

A Review of Three Books on Natural Disasters

Lizabeth Hope-King

Department of Geological Sciences, California State University, San Bernardino,
CA 92407

Joan E. Fryxell

Department of Geological Sciences, California State University, San Bernardino,
CA 92407

Natural disasters are frightening and fascinating certainties here on Planet Earth. They are an inevitable part of the human experience and should be examined as an important aspect of a good education. Their occurrence needs to be recognized, studied, and understood. Exploring the distinction between truly natural disasters and those caused by human activities can provide the students with new perspectives. Due to the sensational nature of the topics, courses about natural disasters enjoy great popularity on many college campuses, and help to excite interest in the sciences among students.

"Geohazards, Natural and Human" by Nicholas K. Coch (Prentice Hall, ISBN 0023229926), "Earth's Fury, An Introduction to Natural Hazards and Disasters" by Robert L. Kovach (Prentice Hall, ISBN: 0130424331), and "Disasters, An Analysis of Natural and Human-Induced Hazards" by Charles H.V. Ebert (Kendall/Hunt Publishing Company, ISBN 0787270733) are all textbooks dealing with the subject of natural disasters. Each author has interpreted this area of study with his own style. In addition, supplementary on-line materials pertaining to natural disasters and hazards are available from Prentice Hall in "Hazard City: Assignments in Applied Geology" by Hobart King.

"Geohazards" presents its subject matter in a progressive and thorough manner. The author builds the ideas and concepts contained in this text with a firm foundation in geology. The book has sixteen chapters. The first three chapters explain the fundamentals of geology and are followed by *Volcanic Hazards, Earthquakes, Soil Erosion and Sediment Pollution, Streams, Groundwater, Landslides, Subsidence and Collapse, Atmospheric Geohazards, Waste Disposal and Geohazards, Estuarine and Wetlands Problems, Problems of Mangrove Wetlands and Coral Reefs, Coastal Problems, and Severe Weather Hazards*.

Each major topic is described with relevant geologic processes, hazards, and mitigation discussed in individual subsections. This provides clear understanding of the concepts introduced. The text is well supported with many informative illustrations, all in color, and case histories. Of the many illustrations, the diagrams are exceptionally effective in clarifying and reinforcing the concepts presented in the reading. The photographs are visually appealing and efficient in illustrating the hazards in real-life settings and in emphasizing the pertinent geology. The author recognizes the importance of maps in relating geologic concepts. The charts and graphs effectively present information. Case histories are presented as inserts in the relevant sections. These accounts describe the occurrence of some notable disasters and warn of dangerous geologic hazards. The reality of the images is thought provoking. The reading is captivating, and the stories are all well documented. Each chapter ends with a summary, a list of key terms, thoughtful review questions, and some suggested readings. The book closes with two appendices, a metric conversion section, a detailed soil classification table, an informative glossary, and a well-organized index.

In the on-line supplement "Hazard City: Assignments in Applied Geology", the student becomes a geologist, gathering and analyzing information, processing it, making assessments, and giving recommendations. The scenarios include *Volcanic Hazard Assessment, Earthquake Damage Assessment, Flood Insurance Rate Maps, Landslide Hazard Assessment, Snowpack Monitoring, Groundwater Contamination, Coal Property Evaluation, and Landfill Siting*.

"Earth's Fury" features a dynamic, fact-filled narrative. The text has ten chapters. After a brief introduction, the topics are *Volcanoes, Earthquakes, Earthquake Engineering, Landslides and Land Movement, Desertification, Land Degradation and Drought, Atmospheric Hazards, Oceanographic Hazards, River Floods, and Some Accident Scenarios*.

Each chapter begins with basic information on its topic. This condensed, fast-moving explanation is designed to help the student gain some basic understanding of the nature and mechanics of the subject at hand. Fundamental facts punctuated with effective case histories, some of which are amazing, characterize the reading. Occasionally, a case history will be featured in its own section to highlight a specific hazard.

Engineering is a strong underlying theme in this text. Engineering and structural information pertaining to past disasters and mitigation measures for the future are discussed throughout the reading. These concepts are illustrated with informative diagrams. Drawn clearly, these figures are detailed and accurate. Examples include the behavior of different structural forms when stresses are applied in various scenarios and a hypothetical risk analysis for a natural gas terminal. Facts and concepts are also frequently expressed mathematically.

The maps and graphs are clear, understandable, and well placed within the reading. Pictures range from interesting and educational to fascinating in their depiction of extraordinary geologic disasters. All of these visuals are displayed in black and white. Each chapter closes with a number of comprehensive review questions.

"Earth's Fury" is not lengthy, but it effectively covers a large amount of material in a condensed format. It is well arranged and informative, but it is somewhat complex, and assumes the student possesses some prior geologic and mathematical knowledge.

"Earth's Fury" ends with a brief glossary, a bibliography, answers to the review question (clearly and thoroughly explained), and finally the appendices, which contain valuable information on engineering and mathematical geology. These include *Basic Probability Theory, Binomial and Poisson Distribution, Seismic Moment, and Volcanic and Seismic Risk Analysis*. These are useful, but again, are not aimed at a general student population. The reader is sometimes surprised and intrigued when the author discusses obscure and unusual geologic phenomena such as brontides (thunder-like rumbling with a seismic source) and earthquake lights. However, these explorations of the unusual are clearly explained,

and serve to fascinate and pique the interest of the reader.

"Disasters" is a distinctive treatment. It investigates many of the cultural and social aspects of the hazards to life on Earth. The book contains sixteen chapters. Each chapter begins with a list of key terms. The subjects explored are *Earthquakes, Volcanoes, Landslides and Avalanches, Tsunami Waves and Storm Surges, River and Urban Floods, Hurricanes and Tornadoes, Thunderstorms and Lightening, Dust Storms and Blizzards, Aviation Hazards, Drought and Desertification, Forest Fires, Selected Threats to the Biosphere* (e.g. locust plagues), *Some Major Global Concerns, Environmental Deterioration, the Impact of War* (fire death of cities), and *Social Aspects of Disasters*. Although the chapters are brief, the information invokes the imagination. The first two-thirds of each chapter discusses its topic, and the last third consists of two or three extraordinary and educational case histories. These accounts are very well done and expand upon the information in the first part of the chapter.

Each chapter employs for or five maps and/or diagrams, which are always clear, simple, and small in size. In addition, all of the hazards and disasters that are discussed are illustrated in black and white with many photographs of frightening or amazing events. This book is very visually oriented.

Positive aspects of this text include its casual presentation, and its exhibition of a great variety of ideas

and concepts. It is somewhat sensational but still accurate. "Disasters" closes with an informative glossary, references cited by the chapter, and an index. Initially, this book might seem somewhat superficial because it covers so many different disaster scenarios. However, the reader is captivated by the author's efficient and detailed descriptions of many of the possible environmental hazards that could affect our biosphere. Everyone will find something of interest in this book.

Of the many books available on natural disasters, these three were chosen to review because they contain the broadest assortment of topics. While they cover many of the same general topics, each text approaches this area of study from a different perspective, creating the possibility of many different applications. "Geohazards" and "Earth's Fury" are not currently in print, but are being supported by their publisher with the on-line "Hazard City", and are readily available from a number of vendors. They compare favorably in sales rank with other books dealing with the study of natural disasters.

Acknowledgements: We gratefully acknowledge a grant from Associated Students, Inc. at CSUSB, which supported the page charges for this book review.