

Preface

This volume had its origin many years ago after a television documentary was aired with the purpose of locating the remains of Sodom and Gomorrah, those legendary cities in the Vale of Siddim so vividly destroyed by the wrath of God. The documentary was of above average interest to me, as I had spent the best part of a decade involved in a number of geological studies in the Dead Sea valley, where Sodom, Gomorrah, and their satellite cities, were popularly located.

In the documentary, a number of scholars advanced theories of where they thought Sodom (or the other cities mentioned in Genesis) may or may not have been. Members of one profession were notable by their absence from this gathering – geologists! A need was thus perceived for a publication describing the geology of the Dead Sea written for archaeologists, in the hope it might prove useful to this age-old search. A colleague and I set about the task of collecting all information of possible relevance, which included plundering my personal files for data relating to the properties of the soft sedimentary deposits that had accumulated within the Dead Sea valley.

During this filtering process it began to dawn upon us exactly where the Vale of Siddim had been located, and in what fashion Sodom, Gomorrah, and their satellite cities, had been destroyed so dramatically. It also became apparent that the region had been of considerable importance to the commerce between Canaan and Egypt. The loss of the cities in such an inexplicable manner would have devastated this trade.

The results of our research were published in *The Quarterly Journal of Engineering Geology* (November 1995), a publication of The Geological Society, London, England. The paper was titled ‘The Destruction of Sodom and Gomorrah: a geotechnical perspective’, and was well received by the technical readership to whom it was addressed. The paper came to the attention of the BBC, London, while planning their series *Ancient Apocalypses*, and was utilised in their television documentary dealing with the destruction of Sodom and Gomorrah, first aired in 2001. During the preparation of the documentary the BBC commissioned laboratory testing at the Schofield Centre for Centrifuge Studies, Cambridge University, which validated the postulated mode of destruction; namely soil liquefaction by earthquake.

Since limitations of space in the one, and time in the other, prevented more comprehensive treatment in either, it was thought useful to compile the present

volume in order to remedy this deficiency. Furthermore, new information has since been acquired which is included herein. The objective of this work is to draw together the related strands of knowledge from a spectrum of scientific and cultural disciplines, in order to give greater clarity and deeper understanding to a noteworthy event which impacted the region during the third millennium, and which is so vividly described in the Book of Genesis. The destruction of Sodom, and its satellite cities, is concluded as having led to political instability in Egypt at the end of Early Bronze III. Consequently it is hoped this contribution will be of interest, not only to scholars and spur further research into this singular event, but also to the general public.

A critical reviewer for *Archaeology* magazine stated quite bluntly with regard to the story of Sodom and Gomorrah, that 'The real challenge for biblical archaeologists today is not to search for long-lost cities, but to understand why the ancient Israelites formulated these powerful myths', (Silberman, 1996). This dismissive attitude may reflect the opinion of some scholars and archaeologists, but it is irrational. The search for the remains of any city of Antiquity, whether Biblical or not, is a source of fascination to a very wide public, and more enduring than most if the city concerned possesses the legendary notoriety of Sodom and Gomorrah. Indeed, though the destruction of the 'cities of the plain' may have its origins in myth, a responsible attitude of any scholar is to analyse that myth rationally and scientifically with all the tools available. We are right to ask questions, and advance hypotheses, provided we take into account all evidence from whatever source it may originate. Under the present circumstances, as it relates to the destruction of Sodom and Gomorrah, the most effective research is multi-disciplinary.

Here the approach has been to place the narrative against the backdrop of all relevant established geographic and scientific fact. Bluntly stated it is 'to put the horse before the cart', not the reverse. The legendary demise of Sodom and Gomorrah, long buried in the mists of antiquity, embedded in oral tradition, and intertwined with moralistic teaching, likely constitute kernels of historic truth, but they cannot be corroborated by cultural considerations alone no matter how intense the scholarly debate. To make any credible attempt to unravel the truth requires applying the powerful tools of scientific knowledge now in our possession. Therefore, the framework of this book places great emphasis on various branches of the earth sciences, such as geography, geology, seismology, geotechnology, and petroleum chemistry, set against an abbreviated backdrop of archaeology, history, and religion.

One of the great pioneering archaeologists in the search for Sodom was Dr Melvin Kyle. In his famous book *Explorations at Sodom* (1928) he writes in his Introduction 'I conceive the popular telling of dry-as-dust facts on a recondite subject to be one of the greatest services a writer may render.' The author echoes the sentiments of Dr Kyle in the hope that the translation of 'dry-as-dust facts', so necessary for the argument presented herein, may be accomplished with a minimum amount of tedium. In compiling this work I have made every effort to

avoid arcane or complicated language, however, by necessity scientific terms are unavoidable, and some forbearance is requested by the reader should these prove unfamiliar. To this end, a glossary has been included as an aid to understanding some of the more specific terminology.

A publication such as this necessarily includes information extracted from a wide variety of sources compiled by others, and it goes without saying that a great debt is owed to all those whose works are referenced herein, and to whom acknowledgement is duly made. The placement of photographs in the public domain by both individuals and government agencies, especially the United States Geological Survey, has greatly facilitated the illustration of this monologue.

Special mention must be made of the work of Kenneth Emery and David Neev, whose extensive research into the geology of the Dead Sea, and the chemistry of its waters, established a solid factual basis for all subsequent work.

Tribute must be made also to Professor Harry Bolton Seed of the University of California, Berkeley, who gave so readily of his specialist knowledge in earthquake engineering and encouraged this work, and to Professor Nicolas Ambraseys of Imperial College, London, under whom the writer was privileged to study for a short period. It is to be regretted both passed away before the thesis presented herein could be finalised. Appreciation is also extended to Dr John Cripps, of Sheffield University, who encouraged this publication.

Information in my own possession arose during involvement with extensions to the Dead Sea Works Limited chemical plant at S'dom, Israel, while in the employ of Bateman Engineering Limited, Johannesburg, South Africa. Gratitude is accordingly expressed to both of these organisations. Also, I would like to publicly acknowledge the valuable assistance rendered by Tony Beardow during the writing of our original joint paper, the incentive provided by the BBC through inviting me to participate in their documentary, and to Dr Jonathan Tubb of the British Museum. It was at Jericho where I first met Dr Tubb, to discover both of us had attended the same school – King Henry VIII Grammar School, Coventry, England. That evening we recalled some of the teachers we shared those years of long ago. Perhaps, in some small way, they too have contributed to this volume.