LESSON NOTE FOR WEEK THREE

SUBJECT: GEOGRAPHY

CLASS: SS2

TOPIC: VULCANICITY

MEANING OF VULCANICITY

Vulcanicity is the process by which molten rock or magma is forced into the earth's crust or onto the earth's surface.

MODE OF FORMATION

Vulcanicity occurs when molten rock or magma forces its way into planes of weakness within the earth's crust or escapes quietly or explosively to the surface through vents. This leads to the formation of various features both within and upon the earth's crust when the magma solidifies.

There are two forms of vulcanicity which are;

1. Intrusive vulcanicity
2. Extrusive vulcanicity

INTRUSIVE VOLCANIC FEATURES

These are features produced when magma solidifies within the earth's crust without reaching the surface of the earth. Such features are also called **plutonic features.**

Examples of intrusive volcanic features are:

1. Sill: This is a horizontal sheet of solidified magma which lies concordant to the bedding planes of sedimentary rocks. Examples are Northumberland in England and the little and great Karoos in South Africa.

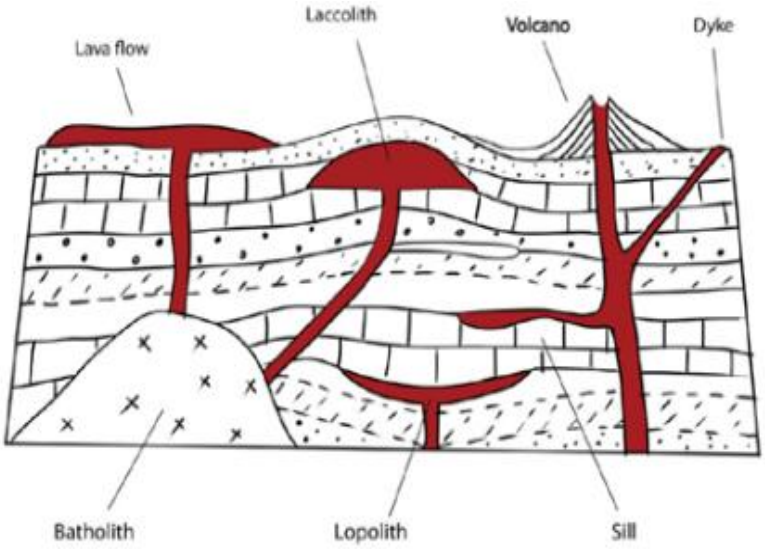
2. Dyke: This is a vertical or steeply inclined igneous rock band which cuts across the bedding plane. It is said to be discordant.Examples of dykes include Cleveland Dyke in England, Salisbury Craig in Zimbabwe and Luanite Dyke in Scotland.

3. Laccolith: This is a dome-shaped intrusion of solidified magma which pushes the overlying rock into an arch. e.g. the laccolith of the Henry mountains in Utah, USA, and Trapin Law in Scotland.

4. Batholith: This is a very massive igneous rock mass that cuts across bedding planes. It is the largest of all plutonic rocks. It usually occurs deep down with the crust but can be exposed by denudation. Batholiths can be found in places such as Wicklow mountain of the Republic of Ireland, the uplands of Britain, France and the mountain ranges of Malaysia.

5. Lopolith: This is a saucer-shaped mass of intrusive magma. Examples can be found in England and Scotland.

6. Phacolith: This is a solidified mass of solidified magma that occupies both the anticlines and synclines of bedding planes.



Intrusive volcanic features

EXTRUSIVE VOLCANIC FEATURES

These are volcanic features which are built by volcanic material deposited on the earth's surface. Some major extrusive volcanic features/landforms include:

1. COMPOSITE CONES: These are large steep-sided volcanoes built up of alternating layers of lava and non-lava materials . They are the highest and most common kind of volcanoes. They are also called **strato – volcanoes.** They are built up by an alternation of violent and quiet eruptions. Examples are composite volcanoes are Mount Etna in Sicily Italy, Mount Cameroon, Mt Vesuvius in Italy and Mt Chimborazo in Ecuador.

2. BASIC LAVA CONE (LAVA DOME): This is made up of very hot lava with temperature of about 1000C and therefore is in liquid form. This lava flows over a relatively long distance as soon as it pours out of the volcano. It flows out as thin mobile sheets of lava for great distances before solidifying. An examples of this cone is Manna in the Pacific.

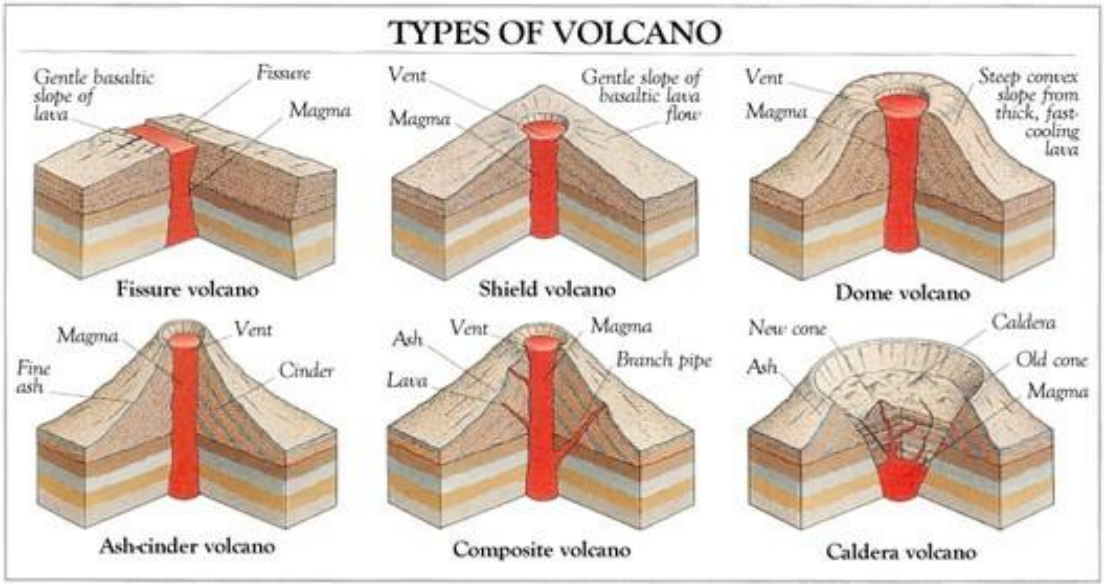
3. ACID LAVA CONES: This is formed by lava which is quite viscous , has a high melting point and solidifies relatively quickly. The resultant cone is more conical than that of the basic lava cone. It is rich in silica. Examples of acid lava cones include Devil's Dome in Wyoming USA,Pug De Dome in France and Mamelles of Dakar in Senegal

4. ASH AND CINDER VOLCANO: This is a volcanic cone which is made up of mainly ash and cinder. Ash and cinder cones are typically small volcanoes which occur in groups, and rarely exceed 300m in height. Examples of ash and cinder volcanoes are Volcano De Fuego in Guatemala, Ikere Cone in Ekiti, Nigeria, Mt. Nuovo in Italy and Mt. Paricutin in Morocco.

5. CALDERAS: These are huge craters of volcanoes, often surrounded by the shattered remains of the cone. Caldera usually occur as a result of violent eruption of the volcanic cone to the extent that the original crater is blown off, causing a huge crater often several kilometers across. When water accumulates in a caldera, a crater lake is formed. Examples of crater lakes include lake Toba in Sumatra, Crater lake in Oregon and Panyan Lake in Pankshin near Jos. Examples of craters are the Barringer Crater in Arizona and the Kaali Crater in Estonia.

6. GEYSERS: A geyser is a hot spring characterized by an intermittent discharge of water ejected violently and accompanied by steam. It is associated with thermal or volcanic regions in which the water below is heated beyond the boiling point (100°C). Major geysers are found in Iceland, North Island of New Zealand and Yellow Stone National Park, USA.

Volcanoes can also be classed based on the recency of their eruptions into three types which are active , dormant and extinct volcanoes



IMPORTANCE OF VOLCANOES

1. They are usually destructive are cause loss of lives and property.
2. They can destroy the vegetation and the soil around of eruption.
3. They are important for recreation and tourism due to their aesthetic value.
4. Many metallic mineral s and precious stones are obtained from volcanic sources.e.g. diamond deposits in South Africa and copper deposits in Butte Montana, USA.
5. In some countries, the natural hot water from volcanic sources(geysers) is tapped for domestic uses. In Italy, the natural steam is harnessed to produce electricity.
6. Igneous rocks such as granite, gabbro and basalt are formed by vulcanicity.
7. Fertile soil is associated with old volcanic regions. e.g. in Java in Indonesia and in East Africa.
8. Volcanoes also offer scientists an opportunity to study the interior of the earth.

HOMEWORK

1.What is vulcanicity?

2. List and explain three intrusive features and three extrusive features of vulcanism.