

PREFACE

This is the story of a lost ocean, which is known to geologists as the Tethys Ocean. It lasted for 250 million years of Earth history, dominating the equatorial world and playing host to the changing life and events that have shaped the world we inhabit today. As continents moved and sea levels rose, Tethys waters swept north across large tracts of Europe, Asia and North America, and south over Africa and South America. As sea level fell so Tethys receded. Continent ground against continent and Tethys was finally squeezed out of existence just 5½ million years ago. But there is a very rich legacy from this past ocean hidden in the rocks of many continents and buried deep beneath the ocean floors of the present-day world.

For many years of my professional career as a geologist and oceanographer, I have worked on rocks on land or drilled into sediments beneath the seas that were once a part of the Tethys Ocean. Slowly and carefully, I have gathered countless clues and amassed a large body of evidence. Sometimes I was looking directly for such evidence, but equally often I was working on some altogether different topic when a new piece of the jigsaw puzzle appeared and neatly slotted into place. That is the way of science. A great many other scientists over many years have been involved, directly or indirectly, in research on the Tethys. The results of their research, like my own, are published in scientific journals and books across the world.

The evidence is incontrovertible. This is a true story – or at least as true a rendition of the scientific facts as we can produce from our

Preface

current understanding. It is not some fanciful musing or creative science fiction, but as close to an accurate account of Tethys history as I can make it. And yet there were volcanic eruptions without parallel in today's world; mass extinctions that almost ended all life on Earth; dramatic radiation of new species in a fecund ocean known only from their tantalizing fossil remains; 'black death' in the Tethys that led to the world's richest oil reserves; and a time when oceans rose up and spread across the planet until only 18% remained as dry land.

All this and more, I have tried to capture as a storyline through time. The book starts with an explanation of the sorts of clues we can find in the rocks, and the information they can provide, and introduces the broad workings of plate tectonics and the all-important measurement of time. Each subsequent chapter then presents a new period of the Tethys, from the building of the supercontinent of Pangaea that marks the beginning of Tethys to its eventual demise as a gaping hole and blistering salt inferno somewhere between Africa and Europe. I have used maps judiciously through the text to help paint a portrait of evolution and change. In particular, the maps at the beginning of each chapter show a reconstruction of the world and the Tethys Ocean for one snapshot of the time covered in that chapter. There is a geological timescale and Tethys timeline in Chapter 1 to help the reader master the huge timescales involved and the names that geologists use as shorthand for different periods in the past. There is also a brief glossary of the more obscure technical terms, which I have introduced of necessity through the text.

In addition to my own research, the sources of scientific information used in reconstructing this history are altogether too numerous to detail in a book of this nature. I have therefore decided to abandon the idea of having an endless series of footnotes or endnotes referring to

Preface

specific scientific articles. Instead, there is a short bibliography with reading suggestions for those wishing to delve further into the science behind the story. I have also introduced in the text just a few of the pioneers in geological science, whose work has made this historical reconstruction possible, as well as some of the many colleagues and friends who have helped me in the field and at sea.

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Dorrik Stow