

Chapter 6-4: History of Life on Earth

Life on Earth began with the origin of organic molecules and continued with the formation of cells. As time passed, various life forms appeared and disappeared, and great geographical changes occurred on the planet.

Geologists divide the Earth's 4.6 billion years of existence into four eras. The eras are subdivided into periods, whose beginnings and endings are marked by major events, such as episodes of mass extinction. The most recent era is also divided into epochs that last a few million years. In this plate, we will discuss the main events in the history of life on Earth from the earliest known period to the present day.

This plate consists of an overview of the various periods on Earth and the major events that occurred during them.

The time span before the eras shown in the plate is known as the Precambrian era. It began with the origin of the Earth, about 4.6 billion years ago, and ended approximately 570 million years ago (MYA). During this time, the first prokaryotic cells appeared, the first eukaryotic cells appeared, and multicellular organisms came into existence. Bacteria were prevalent, photosynthesis began, and oxygen appeared in the atmosphere. Algae also appeared, as did soft bodied marine invertebrates (invertebrates are organisms that have no backbones). The Precambrian era is also called the Proterozoic era.

We will begin our study of the history of life on Earth in the **Paleozoic era (A)**, which extended from 570–245 MYA. A dark color should be used to shade the block labeled (A). At the beginning of this era, **marine invertebrates (B)** developed and flourished. Then, during the Ordovician period, the first vertebrates (animals with backbones) evolved, the **fish (C)**. Along with the mollusks and arthropods, they dominated the sea. During the next period, the Silurian, primitive vascular plants appeared, as did the first jawed fish. In the Devonian period, seed ferns evolved and the first **amphibians (D)** appeared in the seas.

The next period of the Paleozoic era was the Carboniferous period, in which club mosses and ferns were plentiful. Amphibians flourished and **insects (E)** evolved and spread over the Earth. During the Permian period, conifers appeared, amphibians declined in number, and **reptiles (F)** diversified. At the end of the Permian period, approximately 245 MYA, a mass extinction took place.

We will continue our survey of the history of life on Earth with the next era, the Mesozoic. Note that a mass extinction ended the first era, and marks the beginning of the second.

The **Mesozoic era (G)** is divided into three periods. During the Triassic, the first dinosaurs and mammals appeared, mollusks dominated the seas, and forests of ferns and gymnosperms were prevalent on land. The next period, the Jurassic, is also known as the age of the **dinosaurs (H)**. The first birds appeared at the end of this period (they evolved from reptiles), a few species of mammals were present, and gymnosperms continued to flourish on the land. During the Cretaceous period, placental **mammals (I)** appeared and insect groups continued to evolve. Flowering plants covered the earth, and the dinosaurs continued to flourish.

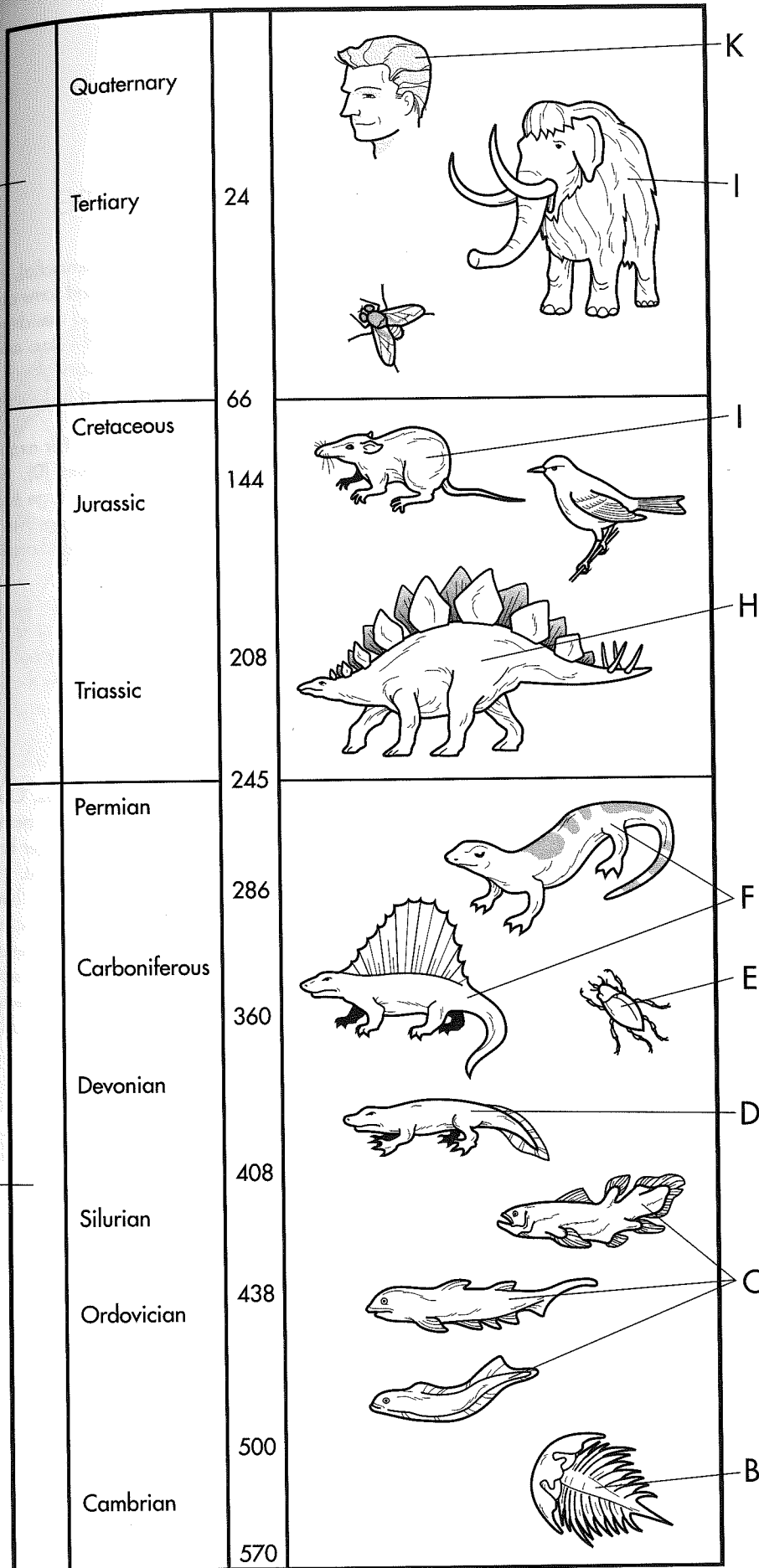
At the end of the Cretaceous period, about 65 MYA, another mass extinction episode took place, and most of the dinosaurs disappeared. This mass extinction has been theoretically linked to the crash of a huge meteorite in the Yucatan Peninsula of Mexico. This meteorite may have raised a huge dust cloud that blocked the sun's radiation, leaving the earth in cold and darkness. The mammals (I) present at this time survived the extinction episode, and would soon occupy the niche once held by the dinosaurs.

We will complete our perusal of the history of life on Earth by examining the third and final period. This period includes the present era. Continue your coloring and read the paragraphs that follow.

The **Cenozoic era (J)** began approximately 65 MYA. At the start of the Cenozoic era, the dinosaurs had disappeared and mammals began to dominate the land. The age of mammals (I) began early in the Cenozoic era and continues today, and insects increased dramatically in diversity and number during this time. By the Tertiary period, birds were huge in number and flowering plants had spread over many parts of the Earth. Drift brought the continents to their current positions, and the climate became similar to today's. Toward the end of the Tertiary period, forests declined and grasslands spread, bony fish became abundant in the seas, and all of the modern genera of mammals were present. The end of the Tertiary period also saw the evolution of hominids on Earth.

The most recent period is the Quaternary. This is the age of **humans (K)**, who appeared in their modern state at this time. Flowering plants continued to spread and diversify. Many of the earlier, giant mammals went extinct, and climatic conditions became similar to present ones.

History of Life on Earth



- History of Life on Earth**
- Paleozoic EraA
 - Marine Invertebrates..B
 - Fish.....C
 - Amphibians.....D
 - InsectsE
 - Reptiles.....F
 - Mesozoic Era.....G
 - DinosaursH
 - MammalsI
 - Cenozoic Era.....J
 - HumansK