**Unit04 Ancient Collisions**

[MUSIC PLAYING]

So we're just outside of Happy Valley, Penn State, up behind the ski area on the road up to Bear Meadows. And we've stopped beside a pretty little stream to look at an old beach. The rocks behind me here are made of sand glued together with hard water deposits. They're sand stone.

This is an old beach fed by old rivers. It came down from a great mountain range that used to exist up to the east of us. Now, if you go and look at most beaches, the layers are flat. And if you look at the layer behind me, it very definitely are not flat layers.

The layers are tipped way up on edge. They're very steeply slanted. And so something fundamental has happened here to get the slant that we see out of the flat layers that used to be.

What happened here was that there was a great collision, and Africa rammed into North America. The oceans open and close, and the continents drift around, and occasionally one continent runs into another. And when there's a running into, you get a lot of breaking and you get a lot of bending. And so the rocks in this part of the world have been bent in various ways, and you get all sorts of interesting bends.

The rocks that we see behind me are one of these bends. They're the little slant on this side of the bend. And they go up here and over the top of Penn State and down on the other side in a great arch, the Nittany Anticlinorium. And we're seeing a little side of that. And that's why we have mountains in central Pennsylvania.

The same thing as the Smokies. The same thing as the Presidential Range, Mount Washington up in New Hampshire. The entire trend of the Appalachians is a result of this giant collision that bent and folded and broke the rocks.

The Atlas in Africa, the mountains up through Norway are the same thing, this giant collision that bent everything. It's happening today to make the Himalayas. And so when you see these rocks slanting up behind me, this little piece here in central Pennsylvania, it's part of the vast damage and the beauty of a collision that happened long ago.