Physical Science Laboratory: Model Four **Name**_____

Glaciation

Description of Model 4: Alpine Glaciation

This model displays features found in a glaciated alpine region. The eastern edge of the model portrays a broad band of arid plains with a canyon cut through the southern end. To the west hogback ridges have been formed in the foothill regions. Beyond the line of vegetation, or timberline, there is an area of bare rock which is capped with snow and in some regions with the ice of glaciers. Many lakes are evident in the valleys and in the mountain basins, called cirques. At the eastern edge of the mountain range several long hogback ridges may be observed.

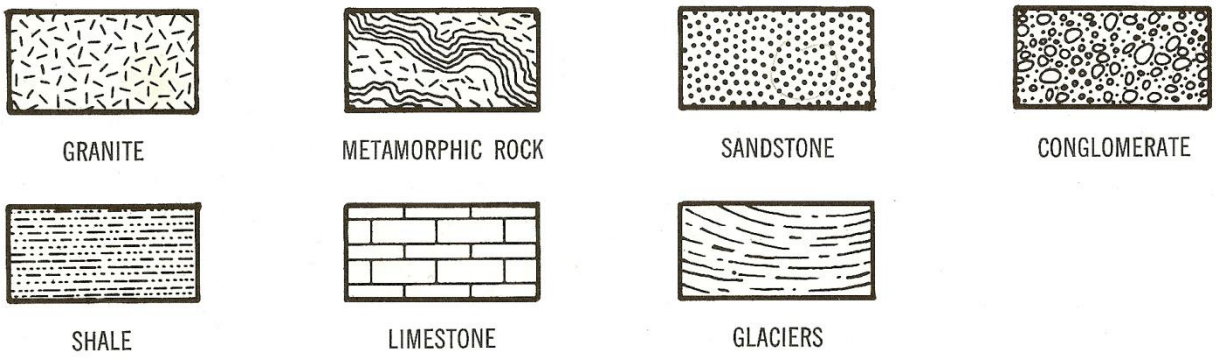
If we examine the sub-surface geology as depicted on the margins of the model, we will be able to see how this complex mountain topography was formed. The western edge of the model tells us that the rocks of the western flank of the mountains are sedimentary. The eastern edge also consists of sedimentary beds; however, the sequence of beds on the eastern edge is different from that on the western edge. If we examine the southern and northern edges of the model we see a large intrusive mass of granite (76) that forms the backbone of the mountain system. Between the granite mass and the sedimentary beds is found a layer of metamorphic rock (77). This model contains examples of the three major rock types – igneous rock, represented by the granite; metamorphic rock (examples of metamorphic rock are quartzite, schist, marble and slate), and the sedimentary rock (examples of sedimentary rock are sandstone, shale and limestone).

The most characteristic feature of this mountain range is the sculpturing that has taken place as a result of the action of alpine glaciers. Glaciers are masses of ice that form in basins and valleys in mountain ranges.

The alpine glaciers that are shown in this model are but the remnants of a much larger glacial system that sculptured the granite peaks, ridges and valleys of these mountains. The deep U-shaped valleys now partly occupied by vegetation, in times past contained glaciers. Originally these valleys were V-shaped in cross section. Their U-shaped form today is evidence of the broadening and deepening effect of glacial ice. As the larger glaciers moved down the larger valleys, their greater scouring action cut below tributary valleys. These tributary valleys now above the main valley, are called hanging valleys (58). Isolated cirques are called hanging cirques (63). This mountain range is shown as it would appear in late spring or late fall with snow covering the higher mountain peaks and ridges. The lakes are fed by meltwater from the mountain snows and glaciers.

from Geology Models Study Guide by Robert B. Lewis

LEGEND



Model 4: Alpine Glaciation Find each feature on the model and write the number of the feature in the table below. Answer the questions below.

Feature Number	Feature Name
	Cirque
	Hanging Cirque
	End (Terminal Moraine)
	Hanging Glacier
	Horn
	Tarn
	Lateral Moraine
	Hanging Valley

1. What is a cirque and how is a hanging cirque different from a cirque?

2. Explain the difference between an end moraine and a lateral moraine.

3. What is a horn?

4. What is a tarn?

5. What do a hanging cirque, a hanging glacier and a hanging valley all have in common?

6. What is the difference between an alpine glacier and a continental glacier?