLE MOUNTAIN	

## Glossary of Railroad Terms

### A

**asleep at the switch:** not paying attention to one's job

### B

**baby-lifter:** a brakeman on a passenger train

**baggage smasher:** a baggage handler

**bail:** to shovel coal

**banjo:** a short-handled shovel, also called an "Irish banjo" because many railroad builders were Irish

**barefoot:** a locomotive or train car without brakes

**big O:** a conductor

**black snake:** a train made up of loaded coal cars

**blind baggage:** a baggage car or mail car with no door at one end; a person who hitches a ride on a railcar

### C

**clinkers:** pieces of coal that fail to burn

**clinker boy:** stoker

**club winder:** brakeman

**crow's nest:** observation tower on a caboose

### D

**dead head:** a train traveling with empty cars; a dull person

**diamond-cracker:** a stoker, also called "diamond-thrower"

**diamonds:** coal

**dinah:** dynamite

**dishwasher:** a person who cleans engines at a roundhouse

### E

**end of the line:** last stop on a railroad line; the end of anything

### F

**firebox:** fire chamber on a locomotive

### G

**gandy dancer:** worker on a railroad construction crew. The name came from the Gandy Company, which made the tools that workers used.

**glory wagon:** caboose

**go-cart:** caboose

**grab an armful of boxcars:** to board a moving freight train

**graveyard watch:** work shift from midnight to 8:00 a.m.

### H

**haul the mail:** to get up speed

**hell on wheels:** saloons and gambling casinos on flatcars that traveled along with railroad builders; a wild person

**hind hook:** brakeman who works at the rear of a train

**hit the ties:** walk along the railroad tracks

**hog:** heavy freight locomotive

**hogger:** engineer

## Railroad Glossary (continued)

### J

**jack:** locomotive

**janney:** to couple railroad cars

**jerk:** a very short branch off a railroad line; a foolish person

**Johnson rod:** a make-believe part of a locomotive; a make-believe part of any machine. Railroad engineers asked newcomers to fix the Johnson rod as a joke.

### K

**kayducer:** a conductor who permitted gamblers to work on a train

**kettle:** small locomotive

**king snipe:** foreman of a railroad construction crew

**kitchen:** caboose or cab of a locomotive

### L

**lightning slinger:** telegraph operator

**line:** the telegraph line

### M

**meat run:** a fast train, often carrying perishable freight

**merry-go-round:** a roundhouse

**milk run:** a train that makes many stops

**monkey-house:** caboose

### O

**OP:** telegraph operator

### P

**parlor:** caboose

**pig:** locomotive

**pig skinner:** engineer

**pour on the coal:** to go faster

**pull the pin:** to unhook two railroad cars; to quit a job; to leave town

### R

**razorback:** manual laborer

**red ball:** a fast freight train

**ring master:** yard master

**roundhouse:** a large, circular building where locomotives are repaired and stored.

### S

**scare strap:** a safety belt used by a workman

**shuffle them up:** to switch train cars

**skunk:** a boy who woke up workers on railroad construction crews.

**snipe:** a cigar or cigarette butt

**stoker:** a person or mechanical device that adds fuel to the firebox on a locomotive

**strawberry patch:** the rear end of a caboose at night

**switch hog:** yard master

### T

**tank town:** a train stop with a water tank and a few buildings; a very small town

**throwing diamonds in the firebox:** shoveling coal

### W

**whistle pig:** engineer

### Y

**yard master:** a person in charge of operations in a railroad yard

## Railroad Talk



Railroad workers, like many other workers, created their own language. Railroad talk was often puzzling to outsiders. Using the **Glossary of Railroad Terms**, rewrite the following sentences in language that anyone could understand.

(Students' sentences will vary.)

1. The dead head poured on the coal as it headed for Denver. The empty train picked up speed as it headed for Denver.
2. The hind hook and the hogger were arguing in the parlor. The brakeman and the engineer were arguing in the caboose.
3. The lightning slinger reported the gossip that came over the lines. The telegraph operator reported the latest gossip that came over the telegraph line.
4. The big O warned the whistle pig not to accuse him of being a kayducer. The conductor warned the engineer not to accuse him of permitting gamblers to work on the train.
5. The dishwasher was angry because the hog was such a mess. The person who cleaned the engines at the roundhouse was angry because the heavy freight locomotive was such a mess.
6. The king snipe told the razorback to put down his banjo. The crew foreman told the laborer to put down his shovel.
7. The ring master liked to work the graveyard watch. The yard master liked to work the night shift—midnight to 8:00 a.m.
8. The clinker boy said he was tired of bailing on the red ball. The stoker said he was tired of shoveling coal on the fast freight train.
9. The gandy dancers were late for work because the skunk got sick. The construction workers were late for work because the boy whose job it was to wake them got sick.
10. The black snake crashed because the club winder was asleep at the switch. The coal train crashed because the brakeman wasn't paying attention to his job.

## Railroad Romance



Many terms that began as railroad terms have taken on broader meanings and have become part of our everyday speech. For example, “dead head” has come to mean a dull person. Below is a short story using railroad terms in their broader meanings. Using the **Glossary of Railroad Terms**, rewrite the story in your own words.

(Students' stories will vary.)

James grew up in a tank town. When James met Susan, he tried to impress her. He took her out and told her she was dinah. He boasted that he liked to haul the mail in his new sportscar. The more James talked, however, the clearer it became that he was a dead head.

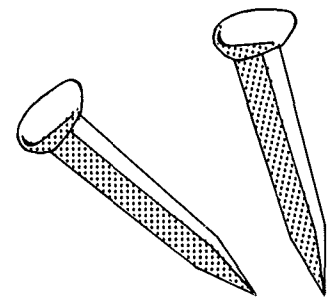
James said that he could fix anything, so Susan asked him to fix the Johnson rod on her car. When he couldn't find the Johnson rod, Susan laughed and told him that he had reached the end of the line. James was so disappointed that he pulled the pin.

James came from a very small town. When James met Susan, he tried to impress her. He took her out and told her she was dynamite. He boasted that he liked to speed in his new sportscar. The more James talked, however, the clearer it became that he was a dull person.

James said that he could fix anything, so Susan asked him to fix an imaginary part on her car. When he couldn't find the imaginary part, Susan laughed and told him that their relationship was over. James was so disappointed that he left town.

(Turn the sheet over for more space.)

## Value of Gold



Gold has been highly prized throughout history. In many societies, gold has been made into coins, jewelry, and ceremonial objects—such as the golden spike used in the last rail of the transcontinental railroad. Below are some word problems that ask you to determine the value of certain gold coins and the amount of gold in several gold objects.

- 1a) The price of gold rises and falls according to the demand for the metal. Many people buy 1-ounce gold coins as an investment. If the price of gold is \$525 an ounce, how much will an investor pay for 32 1-ounce coins?

\$16,800

- b) If the price of gold falls to \$402 an ounce, how much money will the investor lose if he sells his gold?

\$3,936

- 2) Gold is a soft metal. When gold is made into jewelry, it is usually combined with a harder metal. Such a mixture is called an alloy. The amount of gold in an object is expressed in karats. A karat is equal to one twenty-fourth part. Solid gold is 24-karat gold. An object that is 50 percent gold and 50 percent other metals is 12-karat gold. To find the percentage of gold in an object, use the following formula:

$$(\text{number of karats} \div 24) \times 100 = \% \text{ of gold}$$

- a) What is the percentage of gold in a 6-karat gold ring?
- b) What is the percentage of gold in an 18-karat gold pin?
- c) What is the percentage of gold in a 20-karat gold statue?
- d) What is the percentage of gold in a 16-karat gold trophy?

25%

75%

83.34%

66.67%

Name \_\_\_\_\_

## Transcontinental Railroad Time Line

The construction of the transcontinental railroad was a major event in American history. Listed below are some other important events that happened in the same time period. Consult a history book or an encyclopedia to find out when each event occurred. Write the event under the correct year. Then list one other important event from American history for each year in the time line.

1863	1864	1865	1866	1867	1868	1869
1 <u>trans.</u>	1 _____	1 _____	1 _____	1 _____	1 _____	1 _____
<u>railroad</u>	_____	_____	_____	_____	_____	_____
<u>begun</u>	_____	_____	_____	_____	_____	_____
2 _____	2 _____	2 _____	2 _____	2 _____	2 _____	2 _____
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____

1867 Alaska purchased from Russia1868 President Andrew Johnson impeached1863 Transcontinental railroad begun1869 Transcontinental railroad finished1864 President Lincoln reelected1865 Civil War ends1866 Congress passes the 14th Amendment



## Mystery Places

Listed below are the geographical coordinates for 11 places in the United States. The clues tell you what kind of place. Use a globe, an atlas, or a map to identify each place and write its name on the line provided. If you answer all the questions correctly, the first letters of the answers will spell two words.

**G**rand Canyon

What canyon formed by the Colorado River is located at 36°N, 112°W?

**O**hio River

What river joins the Mississippi River at 37°N, 89°W?

**L**ittle Rock, Arkansas

What state capital is located near 35°N, 92°W?

**D**etroit, Michigan

What major automobile-manufacturing city lies near 42°N, 83°W?

**E**verglades

What marshland is located at 26°N, 81°W?

**N**ew England

What geographical region stretches from 41°N, 74°W to 47°N, 67°W?

**S**t. Lawrence River

What river crosses 45°N, 75°W?

**P**ainted Desert

What desert region is located at 36°N, 111°W?

**I**sle Royale, Michigan

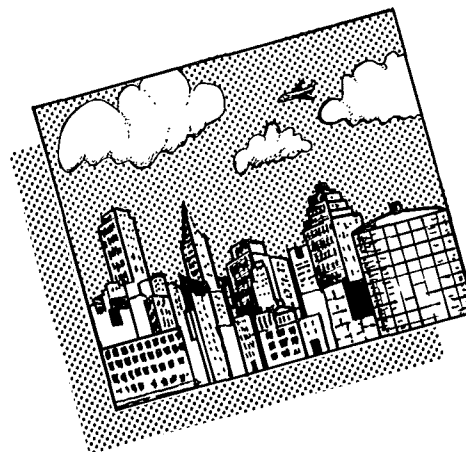
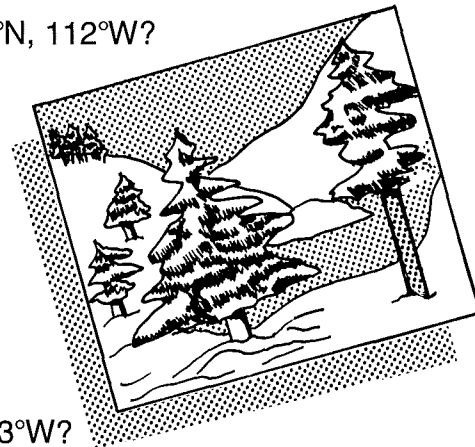
What island is located at 48°N, 89°W?

**K**lamath Falls, Oregon

What city is located near 42°N, 122°W?

**E**rie

What lake can be found at 42°N, 82°W?



# The Golden Spike Award

is awarded to \_\_\_\_\_  
(your name)

of the \_\_\_\_\_  
(name of your railroad company)

for completing a railroad between Sacramento, California,  
and Promontory, Utah.

Date Begun: May 1863      Date Completed: \_\_\_\_\_

# The Golden Spike Award

is awarded to \_\_\_\_\_  
(your name)

of the \_\_\_\_\_  
(name of your railroad company)

for completing a railroad between Omaha, Nebraska, and  
Promontory, Utah.

Date Begun: July 1865      Date Completed: \_\_\_\_\_