

Book Reviews

A Geological Companion to Greece and the Aegean. Michael Denis Higgins and Reynold Higgins, 1996, Cornell University Press, xvi + 240 pp., \$55.00 (cloth-bound).

This extremely useful work is a collaborative effort between a geologist (Michael Higgins) and an archaeologist (his late father, Reynold Higgins), and compiles in one volume the geological background of mainland Greece, the Aegean, and western Turkey. The aim of this book is not only to describe the geology of Greece and the Aegean, but also to comment on how geology influenced the development of ancient civilizations in the region. As such, this work will be indispensable for all archaeologists working in this region, whether they are planning to do field surveys, or are interested in site formation processes (including geological "events" or hazards), settlement patterns, agriculture and stock breeding, or raw material exploitation (including water supplies, stone, and metal). The authors infer in the preface that the volume is intended for scholars and archaeologists seeking "to be fully informed" about the geological background of sites and regions in Greece.

A Geological Companion to Greece and the Aegean includes introductory chapters on geology and the geological history of the Mediterranean, geological summaries of 14 regions, a brief appendix on marble and related stones, and a short glossary of geological terms. In the bibliography at the end, the nearly 300 (alphabetized) references are also numbered; in the text they are cited numerically, saving some space but requiring going back-and-forth between text and bibliography. Sixteen pages of black-and-white plates, including terrestrial and aerial photographs of geological features, supplement the 140 maps and figures that illustrate the text.

The first chapter ("The Geological Background") is a solid introduction to geological processes and features including, among other topics, tectonics, the rock cycle, weathering and soils, rivers, springs, and sea-level change. This section is very well illustrated, and the text is authoritative yet understandable to the nongeologist; the topics as they relate to specific Aegean circumstances are discussed in further detail in the following regional chapters. Chapter 2 is a brief geological history of the Mediterranean, beginning with the evolution of the continents, and ending with the glacial and postglacial origins of the modern landscape.

For each of the 14 geographic regions, the geology of specific sites or areas is presented in moderate detail, making this volume a very handy resource. The interpretations presented are for the most part not original, but rather a well-illustrated synthesis of the existing and often arcane literature. The amount of information provided is sufficient to understand the relationship between a site and its geographical and geological history; the references provided will lead the serious geoarchaeologist to the primary data.

For Attica, the areas discussed include Athens, with a specific section on the Acropolis; Piraeus; Eleusis; Mt. Penteli and Mt. Hymettos; Marathon; Lavrion; and Cape Sounion. For Mt. Penteli and Hymettos, the formation and exposure of the marble layers are explained, and are related to the ancient and modern quarries there. The authors point out that both grey and white marble occur on both mountains, so that the practice of some modern scholars to identify grey marble as Hymettan and white as Pentelic may not be accurate. For Lavrion, the nature of the lead and silver deposits and their exploitation in antiquity is described.

Following a short chapter on the islands (Aegina, Poros, Hydra, Methana) of the Saronic Gulf, a more extensive chapter presents Corinthia and the Argolid. Among the more important archaeological sites covered in this chapter are ancient Corinth, Mycenae, and Tiryns. The geological information provided includes the source of the stone for the city walls, and changes in coastline and sediment deposition at

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Tiryns. The chapter on Laconia and Messenia gives the geological background for Sparta, Mani, and Pylos among other sites; useful information may be found about the grey marble used in Classical Sparta, the Rosso Antico quarries exploited during Minoan-Mycenaean and then in imperial Roman times, and the proximity of the ancient shoreline to the Palace of Nestor.

Olympia is perhaps the most important site documented in the chapter on Elis, Achaea, and Arcadia, and we learn the source of the stone used for the temples of Hera and Zeus, and the role of earthquakes in the destruction of buildings at the site. In Central Greece, we are presented with the geological formation of the dramatic topography of Delphi, and some speculation on the emanation of gas from the chamber beneath the Temple of Apollo where the oracle sat. Euboea was famous both for its Cipollino marble quarries (the green color comes from muscovite and chlorite) and its asbestos (fibrous serpentine). In the next chapter, Thessaly and the Northern Sporades, there is more information about several marble quarries in the vicinity of Mt. Olympos, including the still exploited Verde Antico.

Northwest Greece, the Ionian Islands, and Greek Macedonia are the subjects of the next two chapters. Here we find information on Corfu, Kephallinia, Ithaca, Thessaloniki, and Vergina. In the chapter on Thrace, the Dardanelles, and adjacent islands, the northernmost Aegean island of Thasos is seen to be exceptional in its metal (silver, gold, iron) and marble (both calcite and dolomite) resources, while Lemnos was the source of *Terra Sigillata* still used for medicinal purposes. The position of ancient shorelines around the Sea of Marmara, the Dardanelles, and Troy are reconstructed, and provide important documentation for those attempting to locate ancient settlements in this area.

Several well-known ancient sites are covered in the chapter on the Eastern Sporades and the Ionian Shore. Interesting geological information is presented on the petrified forest near Sigrí on Lesbos; on granite and Portasanta quarries near Pergamon and Chios, respectively; the gold and silver deposits of Sardis; and the marble used at Ephesus. In the Dodecanese and the Carian Shore, we learn about the geological setting of Rhodes, the obsidian source on Giali, and the Mausoleum at Halicarnassus. The chapter on the Cyclades is the longest in the volume, because of the sheer number of important islands and their varied geological resources. The marble sources on Delos, Naxos, and Paros are discussed, as are the obsidian sources on Melos, iron sources on Seriphos, and silver sources on Siphnos. Of significant interest too is the geological history of Thera (Santorini), popularly connected with Atlantis, and certainly the center of a major volcanic event during the Minoan period. Crete, the largest Greek island, is the subject of the last regional chapter. Geological information is provided for several of the palace sites, including Knossos, Mallia, and Zakros, as well as the famous Psykhro (Dictaeon) cave.

The final chapter in the volume, on future geological hazards such as volcanic eruptions, earthquakes, and landslides, includes the sage advice to run for your life if you are on the beach and the level of the sea suddenly goes down since a tsunami may be on its way. The archaeological relevance of this chapter is its discussion of historically documented hazards which may help us interpret the evidence for pre-historic events and human responses.

This volume is well produced and virtually free of typographical errors. The price of \$55.00 (hard-cover) is reasonable for a reference work. In making the geological background information for archaeological sites widely accessible to specialist and non-specialist alike, *A Geological Companion to Greece and the Aegean* fills an important niche in the geoarchaeological literature, and will serve as an invaluable tool for years to come.

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