



Documentary Series: Rise of the Continents presented by Professor Iain Stewart

Episode: 3 – The Americas

Duration: 59 minutes

Overview of the Episode

Iain Stewart weaves a story of how the continents of North and South America were formed and how this has affected minerals in Bolivia, the Andes Mountains and the evolution of reptiles.

Episode Index

- 2:30 min – Foundations of New York skyscrapers and Pangaea
- 7:00 min – The ancient mountains that formed the bedrock of modern New York
- 9:00 min – Links between the Manhattan Schist and the height of New York skyscrapers
- 11:00 min – Stratigraphy of the Grand Canyon
- 13:15 min – Amphibians
- 17:00 min – Ancient desert of Pangaea
- 21:45 min – Internal fertilisation and the amniotic egg
- 26:00 min – Hudson Palisades, New York and the split from Pangaea
- 29:00 min – Locations of same types of basalts on other continents
- 30:45 min – Deep sea vents of the mid-Atlantic ocean ridge
- 35:00 min – Cerro Rico mine in Bolivia
- 41:30 min – Subduction of the Pacific plate under South America
- 44:00 min – Formation of the Andes Mountains
- 45:15 min - Salar de Uyuni salt flat and lithium
- 50:15 min – Formation of the Amazon rainforest and Atacama Desert
- 52:00 min – Llamas and the land bridge between North and South America

Questions

1. **Describe** the rock that makes the foundation for New York skyscrapers and how it formed.

2. **Describe** how ancient mountains formed the Manhattan Schist.



3. **Describe** the link between the Manhattan Schist and the height of New York skyscrapers.

4. **Identify** how much time is represented by the rocks of the Grand Canyon.

5. **Identify** the dominant land animals of Pangaea.

6. **Describe** the grains of sand in the Coconino Sandstone and what this is evidence of.

7. **Describe** how the formation of the supercontinent Pangaea changed the environment and its effect on evolution.

8. **Identify** the adaptations that assisted reptiles (and later birds and mammals) to dominate the land.

9. **Describe** the amniotic egg and its advantages over amphibian eggs.

10. **Describe** the evidence, found in the rocks of the Hudson Palisades, for the breakup of Pangaea and a mantle plume.



11. **Identify** locations across the world with the same type of basalt as found in the Hudson Palisades.

12. **Describe** the impact of the volcanic eruptions that formed this basalt on the climate and living things.

13. **Identify** what organisms found around deep-sea vents feed on.

14. **Describe** the hazards of the Cerro Rico mine.

15. **Describe** how veins of silver in the Cerro Rico mine were formed. Also, **identify** the source of the water and the process that causes it to rise through the rocks.

16. **Identify** other valuable metals found in this area, concentrated by the process of subduction.

17. **Identify** the landscape feature that is the product of this subduction zone, and its location.

18. **Identify** the metal that is found in the salt lake in Bolivia and how much of the world's reserve Bolivia may have.



19. **Describe** changes to the ecosystems of South America that result from the formation of the Andes Mountains.

20. **Describe** adaptations of llamas that enable them to live at high altitudes.

21. **Identify** animals that were able to take advantage of the formation of the land bridge between North and South America and the result of this for South America.