**Earth’s History**  Author: Ms. A. H. Gaede

During the Precambrian time, the formation of the Earth occurred 4.6 billion years ago to about 542 million years ago. The early atmosphere did not contain oxygen as it does today. Intense radiation from the sun hit the Earth’s surface but life began during this time around 3.6 billion years ago. Prokaryotes or single-celled organisms that had no nuclei developed in the oceans. Cyanobacteria is one type of prokaryote that use sunlight to produce their own food through a process called photosynthesis. By the process of photosynthesis, they began to release the oxygen gas into the oceans and air.

Oxygen began to fill the atmosphere and some of the oxygen formed a new layer of gas in the upper atmosphere called ozone which absorbed the harmful radiation from the sun. The decrease in the sun’s radiation allowed life to flourish and become abundant.

About 1 billion years ago, organisms became larger and more complex. These organisms were eukaryotes containing nuclei and other structures in each cell. The fossil record shows us how these organisms were now multicellular. The next era began about 542 million years ago called the Paleozoic Era and ended about 251 million years ago.

During the first part of the Paleozoic Era many marine life-forms appeared. Fossils show us that animals existed such as sponges, corals, squids, snails and trilobites. Even some fish with backbones appeared in this era. During the middle of this era plants, fungi and animals lived on the land. By the end of this era giant ferns, horsetails, and conifers covered much of the Earth.

There were no flowering plants but other plants provided shelter and food for the animals. The fossil record shows us that scorpions were the first land animals. And large salamander-like animals evolved.

By the end of this era, reptiles and insects appeared. About 251 million years ago, at the end of the Paleozoic Era, the Earth’s continents had joined to form Pangaea (a super continent) and shallow inland seas disappeared. Ninety percent of marine species and 78% land species became extinct. This is the largest known mass extinction.

Following the Paleozoic Era, came the Mesozoic Era. This era is usually referred to as the “*Age of Reptiles.*” Dinosaurs dominated Earth for about 150 million years. Dinosaurs had unique adaptations and some swam in the ocean. Also, the first birds and mammals appeared during this time. The most important plants were conifers. Flowering plants appeared in the later part of this era. This era ended about 65 million years ago. About this time, all the dinosaurs and about half of the animal and plant species became extinct. Perhaps a giant asteroid hit Earth and the dust and smoke blocked out the sunlight causing many of the plants to die out first and then all life suffered due to the lack of abundant plant life.

The earliest fossils of *Homo sapiens* (humans)were found during the Cenozoic Era. Humans appeared late in this era. The Cenozoic Era still exists today. This era is sometimes called the “*Age of Mammals.*” Many kinds of mammals, birds, insects and flowering plants appeared. The mammals included mastodons, saber-toothed cats, camels, giant ground sloths and horses. The Alps and the Himalayas formed during this era. The Earth’s climate has changed many times during this Era. The climate turned very cold where ice sheets and glaciers extended from the Earth’s poles. These times are referred to as the “Ice Ages.” Many animals migrated to the Earth’s equator or others adapted to the cold or died out.