

MINERAL EXPLORERS


Mexico



Mexico | SYNOPSIS

It's the world's largest producer of silver with modern companies ruling the trade but Mexico's silver mining tradition dates back hundreds of years and helped shape the country we know today – a country alive with history and culture.

Thomas visits several colonial towns built from the riches of silver mines and explores the ancient craft of silversmithing. Along the way, he finds a great lot of crystallized Mexican minerals but his biggest prize is the opportunity to journey deep inside the world's largest primary silver mine.



MINERAL
EXPLORERS
Educator's Guide

DISCOVER MEXICO

INTRODUCTION

The Country

Mexico has a vast range of landscapes with deserts in the north, high mountains to the east and west, deep ravines in between, and dense rainforests at its southern border. The nation is shielded from the west by the Baja California peninsula, and the Yucatan Peninsula oversees the Gulf of Mexico to the east. Shifting tectonic plates have caused volcanic activity throughout the central region, as well as in the Sierra Madre Occidental and the Sierra Madre Oriental mountains. These geologic forces at play have brought a great deal of raw minerals, such as copper, gold, and silver, to the surface for mining.



Population:
120,286,655 (12th in the world)

Capital:
Mexico City (pop. of 20.5 million)

Language:
Spanish

Government:
Federal republic

Agriculture:
Corn, wheat, soybeans, rice, beans, cotton, coffee, fruit, tomatoes, beef, poultry, dairy products, and wood products

Industry:
Food and beverages, tobacco, chemicals, iron and steel, petroleum, mining, textiles, clothing, motor vehicles, and tourism

Natural Resources:
Petroleum, silver, copper, gold, lead, zinc, natural gas, and timber

Early Civilizations

For over 3,000 years, Mexico has been a site of several advanced civilizations including the Olmec, Toltec, Teotihuacan, Zapotec, Maya, and Aztec. Among these groups were the first known mathematicians, astrologers, and architects of the Americas.

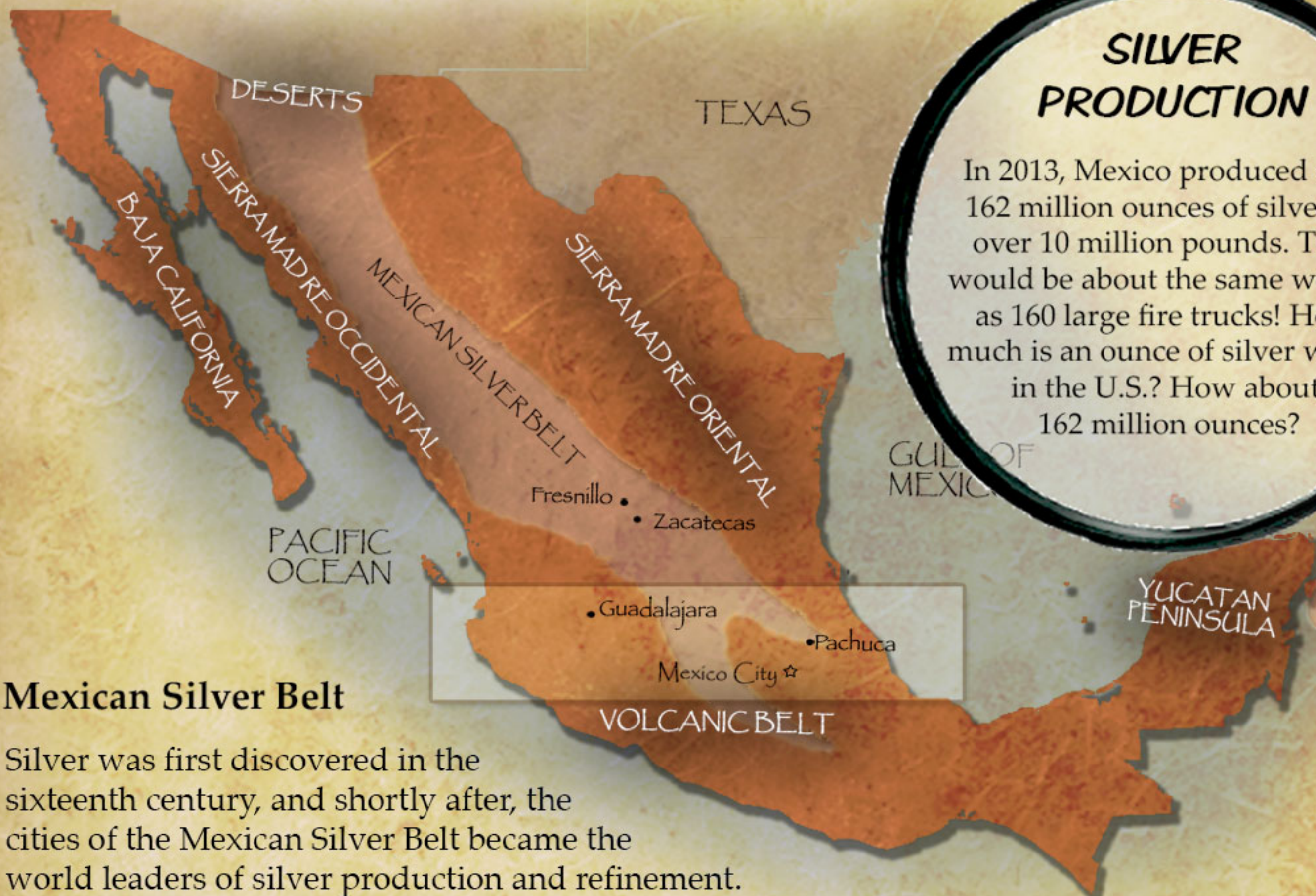
The first Europeans arrived in Mexico in the 1500s. These Spanish forces, under the command of Hernán Cortés, clashed with the Aztec population and, within 100 years, its people were conquered by the Spaniards and the diseases they carried from Spain. The available wealth and minerals of Mexico lead to more Spanish exploration and conquests which would not end until 1821.

DIG DEEPER!!!

"El Santo" is a legendary Luchador, or wrestler, in Mexico, best known for his mask of silver and his fight for justice.



A Silver Lined History



SILVER PRODUCTION

In 2013, Mexico produced over 162 million ounces of silver, or over 10 million pounds. That would be about the same weight as 160 large fire trucks! How much is an ounce of silver worth in the U.S.? How about 162 million ounces?

Mexican Silver Belt

Silver was first discovered in the sixteenth century, and shortly after, the cities of the Mexican Silver Belt became the world leaders of silver production and refinement.

Cities such as Zacatecas and Guanajuato once produced over two-thirds of the entire world's silver. It is undeniable that this amount of wealth could shape the history of several mining cities and the entire nation of Mexico.



San Cayetano Church, Guanajuato

Guanajuato

In the sixteenth century, the Spaniards founded Guanajuato as a mining camp. At one point, Guanajuato produced one-fifth of the world's silver. The richness of the culture and ornate Mexican baroque architecture stand in monument to the wealth of the nearby La Valenciana mine.

Zacatecas

In addition to being a great mining city, Zacatecas was host to a key battle in the Mexican Revolution in 1914. The legendary Pancho Villa, known as Mexico's Robin Hood, led the revolutionary army here for the bloodiest battle of the war.

DISCOVER MINERALS

SILVER

Mineral Profile

Acanthite (Silver-bearing mineral)



Scientific Formula: Ag

Color: Brilliant white when freshly cut; most instances are tarnished gray or black due to its reaction with hydrogen sulfide in the air.

Luster: Metallic

Habit: Usually cubic forms

Mohs Hardness: 2.5-3.0

Streak: Shining White

Crystallized Silver

Silver is a native element, meaning it cannot be chemically broken down to anything other than silver. Silver is rarely found alone in nature, as it is usually in ores which also contain lead, copper, gold, and other valuable minerals. Silver is extremely malleable and ductile, thus it is commonly found in the earth as odd shapes, sheets, or twisted, wire-like forms. Due to mining, crystals of pure silver are very hard to come by, but mineral explorers can sometimes discover the aesthetically wonderful cubic forms, even if it may be in the home of a collector.

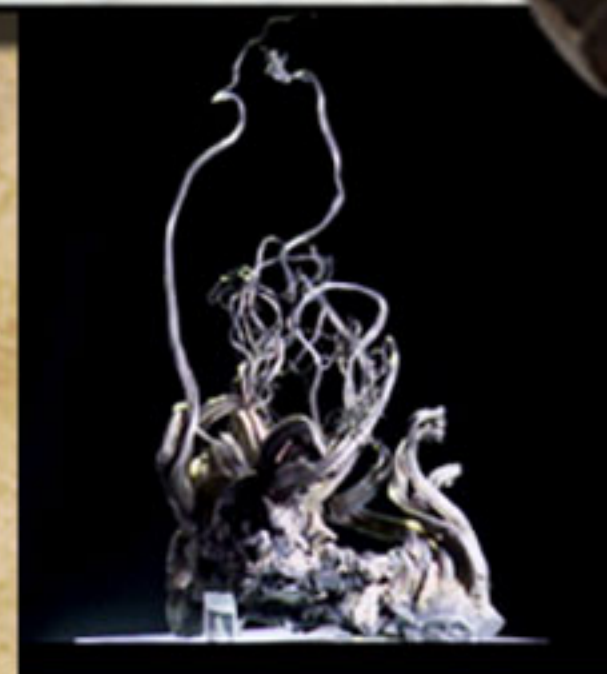
Distinctive Features

Silver is mined because it is rare, moldable and beautiful, but the mineral also boasts several other valuable qualities. To list a few, silver is:

- The best electrical and thermal conductor over all of the other metals
- Resistive to corrosion and oxidation
- Highly reflective to light
- Disruptive to bacteria's chemical bonding

DID YOU KNOW?

About twenty elements occur alone in nature. Silver and gold are two of these elements. Are there any others that Thomas has found?



Wire silver



Acanthite (Silver-bearing mineral)

Silver Creations

Silversmithing

The whitest of all metallic elements, silver is ideal for creating beautiful jewelry, silverware, and many other wondrous works of art. It is sought after because of its rarity, resistance to corrosion, and its immunity to moisture and acids. Artists and craftsmen take advantage of silver's malleability. Once heated, it can be fashioned or beaten into almost any shape. Silversmiths or silver companies such as Tane, can even hammer a sheet of silver into a slice thinner than paper. This silver sheet can be applied to another object's surface, giving it the dazzling appearance of silver.



Although gold may be preferred when it comes to jewelry, many do not realize that gold is too soft in its pure form so it is usually combined with silver to create a stronger bond.

Silver in the U.S.A.

U.S. Geological Survey, 2015

In 2014, the United States produced approximately 2.3 million pounds of silver which has a value of over \$718 million. The estimated uses for silver were:

More Silver Uses

- Silver paste is used in this laptop's keyboard.
- In ancient Greece, silver containers were used to ensure freshness for water, wine, and vinegar.
- Today, silver is used in bandages, clothing, and cell phone covers in order to fight against harmful bacteria and germs.
- Silver is used in a chemical process to develop high quality photographs. When film is exposed to light, it turns black at every point where light strikes a silver ion.
- Photovoltaic cells utilize silver's conductive and reflective qualities to serve as the main component for harvesting solar energy. In what ways will silver be used for the future?

- Electronics, 42%
- Currency, 35%
- Photography, 13%
- Jewelry/Silverware, 7%
- Other, 3%



Silver Use in the U.S.A., 2014

