

FROM *ROCKS & MINERALS* BY CAROLINE BINGHAM

### **3 Types of Rock**

#### **Igneous rock**

- First rocks
- Form from molten rock that has cooled & hardened
  - Like volcanic rock

#### **Sedimentary rock**

- Forms when
  - pieces of rock are carried to the sea
    - create huge piles of sediment
    - cement together after thousands of years
- sediment settles on bottom of seas, rivers, & lakes
- builds up in layers, squashed together

#### **Metamorphic rock**

- forms when rocks are squeezed & heated deep under earth's crust
- as granite is forced up, pressure & heat causes marble to form
  - marble is metamorphic rock

Each type of rock can change to another, depending on what happens to it  
Igneous → sedimentary → metamorphic

#### **Igneous rock**

- form greatest part of earth's crust
- can also be exposed in the land
  - e.g. Giant's Causeway in Northern Ireland
    - formed when basalt lava cooled & shrank
      - this lava can create hexagon-shaped columns
- Pumice
  - Only floating rock
  - Igneous rock from the heart of volcanos
- Obsidian
  - Shiny surface
  - Contains much glass
  - Cools quickly
    - Small crystals
- Granite
  - Most common igneous rock
  - Very strong
  - Used in building
    - e.g. London's Tower Bridge
  - cools slowly

- has large crystals
- Igneous comes from Latin word for “fire”
- The slower a rock cools from its molten form, the larger the crystals

### **Sedimentary rock**

- Chalk cliffs
  - Formed from shells & skeletons of microscopic sea creatures
  - Grow by .02 in (.5mm) a year
    - 180 sea creatures piled up
  - Movement in earth’s crust have lifted the cliffs out of the sea
  - chalk takes thousands (they say millions) of years to form
    - can contain large fossils as well
- Sand is a sediment
  - After thousands of years, it may form sandstone—a sedimentary rock
  - Rocks are continually eroded over thousands of years to produce sand
- Pebbles can cement together to form sedimentary rock
  - Like a cake mix (choc chip cookie dough visual?)
- Breakdown of plants can form sedimentary rocks
  - As plants are buried, they squeeze together, eventually forming a coal
    - Plant to matter
    - Matter to peat
    - Peat to lignite
    - Lignite to bituminous coal
    - Bituminous coal to coal

### **Metamorphic rock**

- “metamorphic” comes from ancient Greek *meta* (=change) and *morphe* (=form)
- Forms when rocks are heated or compressed
  - E.g. when mountains are pushed up out of Earth’s crust
  - Metamorphic rock slate forms from mud & a rock called shale
    - Shale has been squeezed & compressed as mountains are pushed up
    - Slate splits easily into sheets
- When rocks are heated, parts may start to melt & run through a “host” rock
  - Makes swirly-patterned metamorphic rock
    - Called migmatite
    - E.g. a dark host rock contains swirls of a lighter-colored rock
- Marble is formed from limestone
  - Mined by being cut into huge blocks w/ strong cutting wires

### **Caves**

- Constant flow of water eats away at an area of solid rock
- Cave formations can build up gradually as drops of water deposit traces of a mineral called “calcite”
- Rock formations in caves build drip by drip
  - Stalactites & stalagmites can take 1,000 yrs to grow less than half an inch

