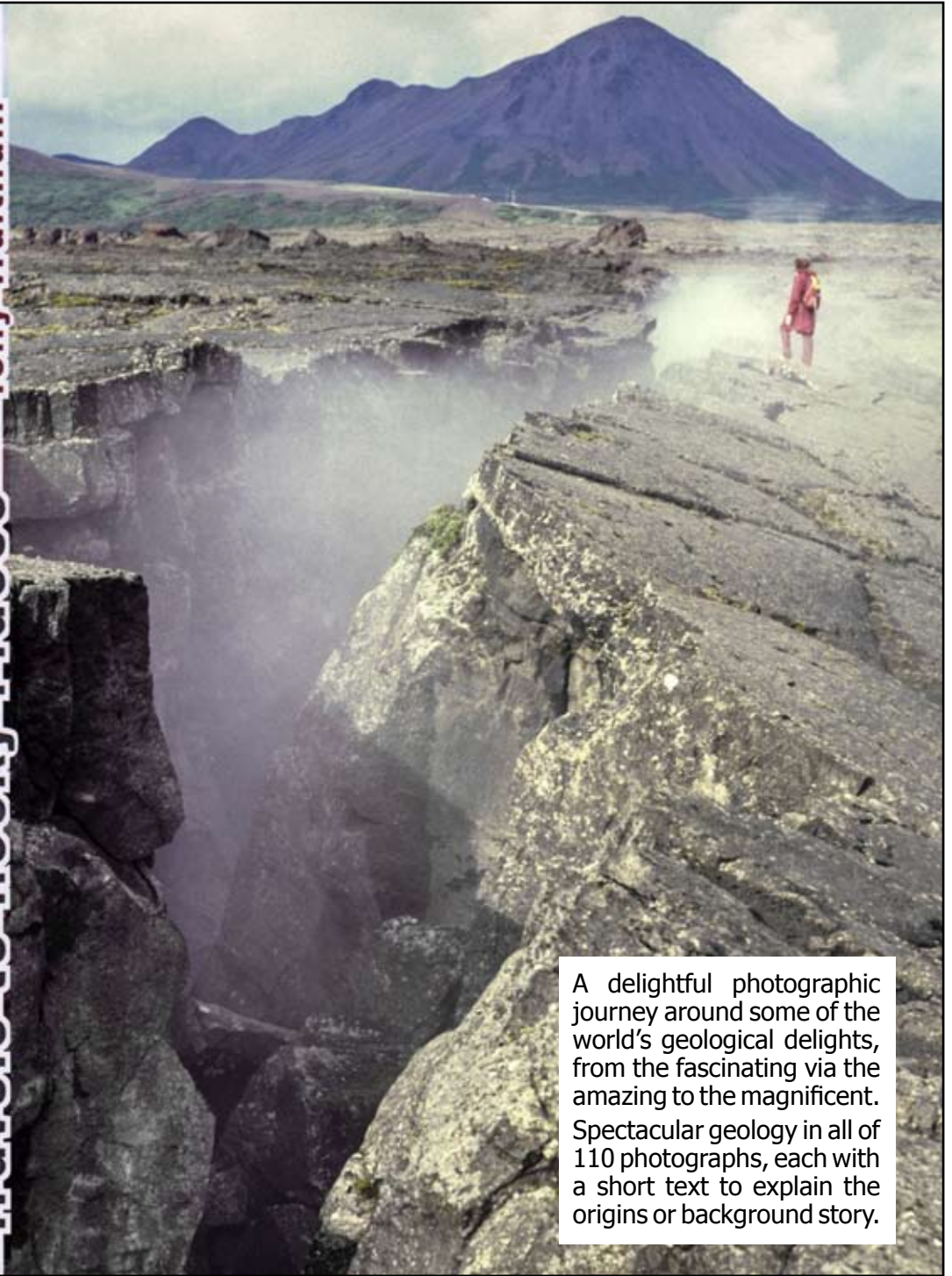


World of Geology

Travels to Rocky Places

Tony Waltham



A delightful photographic journey around some of the world's geological delights, from the fascinating via the amazing to the magnificent. Spectacular geology in all of 110 photographs, each with a short text to explain the origins or background story.





Monument Valley

Lying largely within Arizona and Utah, America's great Colorado Plateau is commonly known as Red Rock Country because of its dramatic desert landscapes that are dominated by Permian and Triassic red sandstones. Close to the plateau's centre, and just inside Arizona, Monument Valley has long been a homeland for the Navajo tribe. Then since 1939 it has become an icon, both for the region and for Hollywood Westerns, after the film director John Ford used it as a backdrop for John Wayne's exploits in *Stagecoach* and also in nine subsequent films. The Valley's narrow buttes and wider mesas all owe their existence to erosion and dissection of the edge of a sandstone plateau, where the almost horizontal beds include a thick unit of strong sandstone that has been undercut by weathering and erosion of a relatively weak sequence of shales and thin sandstones.

In and around Monument Valley, all these spectacular landforms have near-vertical walls about 120 metres tall that are formed in the massive, red, aeolian De Chelly Sandstone. These great rock walls rise above stepped plinths that have developed in a similar thickness of

Sample text

interbedded shales and sandstones of the deltaic Organ Rock sequence. Another strong bed, the Cedar Mesa Sandstone, forms the relatively level floor in the lower part of the valley between the Merrick and Mitten buttes that are seen in this famous view from Artist Point.

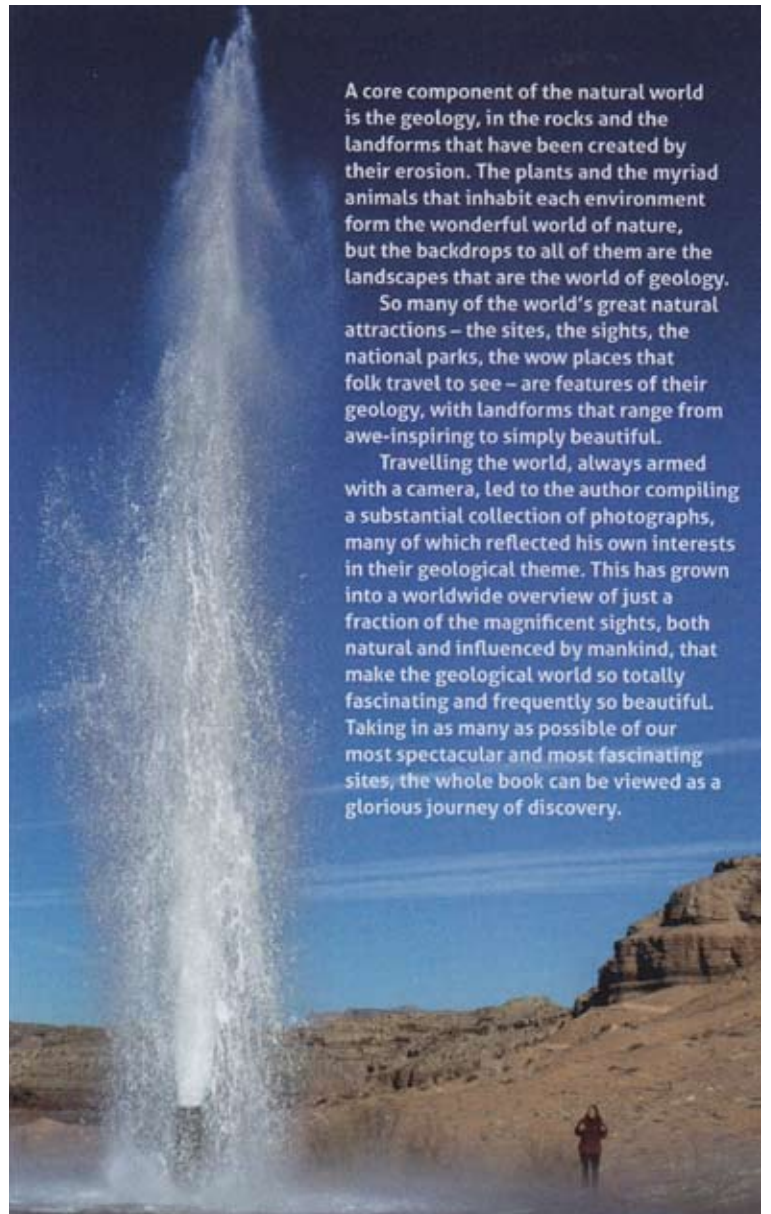
Even though the site now lies within a semi-arid desert, the great majority of the erosion that has left the buttes behind has been fluvial, and wind erosion has contributed little. Streams drained off the edge of the main sandstone plateau to cut deep canyons by headward erosion. Their sides then retreated, not by the usual outward flaring and degradation, but by the spalling of slabs of rock between vertical joints that opened progressively owing to lateral stress relief in the ground alongside the valleys. Only when the valleys had cut deep enough to expose the weaker Organ Rock beds, did they develop with V-shapes at those lower levels. There the valley floors expanded and undermined the great sandstone walls, which have then maintained their vertical profiles by continuing to retreat on successive vertical fractures.

The sites

Torres del Paine
Perito Moreno Glacier
Cal Orcko dinosaurs
Potosi's Cerro Rico
Parinacota volcano
Chuquicamata
Gruta do Janelão
Trinidad Tar Lake
Panama Canal
Chiapas amber
Mexico subsidence
Copper Canyon
Apua Cave
Kalapana lava
Lechuguilla Cave
Monument Valley
Rainbow Bridge
Antelope Canyon
Angels Landing
Dead Horse Point
Crystal Geyser
Yosemite Half Dome
Crazy Horse
Niagara Falls
Morning Glory
Castleguard Cave
Mendenhall Glacier
Katmai Novarupta
10,000 Smokes
Gilkey Glacier
Meade Glacier
Tangle Lakes
Alaska pipeline
Klondike gold

Tuktoyaktuk
Kangia Ice Fjord
Grjótagjá fissure
Strokkur geyser
Jökulsárlón
County Mayo peat
Aran Islands
Old Man of Hoy
Thornton Force
Pippikin Pot
Malham Cove
Brimham Rocks
Mam Tor landslide
Peak Cavern
Ainthorpe landslip
Holderness coast
Dudley mine
Cheddar Gorge
Millook Haven
Preikestolen
Geirangerfjord
Spitsbergen
Gasterntal
Vaiont landslide
Venice flood
Modro Jezero
Mount Etna
Stromboli
El Chorro Gorge
Gibeon meteorites
Kimberley Big Hole
Sof Omar Cave
Erta Ale lava lake
Socotra
Farafra Desert
Pamukkale
Cappadocia

Petra sandstone
Wadi Ghul
Nizwa flood
Namakdan salt
Baku mud volcano
The Amber Room
Lomonosovskaya
Aral Sea
Rakaposhi
Caves of Ellora
River Ganges
Mount Kailas
Gangapurna
Mount Everest
Nyainqentangla
Bayanzag
Petropavlovsk
Avacha volcano
Mutnovsky
Toyako lahar
Moonkeuk
Huanglong
Li River towers
Halong Bay
Mount Popa
Batad terraces
Palau Rock Isles
Mulu Pinnacles
Deer Cave
Wolfe Creek crater
Hammersley iron
Bungle Bungles
Devils Marbles
Welcome Nugget
Mount Tongariro
Pohutu Geyser
Moeraki Boulders



A core component of the natural world is the geology, in the rocks and the landforms that have been created by their erosion. The plants and the myriad animals that inhabit each environment form the wonderful world of nature, but the backdrops to all of them are the landscapes that are the world of geology.

So many of the world's great natural attractions – the sites, the sights, the national parks, the wow places that folk travel to see – are features of their geology, with landforms that range from awe-inspiring to simply beautiful.

Travelling the world, always armed with a camera, led to the author compiling a substantial collection of photographs, many of which reflected his own interests in their geological theme. This has grown into a worldwide overview of just a fraction of the magnificent sights, both natural and influenced by mankind, that make the geological world so totally fascinating and frequently so beautiful. Taking in as many as possible of our most spectacular and most fascinating sites, the whole book can be viewed as a glorious journey of discovery.



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