The cartoon above is not a panorama but a series of views from different points along US Highways 20 & 26 between Idaho Falls and Arco in eastern Idaho. The views are keyed to mile markers so that landscape features are each seen on lines perpendicular to the highway. Mile markers have the peculiarity that the highway east of The Puzzle is numbered in US 20 miles but the highway west of The Puzzle is numbered in US 26 miles, resulting in an overlap of numbers near The Puzzle. Curves in the highway dictate that mile markers are not spaced evenly in this document

The landscape south of US Highways 20 and 26 from Idaho Falls to Arco is a sampler of **volcanic features**, from flat lava flows to gently peaked shield volcanoes to sharply upright volcanic domes. It is the result of volcanic eruptions over the last million years, and as recently as 3,000 years ago, a blink of an eye in geologic time.

Buttes ("byoot") are an isolated hill, typically with steep sides and commonly with a relatively flat top. A butte can thus consist of any geological material, but all of the buttes shown on this document are volcanic features. They rise from a vast plain of basalt, a common volcanic rock, that has been erupted here over the last 4 to 5 million years. The unnamed butte at Mile 299 provides travelers with a close look at the vent at the top of a volcanic butte, as does Microwave Butte at Miles 279-280.

Igneous rocks are the rocks that form from magma (molten mineral material), and volcanic rocks are the igneous rocks that form when magma rises from Earth's interior all the way to the surface. Magmas have a spectrum of chemical compositions that range from rich in magnesium and iron ("mafic" is the made-up word for them) to rich in silicon and aluminum ("felsic" is the made-up word for them). This chemical distinction leads to two things that one can see from miles away. First, abundant silicon makes a magma viscous, so that it does not flow across the landscape and instead piles up in a dome, whereas a mafic magma (with less silicon) will flow for miles and miles to make a flat lava field or a low-lying shield volcano. Second, the iron of mafic magmas makes the resulting rocks darker than felsic rocks, so that the lack of iron in felsic magmas makes the resulting rocks (rhyolites) white. Thus one looks across the Snake River Plain and sees light-grey domes of felsic rocks and dark-grey lava flows of mafic rocks. The Big Southern Butte and East Butte, and sees broad flat expanses of mafic black basalt like the Hell's Half Acre Lava Field. Lows appear to be made of entire plain consists of older basalt that is commonly covered with lighter-colored wind-blown dust and/or with a coating of white caliche, a secondary surficial coating of calcium carbonate common in dry environments.

The difference between viscous rhyolitic magma and flowing basaltic magma makes the eye interpreting the landscape quite different. **Rhyolitic domes and basaltic lava fields** that have an equally large or even larger area. For example, the Big Southern Butte has a footprint of about 10 square miles. Sizemile Butte, which looks much more modest, produced a lava field with a larger area, of at least 12 square miles. Even larger is Crater Butte (over which most people drive without noticing): lava field with an area of at least 50 square miles. Thus the Big Butte might better be called Tall Butte or Sharp Butte, in deference to the beauties bestow from which surficial coating of calcium carbonate common in dry environments.

The Big Southern Butte is easily the most prominent of the Buttes of the Snake River Plain. It rises to 7,548 feet (2300 m) above sea level, and thus about 2400 feet (730 m) above the Snake River Plain, with slopes exceeding 30° on its sides. Clouds sometimes cover its upper reaches when the surrounding plain is clear. The Bureau of Land Management says the Big Southern Butte is "one of the largest volcanic domes in the world", and the butte gives Butte County its name.

The Big Southern Butte is locally called just "The Butte". However, it is also called just a "Big Butte" near Grangeville in Idaho County, Idaho, and so distinction between the two is needed. One might ask why the one at Grangeville wasn't called "southern" and the butte here would more logically be called the "Southern Big Butte" – but it is formally named the Big Southern Butte.

Crater Butte is a shield volcano covering more than 50 square miles. Its crest is about 0.5 miles from the highway and a 100-foot deep crater at the top of Crater Butte gives it its name, but that crater is inaccessible to visitors because it is in the restricted area of the Idaho National Laboratory. Crater Butte is sufficiently high that, from the highway east of Highways 20 and 26 rests on its flank, the Tetons can be seen on the eastern horizon on clear mornings. It is also high enough to be seen in the far west in the view in the panel above this one.

All of the rocks and geologic features in the Snake River Plain are remarkable for their geological standards: hardly anything seen at the surface is more than a million years old. For comparison, the rocks in the Lost River, Lemhi, Beaverhead, and Bitterroot mountains visible to the north are largely hundreds of millions of years old, and the mountain ranges into which they are arranged today are several million years old. Earth itself is four and a half *billion* years old.