



THE WORLD'S GREAT WONDERS

HOW THEY WERE MADE & WHY THEY ARE AMAZING

JHENI OSMAN

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MELBOURNE | LONDON | OAKLAND

Rongbuk Glacier







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IT'S A WONDERFUL WORLD

**THE GREATEST ADVENTURE NOW IS TO TRAVEL, TO SEE THOSE
PLACES IN THE WORLD – MAN-MADE CREATIONS OR SUBLIME WORKS
OF NATURE – THAT PACK A MYSTERIOUS POWER.**

BY DAN CRUICKSHANK

Places that might live for years in your imagination, that attract, intrigue or tantalise, and that – when you see them – mark a moment of perception, become milestones in your life. To travel can almost be an act of pilgrimage, a journey seeking a closer connection with experiences that offer inspiration, that yield understandings and that reveal often unexpected connections between people and places, between cultures of the past and of the present. In a world that can seem increasingly divided, the empathy offered by travel, the tolerance it engenders of the lives and beliefs of others, is no small thing. The more adventurous, more independent and more demanding your journey, the more, no doubt, you will learn. But all travel enriches.

The aim of this book is straightforward – to inform, to inspire and to encourage its readers to travel. The book identifies a selection of ‘wonders’, explains each in a succinct manner providing the information needed by all aspiring travellers, and then sends you on your way. Knowledge about the world helps you choose where to go; it also helps when you get there. If you know key facts about your destination you will surely enjoy it – and most certainly understand it – better.

It also raises quite a few questions. What is meant by the term ‘wonder’, and why this particular collection?

Of course the term ‘wonder’ is loose, clearly subjective and poetic, rather than scientific or objective. I suggest anything that surprises, mystifies, or takes the breath away by its sheer size, beauty or audacity is a wonder.

Equally, any list of 50 ‘wonders’ must to a degree be subjective, as indeed must some of the descriptions and explanations – especially of ancient or mysterious man-made wonders such as Stonehenge, the Great Pyramid at Giza, the statues on Easter Island or the Nazca Lines, whose origins, purposes, meanings, or techniques of fabrication are unclear or contested.

But the mystery that surrounds some of the ‘wonders’ featured in this book can make them even more fascinating. Some we accept as almost and forever beyond our comprehension. Great natural wonders, such as the Aurora Borealis or the Great Blue Hole, are humbling. They proclaim the immensity, the beauty and the profound secrets surrounding the origin and mechanism of creation and, in the process, put our personal obsessions and aspirations in perspective.

Things can be a little different when it comes to man-made wonders. They can be awe-inspiring or full of mystery, but they are human affairs and the means and secrets of their creation are surely susceptible to scrutiny, research and reflection – or can be

understood through moments of weird illumination or revelation. It's heady stuff – and it's the quest for answers to some of the questions enshrined in ancient man-made wonders that has, for me, made travel to remote parts of the world utterly addictive and first-hand encounters so compelling.

I have explored virtually all the man-made wonders included in this book and many I have found puzzling and provoking. But that's surely the way it should be – we strive to penetrate their secrets but deep down we want our wonders to continue to make us wonder.

I remember my first contact with the Great Pyramid at Giza. Of course I knew it well from books and illustrations, but only when I crawled inside and over it, did I really appreciate its wonder. It's made with a precision that astounds and possesses mathematical and geometric qualities that are astonishing in their implications. It covers 12 acres (4.8 hectares), contains nearly 2.5 million limestone blocks, yet the margin of error in setting-out is incredibly small. The maximum difference in the exact length of the four sides is 4.4 cm and the base/horizontal height differs from corner to corner by no more than 2.1 cm. And inside, the so-called King's Chamber is formed by vast granite blocks that are not only of great weight but which have perfect straight edges and joints of less than ½ mm in thickness. How was this structural brilliance and precision achieved in a bronze-age culture and – perhaps more puzzling – why was it believed to be necessary? I knew the theories of pyramid design and construction but only by exploring this vast structure – more machine than building – did theory become personal and visceral reality. This, of course, is the power of travel, the reason for making the journey.

I had a similar moment of revelation at Easter Island. It was only when I first saw the statues or Moai in the context of the island – on this remote and mountainous speck of land marooned in a vast ocean – that I began to comprehend the true artistic power of this unique sacred sculpture. And only when I grasped the frenzied and sudden way in which Moai had been overthrown and disfigured did I gain a glimpse of the sudden catastrophe that must have overtaken the island. Moai were abandoned in

the quarry and in transit, toppled from their sacred sites and their obsidian eyes wrenched out. Why had these gods been abandoned and desecrated, seemingly by the very people who had wrought them in such wonderful manner? Many Moai have now been re-raised on their sacred platforms to present an amazing sight - enigmatic images of power that define, and are defined by, their spectacular setting.

And setting is all-important for the full appreciation of many modern engineering wonders. The image of the Burj Khalifa rearing-up in the pages of a book or magazine is startling enough but to see the actual thing rising tall and slender above the Dubai desert is breathtaking. Why is the world's tallest building located here? This is a question that may sound naïve but to answer it demands an understanding of the dynamics of the modern world and the Middle East. I put this question to the member of the royal family masterminding the tower's construction. He answered with his own equally simple question. 'Why not?'

Reflecting on my own travels among the wonders of the world it is, I think, the unlikely connections across time and space that form the most haunting and memorable experiences. This book offers a few examples of unlikely juxtapositions or connections. I have not seen but am amazed by the 'Large Hadron Collider', a vast scientific apparatus housed within a tunnel 27km in circumference located far beneath the Franco-Swiss border near Geneva. It seeks to test different theories of particle and high-energy physics and to answer fundamental questions about the nature of the physical world and to finally unlock some of the secrets of creation. It's impossible not to see uncanny connections between this 21st-century scientific wonder and enigmatic ancient creations – such as the thousands of lines covering the landscape at Nazca, Stonehenge or – indeed, the Great Pyramid. These, in their seeming precision, are often viewed as mysterious scientific apparatus. Does the Hadron Collider offer a clue to their meaning?

If you hope to find answers to some of the world's most intriguing questions you have to travel, to see and experience for yourself. This book provides inspiration and information – the rest is up to you.

THE GREATEST SHOW ON EARTH

OFTEN ONE VISITS AN INCREDIBLE SITE IN SOME EXOTIC LAND AND WONDERS HOW ON EARTH SUCH A FEAT OF ENGINEERING WAS BUILT, OR MARVELS AT SOME NATURAL PHENOMENA.

BY J H E N I O S M A N

Yet, the notice board just lists a few meaningless dates, or a guide merely rattles off a bunch of jargon-packed phrases they've rote-learned for their summer job.

This book takes you a step further on your travels, revealing the science and engineering behind how epic structures were built or incredible natural wonders formed. It was always going to be tough to reduce all the world's amazing wonders into 50 must-see sights, but this book spans the heights of engineering, the spectrum of beautiful architecture, and the eons of time.

Take the world's tallest skyscraper – the Burj Khalifa. At 2.5 times the height of the Eiffel Tower, it soars 828 metres into the air. Constructing such a massive building that can withstand severe earthquakes and fearsome winds required incredible engineering ingenuity. Maintaining it isn't easy either – the equivalent of 10,000 tonnes of ice are needed to cool the building against the searing Dubai climate, creating condensation that would fill 20 Olympic-sized pools.

From the man-made to Nature's engineering masterpieces. The world's tallest natural wonder is actually the volcano of Mauna Kea on the island of Hawai'i – stretching over 10km from seabed to peak,

taller than Mt Everest if both are measured from their bases. But Everest is still the highest mountain in the world in terms of altitude – and growing by 4mm each year. Meanwhile, one of the world's most famous gorges, the Grand Canyon, is getting deeper annually by the thickness of a sheet of paper.

From the biggest to the most beautiful. The Taj Mahal has been described as one of the world's greatest beauties, but its elegance is actually down to clever engineering. To make it appear perfectly straight from ground level, the architect designed the minarets to slant slightly outwards, which also ensured that in the event of an earthquake, they would fall away from the precious mausoleum.

Travelling further back in time, this book features ancient wonders, from the enigma of how the Easter Island statues 'walked', to the mystery of how Stonehenge was built. Throughout history, humans have changed the face of the planet, creating incredible pieces of architecture, while Nature has carved and engineered its own wonders and continues to amaze us with its stunning phenomena. You may well have a favourite sight that is not included in this book. Do email your suggestions to us. In the meantime, here are Lonely Planet's picks of the Great Wonders of the World and how they came to be...



WORLD MAP The World's Great Wonders





● Aurora Borealis

EUROPE

● Leaning Tower of Pisa

● Colosseum

● Acropolis

● Hagia Sophia

● Cappadocia

● Dea Sea

● Great Pyramid of Giza

● Petra

● Burj Khalifa; Palm Jumeirah

AFRICA

● Church of St George

● Great Rift Valley

● Ngorongoro Crater

MIDDLE EAST

● Band-e Amir

● Potala Palace

● Taj Mahal

● Great Wall of China

ASIA

● Lake Baikal

● Terracotta Warriors

● Maglev Train

● Three Gorges Dam

● Mount Everest; Rongbuk Glacier

● Angkor Wat

NORTH PACIFIC OCEAN

INDIAN OCEAN

● Great Barrier Reef

● Lark Quarry

AUSTRALIA





NATURAL WONDERS

CHAPTER I