

Correlation between Geology and Paleontology

Fossils are formed by an organisms remains being deposited primarily in limestone, chert mudstone, shale, siltstone. The hard parts (bones, teeth, nails, shell, or wood like tissue) of the organism are preserved. Three types of fossils are found, the original material, imprints/trace, or a mold. When the conditions are right the original material can be preserved. Imprints such as foot prints and skin profiles show us activity, when trace fossils such as Dino eggs and feces are found. And when a mold fossil is made the bone (after being deposited in the rock) deteriorates and leave a hole or cavity of sorts where the bone used to be and minerals can fill the cavity and leave a mold of the organism.

Another form of fossilization is petrification, most common in wood. The wood would get impregnated by underground water which is very rich with minerals. When the wood absorbed the dissolved mineral rich water, the mineral *usually* Silica would solidify and turn the wood literally into rock.

Mummification is another form of fossil preservation, this is where an organisms remains are deposited in an environment that is deprived of oxygen. This stops the decomposing bacteria from being able to do their job. You can find such environment in a bog, swamp, buried in a volcano explosion, ice, being encased in amber. These are all forms of embodiment, freezing or drying. Mammals humans and many other things have been persevered in ice frozen and kept good like a steak in the fridge.

Dinosaurs bones are composed of Calcium Carbonate (CaCO_3), a very hard and durable Mineral compound. When they are exposed to Mechanical, chemical weathering & erosion it breaks the bones down and can cause them to be lost and forgotten with time. Many bones have survived the weathering and erosion processes.

Dinosaurs are not the only organisms to be preserved in the geological map of history. These include Plants, single celled organisms (bacteria), Sponges, Coral, anemones,

Brachiopods, Mollusks, Cephalopods, Echinoderms, Arthropods, insects and different bio diversity preserved in amber, Fish, Amphibians, Reptiles, Pterosaurs, Mammals, and even Humans. With this many organisms dying off you would think that they would be every where and be shown in every climate. But conditions must be right, the soil and sediment composition have to be right and climate play a big role for the type of weathering and erosion that effects the fossil.

The Structure of three bone types found can lead us to know some key things about dinosaurs. With the presence of Primary, Haversian, and growth ring bone tissues not only show us that dinosaurs were a breed in between cold and warm blooded (birds and mammals). This was a factor in their ability to adapt to change and dominate for 150 million years.

What can be learned and observed from the study of these fossils we can find in the earth? We can understand what caused the extinction of these creatures, and learn from it. Things we have been able to find out are organisms eating habits, mating, skin, eggs, needs, life, world, ecosystem. Now that we understand these are on some level we have been able to gain a grasp on the past but there is always more to learn and study.

What can still be explored and for what reason? Color, sex reproduction, and to what level of intelligence these prehistoric creatures that we can only visualize through their remains. We could find out more about this world we live in and the universe if we could but find a way unlock the past, the key to the present is the past. And that is the whole reason for Paleontology is to find prehistoric life and study it reconstruct it and better understand it by seeing why it was alive and why it died.

Hand Sample

Orthocera

Reference work

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