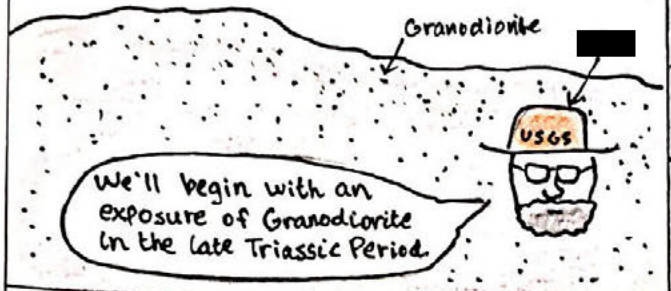
A Lithologic Tour of the Sierras [redacted]

We begin our tour about 210,000,000 years ago...

Owens Gorge Overlook



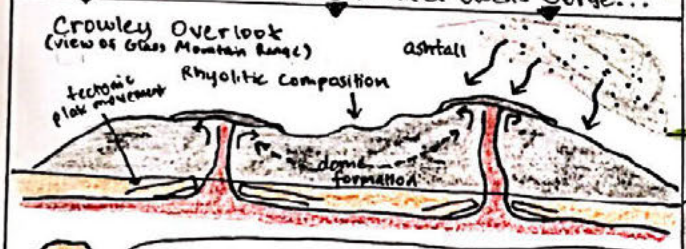
About 3.3 million years ago, we see an eruption of basalt, which fills the gorge*. This diverts the Owens River southward into Rock Creek.

*At this point, the gorge had reached about 200m depth.

206,700,000 years Later...

Meanwhile, about 36 miles North of Owens Gorge...

Crowley Overlook
(view of Glass Mountain Range)

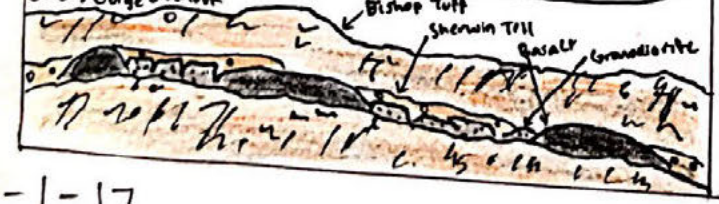


As these basaltic eruptions occurred, we also see the formation of Glass Mountain about 2 million years ago. This mountain and its range formed as a result of ashfalls* and domes* forming from the volcanically active area.

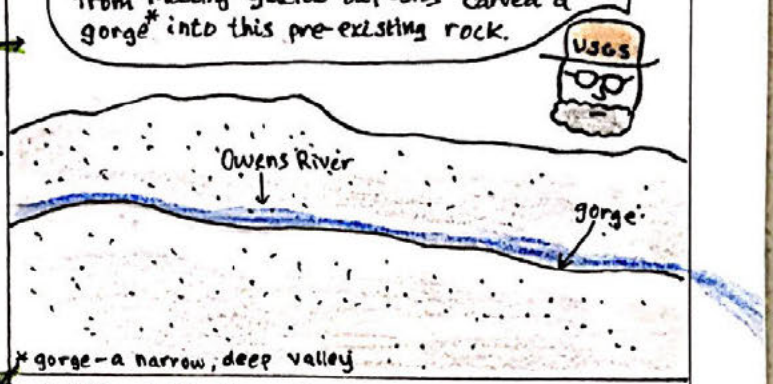
*ashfall - a rain of ash from a volcanic eruption.
*dome - an uplifted bulge, in this case from volcanic (magmatic) activity.

Over about 100,000 years after the formation of Long Valley Caldera, Magmatic activity continued underground and created a resurgent dome* in the middle of the Caldera. And remember Owens River? Yeah, that overflowed and carved another gorge 150,000 years ago

Owens Gorge Overlook



As time went on, weathering and erosion from melting glacial deposits carved a gorge* into this pre-existing rock.



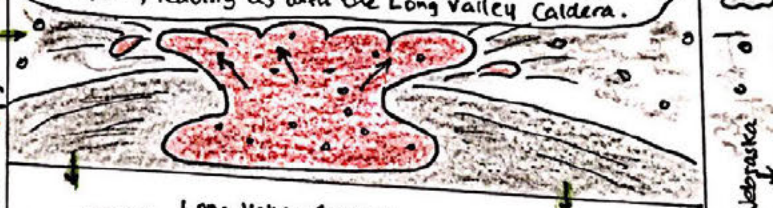
*gorge - a narrow, deep valley

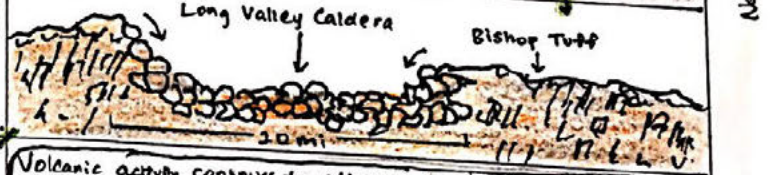
~2,400,000 years Later...

Some time later, we see a period of vast climate change. With these changes, we see glaciation*, including the Sherwin Glacier which left behind a thick layer of glacial till* (Sherwin Till).

*Glaciation - Formation, movement, and recession of glaciers.
*Glacial till - unsorted glacial sediment.

About 767,000 years ago, we had an enormous eruption. Not only did this blanket the landscape with Ignimbrite (Bishop Tuff), but the now empty magma chamber collapsed, leaving us with the Long Valley Caldera.





Volcanic activity continues to alter the landscape to this day. One notable landscape feature is Glass Creek, which formed in 1350 (~650 years ago) as a viscous* rhyolitic flow. The two colors in the rock display the two separate compositions coming together from simultaneous eruptions.

Glass Creek

*viscous - thicker liquid (resistant to flow)

7-1-17

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