

## Tape 1

1. Gives shape to the island of Ireland.
2. An accurate history book.
3. From 2000 million years ago to the present.
4. Can reveal Ireland's history.
5. First maps made of these 150 years ago.

*(Rocks)*

1. Like the pages in a book.
2. Form as individual layers.
3. Each layer is a single page.
4. Formed of shell layers.
5. Formed of silt and sand.
6. Can form rock when under pressure.
7. Forms as horizontal layers.

*(Sediments)*

1. Pages of the book are missing.
2. Wind and rain can do this.
3. Rocks can disappear.
4. Smooths the landscape.
5. Produces sediment.

*(Erosion)*

1. Can tell if rocks are the right way up.
2. Formed by water.
3. Form in sand.
4. Formed on a seashore millions of years ago.
5. May see them today at the beach.
6. Ridges and troughs.

*(Ripples)*

1. Found in Dun Chaoin, Co Kerry.
2. Form in a dry climate.
3. Form in mud.
4. Can be turned into rock and preserved.
5. Cracking.

*(Mudcracks)*

1. Support Darwin's theory- of evolution.
2. Can be up to 500 million years old in Ireland.
3. Found preserved in sedimentary rocks.
4. Can tell us about the environment of deposition of the sediments.
5. Remains of ancient life.

*(Fossils)*

1. Found in Kilkenny.
2. In a small quarry.
3. Site of an important discovery.
4. Preserved in the mud of shallow lakes.
5. Almost 400 million years old.
6. Were once alive.

*(First land plants)*

1. Found preserved in rock at Malahide.
2. Found at Hook Head.
3. They are 350 million years old.
4. Indicate Ireland once had warm tropical shallow seas.
5. Found today in the Bahamas.
6. Were once alive.

*(Corals and brachiopods)*

1. Numbering the pages in the book
2. Can use this to accurately date the rocks
3. Uranium has this.
4. Can tell us that the planet is 4500 million years old.
5. Dangerous in large amounts.

*(Radioactivity)*

1. The site of the oldest rocks on mainland Ireland.
2. The rocks are 1800 million years old.
3. There are metamorphic rocks here.
4. A peninsula.
5. In Co. Mayo.

*(Annagh Head)*

1. A sign that there are powerful forces at work.
2. Have occurred in Ireland.
3. Cause rocks to break.
4. Form changes in the landscape.
5. Can cause large fatalities in urban areas.

*(Earthquakes)*

1. Irish geologist estimated the age of the Earth.
2. Before the discovery of Radiometric dating.
3. Used the quantity of salt in the ocean.
4. Suggested the Earth was 90 million years old.
5. Though interesting, this method proved inaccurate.

*(John Joly)*

## Tape 2

1. The landscape is constantly changing.
2. Old rocks are eroded.
3. Most debris ends up in the sea.
4. New rock is created.
5. Takes millions of years.

*(Rock cycle)*

1. Looks like a volcano.
2. Not a volcano.
3. Made of sand compressed into quartzite.
4. Found in Co. Wicklow.
5. South of Dublin.

*(Sugar Loaf)*

1. Causes rocks to form.
2. Twists sediments on their side.
3. Masses of rock slope at an angle.
4. Not caused by wind or weather.
5. Found at Loughshinny in North Co. Dublin.

*(Pressure)*

1. Happens over millions of years.
2. Rocks are squeezed from the sides.
3. The rocks are uplifted as the whole area rises upwards.
4. Alps.
5. High young mountains.

*(Fold Mts.)*

1. Constant pressure will form these.
2. Rocks buckle and deform.
3. Looks like twisting.
4. Seen in many parts of Ireland.
5. Seen at Lough Swilly.

*(Folds)*

1. Minerals are forced into parallel alignment.
2. Looks like thin sheets of rock.
3. Formed by intense heat and pressure.
4. Found at Valencia in Co. Kerry.
5. Used to roof the Houses of Parliament in London.

*(Slate)*

1. A semi-solid layer of the earth.
2. It is in constant motion.
3. It has several layers.
4. About 3600 degrees Celsius.
5. Between the crust and the core.

*(Mantle)*

1. A theory.
2. Africa and South America look like pieces of a jigsaw puzzle.
3. Similar rocks and fossils in different continents.
4. India bumped into Asia.
5. Continents moved.

*(Theory of Continental Drift)*

1. A young mountain
2. Weathered by erosion.
3. Mt. Everest still rising.
4. A fold mountain.
5. Where India is pushing into Asia.

*(Himalayas)*

1. Intense pressure
2. Horizontal movement.
3. Where rocks break.
4. Where movement takes place along a fault.
5. San Francisco, Los Angeles earthquakes are part of it.

*(San Andreas fault)*

1. Can be seen in Donegal.
2. An ancient beach can be seen here.
3. Old rocks are thrown against young.
4. A beach 400 meters up a hill!
5. A mountain.

*(Knock Allan Mt.)*

1. Seen at Horn Head, Co. Donegal.
2. Quartzite has been crushed paper thin as rocks slide.
3. This happens when continents collide.
4. Rocks forced down, rocks forced up.
5. A fault.

*(Thrust fault)*

## Tape 3

1. Some parts are 4500 million years old.
2. Moved by huge convection currents.
3. Currents kept in motion by heat from the centre of the earth and radioactive decay.
4. Bounded by huge faults.
5. Boundaries are the site of volcanoes and earthquakes.

*(Crustal plates)*

1. Full of gases.
2. Recycled rock.
3. Very hot.
4. Comes from the mantle.
5. New molten rock.

*(Magma)*

1. Found at Annagh Head.
2. Molten rock flows through solid rock.
3. Valuable metals found in veins nearby.
4. Travels along cracks or channels.
5. Pipes of molten rock.

*(Sill)*

1. Found at Belderg.
2. 600 million years ago.
3. Black.
4. Basic.
5. Basalt is this type of rock.

*(Igneous rock)*

1. 500 million years ago.
2. Looks like a small island.
3. On the mainland nearby are volcanic debris and ash.
4. North of Dublin.
5. An ancient volcano.

*(Lambey Island)*

1. Used to be sand.
2. Add some soda.
3. Heat.
4. Put into a mould.
5. Used by man to make bottles.

*(Glass)*

1. Place in the north of Ireland.
2. 50 million years ago lava poured out here.
3. Dark basalt layers flowed on top of white chalk.
4. Spectacular columns can be seen here.
5. Where Finn McCool built his famous pathway from Antrim to Scotland.

*(Giant's Causeway)*

1. Can be seen at the Giant's Causeway.
2. A world heritage sight.
3. Unique natural beauty.
4. Horizontal and vertical cracks in ponded lava formed these.
5. 4, 5, 6 and 7 sided.

*(Hexagonal columns)*

1. Black.
2. Basic.
3. Very small crystals as it cools quickly.
4. Cools at the surface first.
5. Lava that forms a smooth dense rock.

*(Basalt)*

1. Large coarse crystals.
2. Cooled slowly at depth.
3. Took 10 million years to cool and solidify.
4. Found at Poisoned Glen in Donegal.
5. Used to build statues gravestones and face buildings.

*(Granite)*

1. Found at Killiney Beach on the east coast of Ireland.
2. Happened when the granite flowed through older rocks.
3. Formed new minerals; garnets in the andalusite mica schists.
4. The old rocks were baked.
5. A type of metamorphism.

*(Thermal metamorphism)*

1. Found on the ocean floor.
2. Middle of the Atlantic.
3. Round ball-like structure.
4. Glassy crust on the outside.
5. Type of lava.

*(Pillow lavas)*

1. Existed 500 million years ago.
2. Has ancient pillow lavas.
3. Can be seen at Lettermullen, Co Galway.
4. New ones still exist today.
5. Atlantic Ocean is similar but only 100 million years old.

*(Ancient Ocean)*

## Tape 4

1. Formed 350 million years ago.
2. Warm tropical seas.
3. Full of fossils.
4. Contains corals and crinoids.
5. Made of calcium carbonate.

*(Limestone)*

1. Divided Ireland in two.
2. Has different fossils on each shore.
3. Pillow lavas in Connemara could only have formed in an ocean.
4. A big ancient ocean.
5. Opposing shores merged along line from Louth to Shannon estuary.

*(Iapetus Ocean)*

1. One plate slides beneath another.
2. Continents collide.
3. Fold mountains form.
4. Ireland is a small part of this.
5. One huge continent formed.

*(Supercontinent)*

1. Ancient collision.
2. Formed the Highlands of Scotland.
3. Stretches for thousands of kilometres.
4. When two continents move towards each other.
5. Ancient ocean once present between the two.

*(Continental collision)*

1. Mountains are eroded by rain and wind.
2. Debris of these mountains collect.
3. Piles of rubble.
4. Found in the South at Magillacuddy Reeks.
5. Rock formed from rounded pebbles and boulders.

*(Old Red Sandstone)*

1. Very old rock.
2. Some of the oldest in Ireland.
3. Found at Annagh Head in Co. Mayo.
4. 2000 million years old.
5. Heated, compressed and folded many times.

*(Gneiss)*

1. It once existed at Hook Head in Co. Wexford.
2. Limestone fossils once lived in a tropical sea.
3. 340 million years ago.
4. We have now moved north.
5. The line of latitude where we used to be.

*(Equator)*

1. A type of rock.
2. Began life in the tropics.
3. Found at Castlecomer in Co. Kilkenny.
4. Compressed trees from a rain forest.
5. Used as a fuel.

*(Coal)*

1. Formed in a desert.
2. An arid environment.
3. Seen at Sleah Head, Dingle Peninsula.
4. Red colour.
5. A rock made from desert sands.

*(Red Sandstone)*

1. Formed in a desert.
2. A dark red clay.
3. Shaped and heated.
4. Used by man, therefore a resource.
5. Used to build a bridge in Mayo.

*(Bricks)*

1. Found in rock that was once molten.
2. Found between Leinster Granite and older rock.
3. Can be aligned to the magnetic poles.
4. A type of metal.
5. A resource used by man.

*(Iron)*

1. New York used to be closer to us.
2. Enlarges at 10 cm. per year sometimes.
3. New rocks forming at its centre.
4. An ocean getting bigger every day.
5. Moving us further from America.

*(Atlantic Ocean)*

## Tape 5

1. Lasted from 2 million years ago to 5,000 years ago in Ireland.
2. Ireland was covered by ice.
3. Sculpted great valleys.
4. Laid vast plains of deposits.
5. Was also called the Pleistocene.

*(Ice Age)*

1. What is harder than rock?
2. Softer than water?
3. Moves over long periods of time?
4. Capable of modifying great mountains?
5. Frozen water.

*(Ice sheet)*

1. A bay.
2. Bounded to the south by granite at Killiney.
3. Bounded to the north by quartzite at Howth.
4. A feature formed by the sea and rivers.
5. Has the settlement of Dublin at its centre.

*(Dublin Bay)*

1. A rock.
2. Found at Port Salon, Co. Donegal.
3. Composed of broken rubble that didn't travel very far.
4. Composed also of small particles that were carried further by rivers.
5. A great mixture of material.

*(Conglomerate)*

1. Found at Cushendall, Co. Antrim.
2. A conglomerate.
3. Almost 400 million years old.
4. Boulders that travelled very far.
5. Very smooth and rounded.

*(Pudding stone)*

1. A process.
2. Turns black basalt red.
3. Weathered basalt looks like onion skins.
4. Water in the air breaks down rock.
5. Water in the air dissolves minerals and weakens rock.

*(Weathering)*

1. Desolate landscape in the west of Ireland.
2. Rain dissolves cracks in the surface.
3. Where rivers flow underground.
4. Unique landscape of underground caves and caverns.
5. A limestone rock area.

*(Burren)*

1. Water collects and freezes in hollows.
2. Ice flows downhill.
3. It moves under the force of gravity.
4. It retreats by melting.
5. A tongue of ice.

*(Glaciers)*

1. Wide and deep.
2. Straight.
3. Feature of erosion.
4. Was originally a river valley.
5. Moulded by a glacier.

*(U valley)*

1. Found in Co. Wicklow.
2. Powerscourt, Enniskerry, is a good example.
3. Occurs on side of a hanging valley.
4. A feature on a river.
5. A vertical fall of water.

*(Waterfall)*

1. Finn McCool threw some of these boulders.
2. Lumps of granite lying on the limestone in the Burren.
3. Pieces of Ailsa Craig on the beach at Killiney.
4. They stand out on the landscape.
5. A piece of rock carried a long distance by the ice.

*(Erratics)*

1. Came from the ice.
2. Covers the rock in a thick layer.
3. Dropped as the ice melted.
4. Last sediments to be deposited.
5. Rich basis for agriculture.

*(Boulder clay)*

## Tape 6

1. A new layer that formed after the last ice age.
2. Covered a lot of Ireland.
3. Looked like Tundra.
4. Very wet and dark in colour.
5. Plants were dominant, including mosses.

*(Bog)*

1. Could be peat used for fuel.
2. Could be minerals used in decorative stone.
3. Something taken from the land.
4. Something used by man.

*(Natural Resource)*

1. Something found on the beach in Whitepark Bay.
2. Used by early man.
3. Silica-rich nodules.
4. Could be broken to form sharp edges.
5. Used as a tool to skin a rabbit or spark a fire.

*(Flint)*

1. Found at Tievebullagh, Co. Antrim.
2. Hard clays baked by hot lava.
3. Stone-age man used this in NW Europe.
4. Sold as tools and weapons.
5. Used to make axe heads and spear tips.

*(Porcellanite)*

1. Extractive industry.
2. Found at Castlecomer.
3. High quality anthracite extracted here.
4. 600 men used to work here.
5. Last remnant of a great mining tradition.

*(Coal mining)*

1. Lead and zinc ore is found here.
2. 50 miles of tunnels under Navan.
3. 1000ft. underground.
4. Geological surveys are used to locate the ore.
5. What is the name of the mining company?

*(Tara Mines)*

1. What is the name of the stone?
2. Sandstone.
3. Used for road building.
4. Sometimes shows worm casts.
5. Used as flagstone slabs, for patios, fireplaces even harbour protection.

*(Liscannor stone)*

1. Formed in ancient warm tropical seas.
2. Evaporated under a warm tropical sun.
3. Found at Kingscourt, Co. Cavan.
4. A mineral.
5. Used to plaster walls.

*(Gypsum)*

1. A renewable resource.
2. Used to make energy.
3. Valleys are dammed.
4. Huge reservoirs formed.
5. Running water turns turbines.

*(Hydroelectric power)*

1. Taken from the earth and used by man.
2. Takes millions of years to create.
3. Metals, oil and gas.
4. Can be destroyed in a few hours.
5. Taken quicker than it can reform.

*(Non-renewable resource)*

1. Our layer of rock.
2. Old tyres.
3. Paper and plastic.
4. Thick deposits laid down.
5. Another name for garbage.

*(Rubbish)*