#20: Igneous Formations **name:**

VOLCANIC PILE
Go to http://formontana.net and then click on picture # 89.

1. In the movie "The Untouchables" what were they pretending that this place was?

2. Explain what a "volcanic pile" is.

3. Why is there not much left of the volcano that sat here 75 million years ago?

4. **Go to http://formontana.net/igneous.html.** On this map "volcanic piles" are the red areas. Compare your Montana Highway Map and the map on the computer screen to figure out the names of each of the mountain ranges made up of the following volcanic piles:

    a. 10 miles south of Havre:

    b. 20 miles southeast of Helena"

    c. 40 miles east of Great Falls

5. **Go back to http://formontana.net/hardy.html.** Use the scale and map near the middle of the web page to determine the approximate length and width of the prehistoric volcano.

6. Which river and highway now run through the ancient volcano?

7. When was the area volcanically active? (From when to when?)

8. How do scientists know when it was volcanically active?

9. Explain how igneous rock can tell geologists where the magnetic north pole was when the lava hardened?

10. Explain how igneous rocks can help geologists know the size and shape of the volcano even after it has eroded away.

11. How do geologists know that the rock in the photos was formed as lava cooled above the ground, rather than below the surface?

PURCELL SILL

Go to http://formontana.net and then click on picture # 90. Look at the image and read the explanation below the image

12. This photo was taken in the Many Glacier Area of Glacier Park. Use your Montana Highway Map to find the Many Glacier Hotel in the northeastern part of the park. What lake is located there?

13. The photo on the web page was taken near the hotel. What are the two criteria that must be met in order for a rock layer to be considered a "key bed"?

14. What makes the Purcell Sill such a good key bed for Glacier Park?

15. **Go to http://formontana.net/jordan.html.** How was the dust that makes up the K-T clay formed, and why is it so extensive (found all over the world)?

16. **Return to http://formontana.net/purcell.html.** List three differences between the K-T clay and the Purcell Sill.

17. How is the type rock that makes up the Purcell Sill different from the rock that makes up the layers above and below it?

18. Explain how the Purcell Sill was formed.

19. Why did the "sill" cause the limestone above and below to change into marble?

20. **Click on the Hot Link titled "A closer look".** In this photo of Mr. Benson standing by the Purcell Sill, what type of rock is the sill beneath him made of?

21. Why is the marble next to Benson's head so white?

22. Why would the crystals in the black rock near his feet be smaller than those several feet below that?