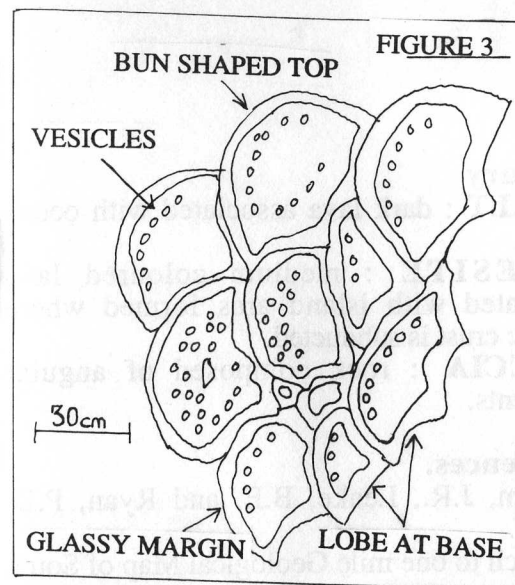
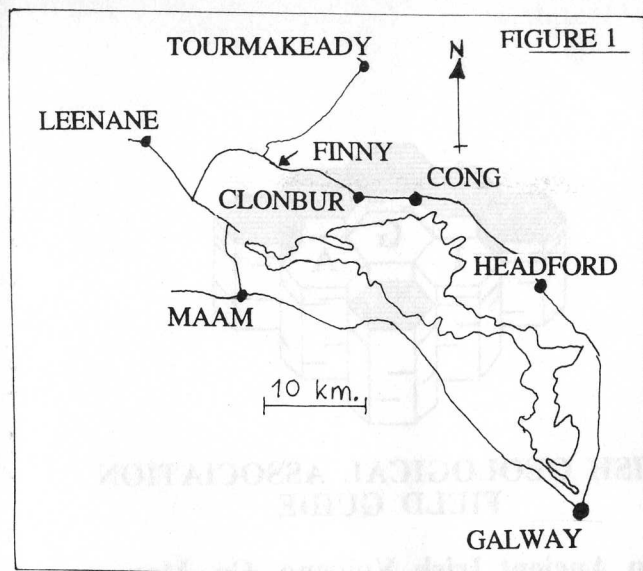


## **IRISH GEOLOGICAL ASSOCIATION FIELD GUIDE**

**An Ancient Irish Volcano, Co. Mayo**  
**By : P.D. Ryan (U.C.G.)**

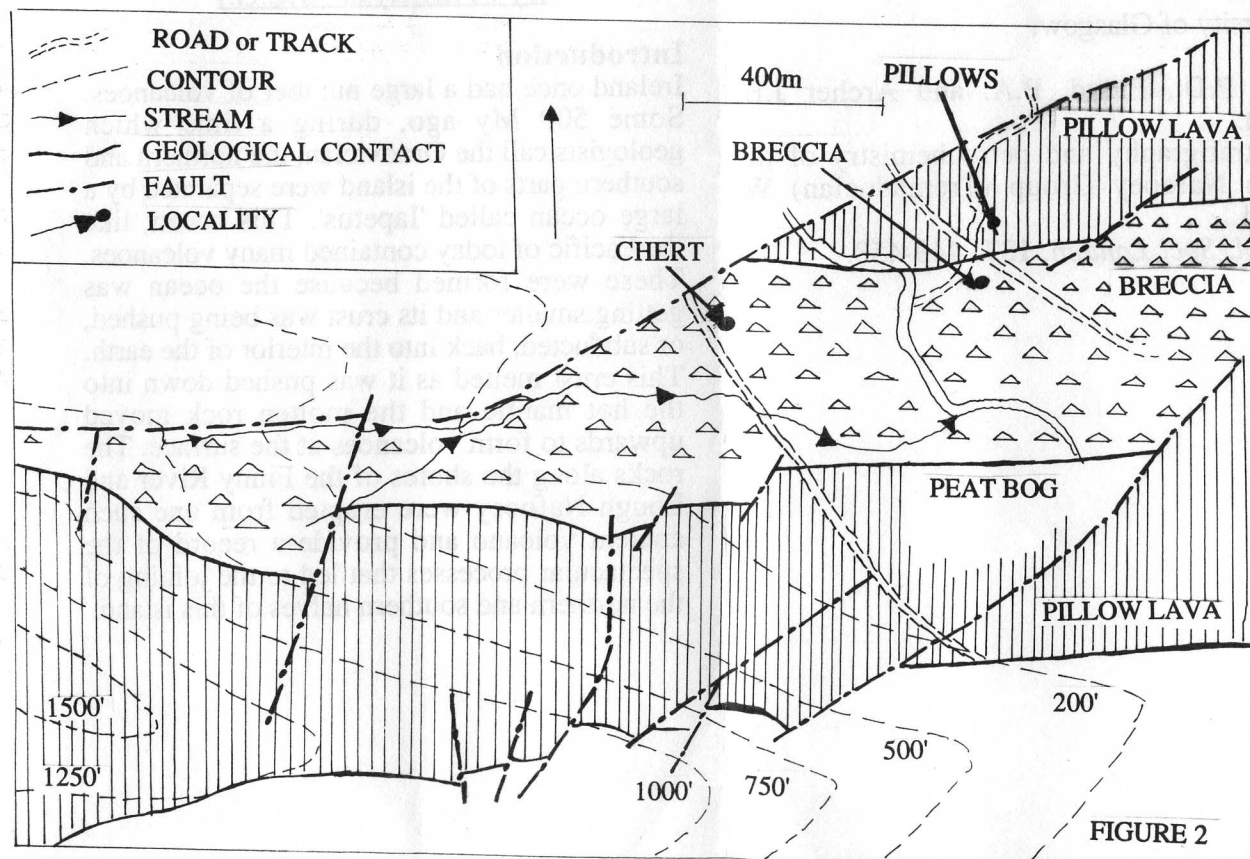
### **Introduction**

Ireland once had a large number of volcanoes. Some 500 My ago, during a time which geologists call the Ordovician, the northern and southern parts of the island were separated by a large ocean called 'Iapetus'. This ocean, like the Pacific of today contained many volcanoes. These were formed because the ocean was getting smaller and its crust was being pushed, or subducted, back into the interior of the earth. This crust melted as it was pushed down into the hot mantle and the molten rock moved upwards to form volcanoes at the surface. The rocks along the shores of the Finny River and Lough Nafuoey were erupted from one such ancient volcano and provide a record of the spectacular processes that led to the joining of the northern and southern halves of this island.



## Locality Descriptions

**Locality 1** Bridal Path (Grid Ref. M004595). The first locality is situated on the Bridal Path that runs from the Finny-Leenane road to the Tourmakeady road (Fig. 1). The geology (Fig. 2) is described by Ryan et al. (1981) and the regional geology is shown by Graham et al. (1985). Park on the roadside and walk 20m northward to the Z bend in the road. The rocky outcrop on your right is made up of a dark green, fine grained, heavy lava called **BASALT**. This basalt contains many pillow shaped bodies each of which has a very fine grained glassy margin and a coarser grained centre. These **PILLOW LAVAS** were formed when lava flowed from the volcano into water. The surface of the lava cooled and contracted into spheres which contained still-hot lava in their centres (Fig. 3). The tops of the pillows are bun-shaped, their bottoms have lobes. This evidence allows geologists to work out which **WAY-UP** the rocks are today. Small holes in the rock are present. These are **VESICLES** formed by gas bubbles, which escaped from the lava as it was cooling. Continue 100m northwards to the small quarry on your right. A small outcrop of black shale in this quarry yields abundant fragments of planktonic fossils called **GRAPTOLITES**. These confirm that the lava was formed by an underwater eruption and allow the rock to be dated as Early Ordovician.



**Locality 2** Finny River (Grid Ref. M001592 - L998591).

Return to the road, cross it and follow the track leading to the river. The contact between the pillow lavas (green) and a **VOLCANIC BRECCIA** (grey-brown) occurs on your right at the start of the track. Walk on to the rocks on the left. Here the breccias are made up of large and small angular blocks of **ANDESITE** that were blown out of a volcano. They are contained in a matrix of **VOLCANIC ASH**. These formed on the flanks of a volcano above sea level and were carried down into the sea by a massive land slide.

Continue down the track and cross the river (if safe) by the stepping stones. Walk some 300m westwards, examining the elongate outcrops that emerge from the peat bog. These contain more breccias and pillow lavas. In several places the pillow lavas have a layer of hard, fine grained, bright red or green rocks called **CHERT**. These are formed from **SILICA** that comes from the skeletons of small planktonic animals called **RADIOLARIA** and from the hot lava. The complex folds and patterns in these cherts show that they were still soft when the breccias that overlie them were laid down.

#### **Economic Importance**

These volcanic rocks are important because they often form a source for economic minerals such as **COPPER** or **GOLD**. This is because the hot seawater in contact with the lavas can dissolve metals and concentrate them into mineral deposits.

#### **Glossary**

**BASALT** : dark lava associated with ocean basins.

**ANDESITE** : medium coloured lava associated with island arcs formed where oceanic crust is subducted.

**BRECCIA** : rock composed of angular fragments.

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