

GEOLOGY OF ROCK PLATFORMS - NEWCASTLE COAST

Honeycomb weathering develops on sandstone surfaces of rock platforms. Honeycombs are small, closely spaced depressions up to a few centimetres in diameter and depth.



Salt crystallization followed by wind erosion causes honeycombs. Growing salt crystals, due to evaporation after a soaking by sea water, dislodge sand particles in the rock. Wind then

blows away the loose sand grains leaving small holes. Sand blasting by the wind swirls sand grains around in the holes, enlarging them.



Igneous Dyke On the rock platform north of Newcastle Ocean Baths a basalt dyke has intruded the sedimentary rocks along a joint. About 100 million years ago molten basalt from the Earth's mantle, at a depth of about 100 km, squirted upwards through cracks in the

overlying rocks while the rocks were being stretched. The molten basalt solidified as a wall-like intrusion in a joint against the cooler sedimentary rocks. A chilled margin of finer grained basalt formed along its edges.

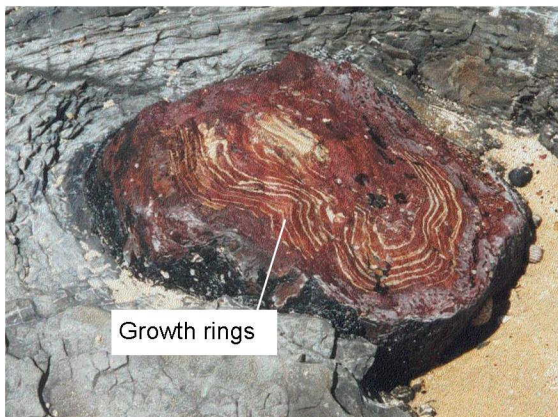


Iron Deposits Brown, orange, yellow and red coloured deposits in rocks are from the mineral limonite. Limonite is hydrated iron oxide (rust). It is commonly found in joints, along bedding planes, replacing plant material, and as concretions.

Limonite is generally more resistant to erosion than the host rock. Raised zones occur parallel to joints, resistant caps form on softer sedimentary beds, and petrified tree stumps and logs sit above the sandy/shaly platform surface.

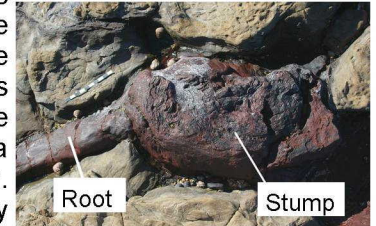
Limonite is a secondary mineral, deposited in the sediments after they were laid down.

Fossil Trees Rock platforms expose excellent examples of petrified tree stumps in their growing position. Annual growth rings and bark are preserved and some even have their roots visible. Fallen trunks and limbs lie along bedding planes.



Prepared by Roz Kerr 2007

The fossil tree remains are red-brown as they now consist mainly of limonite. The trees are plants of the *Glossopteris* flora that grew here 250 million years ago, before the time of dinosaurs. By observing the rocks in which the tree stumps are embedded, it is interpreted that the trees grew on a muddy floodplain. A flood of sandy water drowned and buried the trees. Broken tree limbs would have floated along in the river current before becoming waterlogged and sinking to the bottom.



Soon after they were buried, minerals replaced the wood tissues, turning wood into stone. Water squeezed out of the wet mud and sand moved through the sedimentary layers, carrying dissolved chemicals picked up along the way. Where the water encountered permeable wood buried in the sediments, it deposited minerals. The minerals replaced the wood tissues molecule by molecule, preserving detailed cell structure, growth rings and bark texture. In some cases the bark has been coalified instead. Later, uplift followed by erosion of the overlying layers exposed these fossils for us to see.



Isolated Sandstone Blocks resting on the rock platform have either tumbled down from nearby cliffs or been eroded from the edge of the platform

and tossed up by storm waves.

