Banded Iron Formations

Banded Iron Formations are a distinctive type of rock often found in old [sedimentary rocks](http://encyclopedia.kids.net.au/page/se/Sedimentary_rock). The structures consist of repeated thin layers of iron oxides.

The oldest known rock formations dated around 3,800,000,000 years before present – 1.8 billion years old-- include banded iron layers, and the banded layers are a common feature in sediments for much of the Earth's history. Banded iron beds are less common after 1.8 billion years old although some are known that are much younger.

The conventional concept is that the banded iron layers are the result of [oxygen](http://encyclopedia.kids.net.au/page/ox/Oxygen) released by photosynthetic organisms (i.e. "[plants](http://encyclopedia.kids.net.au/page/pl/Plant)" -- although the actual agents were likely [bacteria](http://encyclopedia.kids.net.au/page/ba/Bacteria)), combining with dissolved iron in Earth's oceans to form insoluble iron oxides.

The banding is assumed to result from cyclic peaks in oxygen production. It is unclear whether these were seasonal or followed some other cycle. It is assumed that initially the Earth started out with vast amounts of iron dissolved in the world's seas. Eventually, as "plants" pumped out oxygen, all the available iron in the Earth's oceans was precipitated out as iron oxides.

The atmosphere became oxygenated. It is assumed that the rare later banded iron deposits represent unusual conditions where oxygen was depleted locally and iron rich waters could form then come into contact with oxygenated water.

The total amount of iron [oxygen?]locked up in the banded iron beds is estimated to be perhaps 20 times the volume of oxygen present in the modern atmosphere. Banded iron beds are an important commercial source of iron ore.