

INSPIRATION POINT

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Inspiration Point, a headland overlooking the entrenched Brazos River, near Mineral Wells, Palo Pinto County, Texas, is the western end of an annual geological field trip made by students of Southern Methodist University. This article is an attempt to interpret and to give meaning to this beautiful landscape.

The geologic story told at Inspiration Point is breathless with interest and spans a period of time so great that it is beyond human comprehension.

The rocks beneath our feet consist of rounded pebbles cemented in a matrix of sand and gravel. What story do these rounded pebbles tell? This conglomerate belongs to a period known as the Carboniferous, the great coal making period; but the story of the individual pebbles goes back much further in geological time.

These pebbles came from an ancient land to the east of us, known as Llanoris. Where we now stand was then ocean

bottom beneath whose waves were laid down the muds and gravel which were later to harden into this sandstone and conglomerate. These pebbles were fashioned by weathering and erosion from the rocks of ancient Llanoris. Streams from this land pushed and rolled them down the ocean bed where, delta-like, they were spread over its floor in great sheets; sheets so thick and numerous that they finally built to the surface and formed swampy lowland soils, in which grew great swamp forests, leafless bizarre trees, *Sigillaria*, *Lepidodendron* and other Carboniferous trees and plants.

Such soft beds are unstable. Occasionally, in sinking areas, the waves swept in over the land and the swamp forests were buried under muds and sands to form coal fields such as those at Strawn, Thurber, and coal seams near Mineral Wells. At other times the bottom was clear and then they were covered with sea lilies, where the small boy now finds an Indian button factory from their stem fragments, or they were covered with brachiopods and other shells innumerable.

The pages of geological history are badly torn and scattered. Underneath our feet are Carboniferous beds. What happened here while the Red beds to the northwest of us, the Permian formations were being laid down? Much of Texas was then an arid country with occasional lakes where great finned Amphibian lizards, *Dimetredon* and others lived under climatic conditions most intolerable.

What happened here while the Triassic beds of the eastern United States were being laid down amid volcanic outpourings east of the Appalachian Alps? What happened here while curious toothed birds and winged reptiles flew over the lagoons and seas of Jurassic time? What happened here while the ancient motherland, Llanoris, wasted away and finally sank beneath the bottom of the Caribbean Sea?

There is no answer here. The pages are gone. All we know is that our Carboniferous beds were tilted to the northwest and that nature in her inevitable way, by weathering and stream erosion, was preparing a vast peneplain over this area. Hard and soft beds alike were cut across by nature's carpentry, the soft shale, the soluble limestone, the harder

sands and even the well-cemented conglomerate. The stage is set and nature is prepared to present another act in its great drama.

Our lands slowly sink. From the southwest advances the slowly engulfing Comanchian sea. Its waves roll over the very rocks on which we now stand. Our pebble conglomerates are again buried under beach sands. Just southwest of Millsap these beach sands cover the carcass of a great dinosaur. Dr. Hill, who first described these sands, called them Dinosaur sands instead of their present designation, Trinity.

To the southwest off shore in the lime muds (now Glen Rose limestone) in Hood and nearby counties, there are the tracks of other great dinosaurs, which waded and fed along this ancient sea.

The waters would not be denied. The ocean spread to the northwest. Lime muds accumulated. It was a rich ocean. Incredible numbers of shell forms lived on its floors now hundreds of feet above our conglomerate, ammonites, the Nautilus, echinoids, brachiopods, and other shell fish. There were great reefs of oysters and through and over them swam giant sea lizards and terrible serpents unthinkable.

The land did not give up without a struggle. In Woodbine time the sea retreated briefly, but again advanced and now triumphantly until the Cretaceous ocean swept to Northern Alaska and the great series of shales and chalk deposits were laid down. Then our conglomerates rested under a burden of possibly 3,000 feet of sediments.

And again the scene changes. At the close of Cretaceous deposition great earth stresses have accumulated. The great Rocky Mountain system is born and lifts its head triumphantly over the ocean's retreat. Along the mountain front great streams, such as the Canadian, Arkansas, Platte and others spread the mantle of the High Plains. Other streams like the Red, Brazos and Colorado take intermediate station.

North Central Texas has also felt the mountain impulse in the Big Bend Arch. Slowly the streams cut inland and

carry great loads to the Gulf, where they are spread out in the great belts of the Tertiary skirt. The "Central denuded" area is slowly scalped. The Cretaceous layers are being removed, bed by bed, until with dramatic suddenness the soft Trinity sand is reached and there is laid bare again our ancient peneplain and again our pebble conglomerate sees light and sunshine.

The story is almost told. The Brazos swings in lazy meanders over the ancient fossil peneplain; but there is an earth movement, a quickening and again the river begins to deepen its channel. Three hundred feet it cuts, but now, due to the hard conglomerate beds, it no longer swings free. Its meanders are entrenched and held fast; nevertheless, it takes revenge on the softer shales to the south, where it spreads a wide valley.

At Inspiration Point our steps wander over a facet, the remnant surface of an ancient peneplain preserved on the edge of our hard conglomerate. Other facets of this plain are seen again and again in the plateau, like crests of the ridges around us.

To the south and east of us stand in battle array the slowly retreating scarps of the Comanchian beds. In the distance the Brazos has breached the wall and given a future prophesy of the inevitable surrender and destruction to follow.