

Dynamic Earth

Just like a loaf the Earth has a crust,
Where rocks at the surface are eroded to dust
And of the sediments filling a basinal depression,
The sedimentary succession
Is the surface expression.
Where brittle deformation near the surface is prone
To causing earthquakes by faulting
Above the Benioff zone,
Of a subducting plate going continental.
Crustal rocks melting and mixing with ocean,
Basics and basalts, in a magmatic swell,
Form volcanoes ascending from the bowels of Hell.

A plate boundary visible as an oceanic ridge,
With black smokers belching sulphurous minerals,
Spreading identically with magnetic signature
On a great conveyor, on either side,
Towards subduction or obduction,
hitching a ride,
To become a deposit of massive sulphide,
Or mineralised veins in orogenous parts,
From igneous intrusions at the mountains heart.
At depth, ductile deformation forms fabulous folds,
Recumbent, overturning, or zig-zagging chevrons.
With decollement, a thrusting is set into motion,
Large portions transported along the plane for a nappe,
Cause complicated strata on a geological map.

Imperceptibly flowing, the mantle semi-solid,
Below the crustal rocks, peridotites and other ultra-mafics.
The Mohorovicic discontinuity marks the seismic change,
An increase in velocity of primary waves
And convection currents from isotopic decay,

Forming cells for circulation to mobilize tectonics,
Converging, diverging in dynamic electronics.
A plume periodically piercing the crust
Builds an island archipelago of volcanoes, like pus
On blistering boils, exuding pahoehoe, runny and ropey,
Consuming, convoluting, consolidating and crystallising
As a basaltic shield, high and vast
Over the oceanic surface is slowly caste.

The core at the centre is solid and dense,
A huge sphere of iron and heavy minerals immense.
Solidified by pressures of considerable 'psi',
That's pounds per square inch to you and I,
Three thousand kilobars is incredibly high.
The outer core liquid and fluidically driven,
The great dynamo of the Earth's magnetism,
Sourced from the latent heat of crystallisation
And radioactive decay and a density transition,
Through which 'S' waves cannot pass,
Due to its liquid composition.
The Earth is an engine, a mechanism; for all its beauty
And will endure for millennia, marvellous in perpetuity.

Anne Padfield