

READING PASSAGE 1

Answer Questions 1-16, which are based on Reading Passage 1.

The Ascension Island experiment

The tiny tropical island of Ascension in the South Atlantic Ocean has an area of only 98 square kilometres. It is located 1,600 km from the coast of Africa and 2,250 km from South America and is certainly difficult for an ordinary commercial traveler to reach even today. Ascension sits on top of what scientists call the mid-Atlantic ridge. This is a chain of underwater volcanoes which are still in the process of forming as the ocean floor is slowly pulled apart by massive geological forces. A million years ago, molten magma from beneath the ocean floor burst explosively above the waves and thus, a new island was born which was to become Ascension. Because the island occupies a 'hot spot' on the ridge, its volcano is especially active to this day.

The island was discovered by a Portuguese seafarer, João da Nova Castella, in 1501, but was given the name Ascension Island two years later by a second Portuguese explorer, Alfonso de Albuquerque. At that time, Ascension was little more than a barren volcanic rock, largely treeless, with no indigenous people at all and no animals to speak of. Its coastal regions, however, supported a few small, underdeveloped plants, while the central peaks were essentially bald.

Because of its location, by the early 19th century, Ascension had become a vital strategic base for the British military. It was a thriving waystation providing much needed provisions for British ships. However, the big problem that impeded further expansion of this outpost was the supply of fresh water. Ascension was extremely arid and experienced strong trade winds from southern Africa. Due to the lack of trees, the little rain that did fall swiftly disappeared in the hot environment.

But Charles Darwin, the British naturalist who is widely regarded as the father of the theory of evolution, devised a bold plan for the barren island. In 1836, the young Darwin was finishing a five-year scientific expedition around the world, reaching strange places like Ascension, where no other naturalist had gone before. Darwin was aboard the British Naval vessel HMS *Beagle* when it called in at Ascension. Darwin later admitted that his expectations Ascension were low, and indeed, it cannot have appeared to be a very promising place. But arriving on Ascension, Darwin became excited by what he considered to be its potential. Everywhere, he encountered bright red volcanic cones and rugged black lava, evidence of the violent geological forces that must have formed the island. Although it remained quite barren, there was evidence of human presence, including a few sheep, goats, cows and horses that had been introduced by the Navy. Being the inventive scientist that he was, Darwin was intrigued by what he saw and began to plan how this place of wild desolation could be transformed.

Only a few years after Darwin's return to England, he laid out his imaginative scheme for Ascension to his good friend, Joseph Hooker, also a respected botanist, who ultimately implemented the plan. In 1839 Hooker set off on his own four-year adventure by sea, an ambitious journey around the icy polar region of Antarctica aboard HMS *Erebus* and HMS *Terror*. Mirroring Darwin's journey, the ships called in at Ascension on their way home in 1843.

In 1847 Hooker advised the Royal Navy to set in motion Darwin's elaborate plan. With the help of British scientists, shipments of trees were to be sent to Ascension. These would provide shade, helping to

reduce evaporation after rain. And the ultimate results of the introduction of trees would be even more important because the retention of water would create fertile soil, encouraging the growth of even more vegetation of all kinds.

So, beginning in 1850 and continuing year after year, ships started to arrive at Ascension, each depositing tree selected from special gardens maintained by scientists in Europe, South Africa and South America. Soon, on the highest peak of 859m, great changes became apparent. By the late 1870s, a variety of trees including fast-growing eucalyptus, Norfolk Island pine, bamboo and banana trees had all taken root and begun to thrive.

Today, Green Mountain — as the highest peak is now known — is sometimes described as a ‘cloud forest’. The trees capture sea mist, creating dampness in the centre of an essentially dry island. This forest is a fully functioning, but in fact totally artificial ecosystem. When naturally occurring, ecosystems develop over millions of years through the process of evolution. By contrast, the Green Mountain cloud forest was created in a matter of decades. In effect, what Darwin, Hooker and the Navy achieved in an effort to make Ascension Island more habitable was the world’s first experiment in creating a self-sustaining and self-reproducing forest.

Could the Ascension experiment have more far-reaching consequences? Dr Dave Wilkinson, an ecologist at Liverpool John Moores University in the UK, who has extensively studied Ascension and its history, first visited there in 2003. ‘I remember thinking, this is really weird,’ he said. ‘There were all kinds of plants that don’t belong together in nature, growing side by side. I only later found out about Darwin, Hooker and everything that had happened,’ he later recalled. Wilkinson has suggested that the principles upon which the Ascension experiment was based could one day be used to transform the planet Mars to make it sustainable for colonies from Earth.

Questions 1—8

Do the following statements agree with the information given in Reading Passage 1?

In boxes 1-8 on your answer sheet, write

- | | |
|------------------|---|
| TRUE | <i>if the statement agrees with the information</i> |
| FALSE | <i>if the statement contradicts the information</i> |
| NOT GIVEN | <i>if there is no information on this</i> |

- 1** People can visit Ascension easily today.
- 2** The mid-Atlantic ridge continues to experience volcanic activity.
- 3** João da Nova Castella was the first to call his discovery Ascension Island.
- 4** When the island was discovered, its center contained more life than the area near the sea.
- 5** The Portuguese military wanted to use the island as a base.
- 6** In the 19th century, Ascension Island acted as an important port for naval supplies.
- 7** The British imported fresh water to Ascension Island from southern Africa.
- 8** When it rained on Ascension Island, the water quickly dried up.

Questions 9 – 16

Complete the notes below.

*Choose **ONE WORD ONLY** from the passage for each answer.*

Write your answers in boxes 9-16 on your answer sheet.

The Ascension Island experiment

Darwin's plan

- before his 1836 visit, Darwin had limited **9** of what he might find
- after his arrival, Darwin saw the **10** of the island and so devised a plan

Joseph Hooker's implementation

- on an expedition to explore the area around **11** , Hooker visited Ascension
- trees were planted on Ascension to lessen the **12** of rainwater
- from the 1850s, plants were brought to Ascension from **13** around the world

Results of the plan today

- the cloud forest traps moisture contained in the **14** which blows off the ocean
- the cloud forest is a successful man-made **15**
- According to Dr Dave Wilkinson, the ideas learned from Ascension may be applicable to life in future human **16** on Mars.