

John Wesley Powell, Canyon Geologist Media Guide

antecedent river – a river whose path of flow within a valley was established before the mountainous structure was uplifted

basalt - a dark, fine-grained volcanic rock that sometimes displays a columnar structure, typically composed largely of plagioclase with pyroxene and olivine

base level - lowest level to which running water can flow and erode

cinder cone - a cone formed around a volcanic vent by fragments of lava thrown out during eruptions

crag - a steep or rugged cliff or rock face

down-cutting – water flow that deepens a channel of a stream or valley by removing material from the stream's bed or the valley's floor

dyke - body of igneous rock that cuts across the structure of adjoining rock, usually as a result of the intrusion of magma

fault - crack in the Earth's crust often associated with boundaries between Earth's tectonic plates

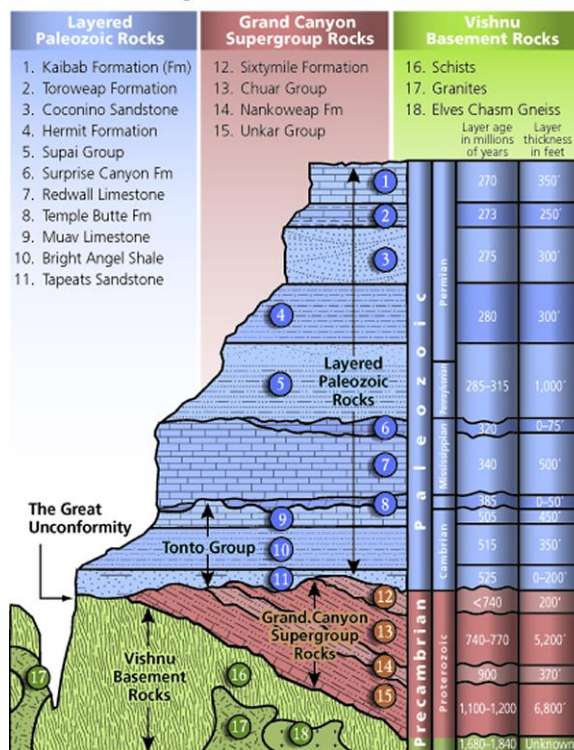
fissure - a long, narrow opening or line of breakage made by cracking or splitting in rock or earth

fold - when originally flat, level surfaces, such as sedimentary strata, are bent or curved as a result of pressure and high temperature

gorge - narrow valley between hills or mountains, typically with steep rocky walls and a stream running through it

granite - formed from the slow crystallization of magma below Earth's surface, a light-colored igneous rock composed mainly of quartz and feldspar with minor amounts of mica, amphiboles, and other minerals with grains large enough to be visible with the unaided eye

Grand Canyon's Three Sets of Rocks



Grand Canyon, National Park Service, March 11, 2008, Wikipedia Grand Canyon, https://en.wikipedia.org/wiki/Grand_Canyon#/media/File:Stratigraphy_of_the_Grand_Canyon.png, public domain

greenstone – rock formed when mafic minerals which make basalt black are commonly changed into a green mineral called chlorite as they are exposed to surface weathering processes

lava - molten rock erupted from a volcano or fissure, or solid rock resulting from an eruption

limestone - hard sedimentary rock, composed mainly of calcium carbonate or dolomite, used as building material and in the making of cement

Marble Canyon –

pinnacle - a high, pointed piece of rock

plateau - area of relatively level high ground

rill – a small stream

sandstone - sedimentary rock composed of sand-size grains of mineral, rock, or organic material

schist - coarse-grained metamorphic rock which consists of layers of different minerals and can be split into thin irregular plates

shale - soft, finely stratified sedimentary rock that formed from consolidated mud or clay and can be split easily into fragile slabs

strata - layers of sedimentary rock or soil, or igneous rock that was formed at the Earth's surface, with internally consistent characteristics that distinguish it from other layers

sub-aerial erosion - refer to the processes of weathering and mass movement

terrace - a step-like landform

unconformable contact – occurs between two geological units in which the older, underlying rocks dip at an angle different from the younger, overlying strata, usually in which younger sediments rest upon the eroded surface of tilted or folded older rocks



Kaibab Plateau from space, NASA, April 19, 2006, Wikipedia Kaibab Plateau, https://en.wikipedia.org/wiki/Kaibab_Plateau#/media/File:Kaibab_Plateau_2006-04-30_MODIS_250m.jpg, public domain



Marble Canyon, Realbvt, June 30, 2002, Wikipedia Marble Canyon, https://en.wikipedia.org/wiki/Marble_Canyon#/media/File:Canyon_midday.jpg, CC BY-SA 3.0

unconformity - geologic gaps in rock formations
characterized by missing rock layers
where the upper layers are usually much
younger than the lower layers

uplifting - vertical elevation of the Earth's surface
in response to natural causes



Vulcan's Throne, E. T. Nichols, U.S.G.S., n. d.,
Wikipedia Vulcan's Throne,
https://en.wikipedia.org/wiki/Vulcan%27s_Throne#/media/File:Vulcans_Throne_Nichols_med00380.jpg,
public domain