
Yellowstone Musings—Deep Time

An article from the *Cathedral Times*
by the Rev. Dr. Bill Harkins



The clouds poured out water; the skies thundered; your arrows flashed on every side. The crash of your thunder was in the whirlwind; your lightning's lit up the world; the earth trembled and shook. Your way was through the sea, your path, through the mighty waters; yet your footprints were unseen. You led your people like a flock by the hand of Moses and Aaron. —
Psalm 77

Vicky and I recently returned from visiting our son Justin and daughter-in-law Michelle in Montana, where they have lived for several years. Our journey from Billings to Yellowstone took us into the Beartooth Mountains by way of the eponymous highway, a spectacular drive. The Beartooth are composed of Precambrian and metamorphic rocks, dated at approximately 4 billion years old. Expansive plateaus are found at altitudes in excess of 12,000 feet. With miles of alpine meadows where no meadows should be—a lovely plateau atop a mountain range—one begins to sense that the normal “rules” of geology don’t apply here.

The Beartooth have over 300 lakes and waterfalls. Winters are severe with heavy snow and incessant winds. Among my favorite places in the Beartooth is Clay Butte. A short trail run to the Butte and one finds oneself on an ancient sea floor *at 12,000 feet*, surrounded by fields of alpine flowers. Marine fossils are plentiful. Prior to the wrinkling of the earth’s crust, the entire Rocky Mountain region was below sea level. This Late Cretaceous seaway extended from the Gulf of Mexico to the Arctic Ocean. The uplift of the crust slowly pushed this seaway up and out of the western interior. Never again has the Rocky Mountain region been invaded by marine waters.

The Yellowstone trail half-marathon, which I joined Justin and Michelle in running, was held in the Gallatin National Forest. John McPhee has said of Yellowstone that, according to plate tectonic theory, it should not exist. “Geologists have come to believe that in a deep geophysical sense it is not Yellowstone that is moving ... the great heat that has expressed itself in so many ways on the topographic surface of the modern park derives from a mantle far below the hull of North America. They believe that as North America slides over this fixed locus of thermal energy the rising heat is so intense that

it penetrates the plate. The geologic term for such a place is a ‘hot spot.’”¹

After our sojourn on the trails, I awoke that night to a clear sky, and the glorious Milky Way spinning above us, even as the ground we were on, however, imperceptibly (much of Yellowstone is in an ancient volcanic caldera) moved beneath us. Deep Time above and below; I was reminded of the psalmist, who wrote of things often unseen, assumed to be fixed, but nevertheless in motion, wonderfully, miraculously alive. I delight in this as suggestive of God’s ongoing participation in Creation. As Teilhard de Chardin has written, “By means of all created things, without exception, the Divine penetrates us, and molds us. We imagined it as distant and inaccessible, when in fact we live steeped in its burning layers.”

Last month, NASA scientists reported the creation of key DNA components in a laboratory experiment that simulated the space environment. Together, these findings suggest that life’s building blocks were concocted in space and blended into the material that formed Earth and its siblings. Writing in the New York Times, Ray Jayawardhana said that our very “cosmic selves” are the stuff of Deep Time, just as is the geology of the Beartooth Mountains in Montana. “Tell me a story,” wrote Robert Penn Warren, “Make it a story of great distances, and starlight. The name of the story will be Time, but you must not pronounce its name. Tell me a story of deep delight.”

¹ “Annals of the Former World,” John McPhee, Farrar, Straus, and Giroux, New York (1999), pp. 389-390