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Planet Earth

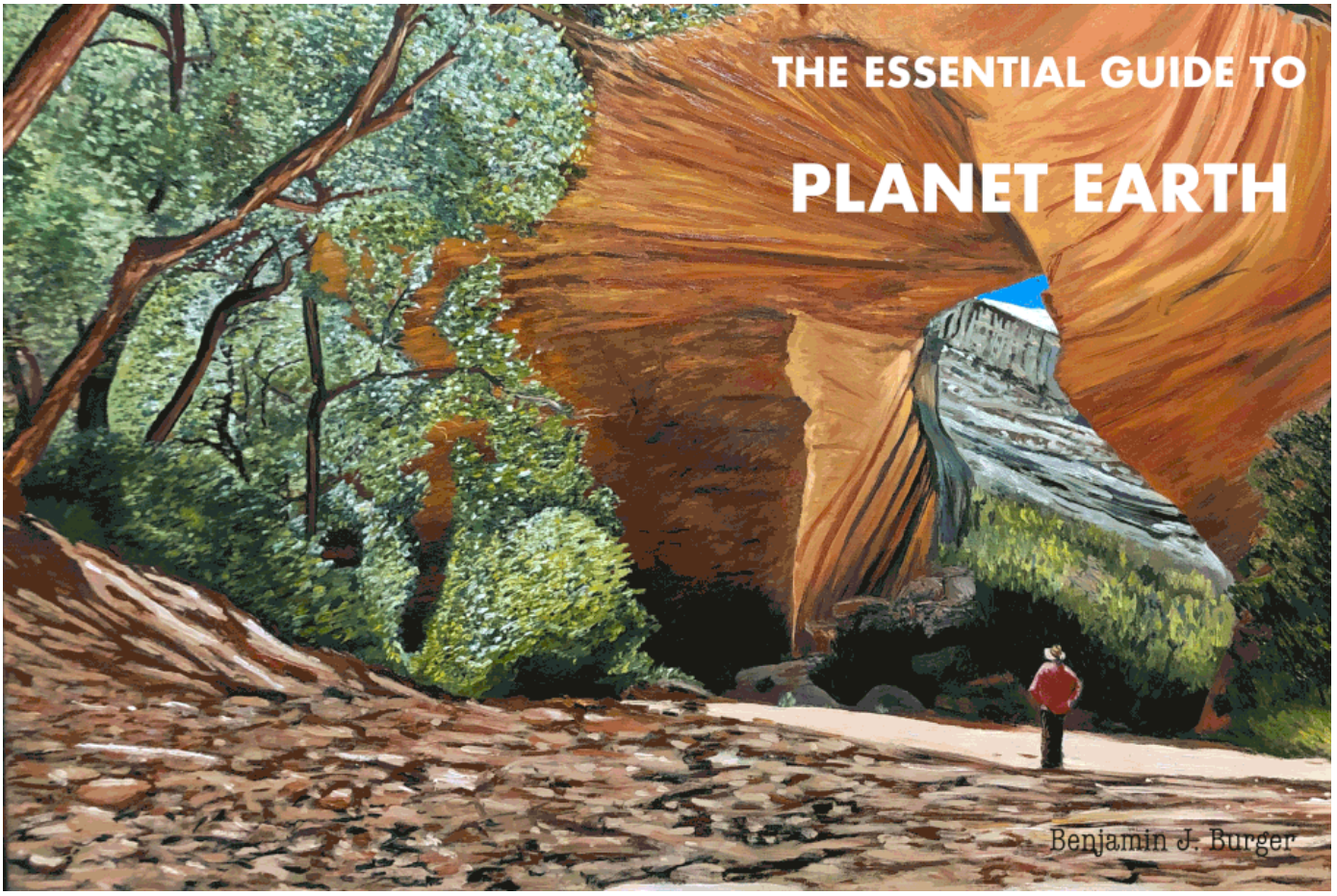

Table of Contents

This book is intended for **intermediate** readers.

A ***printable version*** of Planet Earth is available. For a single panel print version to print out. (edit it (https://en.wikibooks.org/w/index.php?title=Planet_Earth/print_version&action=edit&preload=Template%3APrint+version%2FPreload))

- d. How to Navigate Across Earth using a Compass, Sextant, and Timepiece
- e. Earth's Motion and Spin
- f. The Nature of Time: Solar, Lunar and Stellar Calendars
- g. Coriolis Effect: How Earth's Spin Affects Motion Across its Surface
- h. Milankovitch cycles: Oscillations in Earth's Spin and Rotation
- i. Time: The Invention of Seconds using Earth's Motion

Section 2: EARTH'S ENERGY

- a. Energy and the Laws of Thermodynamics
- b. Solar Energy
- c. Electromagnetic Radiation and Black Body Radiators
- d. Daisy World and the Solar Energy Cycle
- e. Other Sources of Energy: Gravity, Tides, and the Geothermal Gradient

Section 3: EARTH'S MATTER

- a. Gas, Liquid, Solid (and other states of matter)
- b. Atoms: Electrons, Protons and Neutrons
- c. The Chart of the Nuclides
- d. Radiometric dating, using chemistry to tell time
- e. The Periodic Table and Electron Orbitals
- f. Chemical Bonds (Ionic, Covalent, and others means to bring atoms together)
- g. Common Inorganic Chemical Molecules of Earth
- h. Mass spectrometers, X-Ray Diffraction, Chromatography and Other Methods to Determine Which Elements are in Things

Section 4: EARTH'S ATMOSPHERE

- a. The Air You Breathe
- b. Oxygen in the Atmosphere
- c. Carbon Dioxide in the Atmosphere
- d. Green House Gases
- e. Blaise Pascal and his Barometer
- f. Why are Mountain Tops Cold?
- g. What are Clouds?
- h. What Makes Wind?
- i. Global Atmospheric Circulation
- j. Storm Tracking
- k. The Science of Weather Forecasting
- l. Earth's Climate and How it Has Changed

Section 5: EARTH'S WATER

- a. H2O: A Miraculous Gas, Liquid and Solid on Earth
- b. Properties of Earth's Water (Density, Salinity, Oxygen, and Carbonic Acid)

- c. Earth’s Oceans (Warehouses of Water)
- d. Surface Ocean Circulation
- e. Deep Ocean Circulation
- f. La Nina and El Nino, the sloshing of the Pacific Ocean
- g. Earth‘s Rivers.
- h. Earth’s Endangered Lakes and the Limits of Freshwater Sources
- i. Earth’s Ice: Glaciers, Ice Sheets, and Sea Ice

Section 6: EARTH’S SOLID INTERIOR

- a. Journey to the Center of the Earth: Earth’s Interior and Core
- b. Plate Tectonics: You are a Crazy Man, Alfred Wegener
- c. Earth’s Volcanoes: When Earth Goes Boom!
- d. You Can’t Fake an Earthquake: How to Read a Seismograph
- e. The Rock Cycle and Rock Types (Igneous, Metamorphic and Sedimentary)
- f. Mineral Identification of Hand Samples
- g. Common Rock Identification
- h. Bowen’s Reaction Series
- i. Earth’s Surface Processes: Sedimentary Rocks and Depositional Environments
- j. Earth’s History Preserved in its Rocks: Stratigraphy and Geologic Time

Section 7: EARTH’S LIFE

- a. How Rare is Life in the Universe?
- b. What is Life?
- c. How did Life Originate?
- d. The Origin of Sex
- e. Darwin and the Struggle for Existence
- f. Heredity: Gregor Mendel’s Game of Cards
- g. Earth’s Biomes and Communities
- h. Soil: Living Dirt
- i. Earth’s Ecology: Food Webs and Populations

Section 8: EARTH’S HUMANS AND FUTURE

- a. Ötzi’s World or What Sustainably Looks Like
- b. Rise of Human Consumerism and Population Growth
- c. Solutions for the Future
- d. How to Think Critically About Earth's Future
