cc-Wehmeyer

AS (PR)
Historical Information
Umatilla

September 16, 1937

Regional Forester

Portland, Oregon

Dear Sir:

Reference is made to your letter of April 16.

Enclosed herewith is an article on the geological data of the Heppner District. This article has been prepared by George Gillis, Lookout Fireman at Arbuckle Lookout.

Very truly yours,

R.W. CRAWFORD
Acting Forest Supervisor

By James C. Iler, Acting

Encl.

FMC

Remote Past of Heppner District Vicinity

Pensively we stand on the rims of the Blues gazing into the deep vast grave of the past. Tier on tier the tombstones are palisaded, two thousand feet deep, marking the end of an age that was strange. Strata upon strata of sturdy lava seal away the remains of the ancient dead. Scattered about below us are the green, blue, and brown mounds that bespeak the mood of Vulcan as he threw his fire around. With a shudder, we realize what a flyspeck of effect we have on the record of time.

What opened this grave? What made this gash into the bowels of the earth? What so desecrated these long dead? Any native could tell you, pointing far below to a silver thread twisting down the canyons, patiently cutting deeper and deeper. It's water, Dame Nature's carving knife, the John Day River. You ask why she carves. Have you not heard? Being dissatisfied with her job on this old world, she is making that deep incision to find what mistakes she made in the past. Let us hope she is generous when she discovers man to be the great destroyer of natural things. Would she try to rectify her creation of man? What strange thoughts and feeling we have in this awe-producing environment.

Now that the grave is opened, we gasp at the enormity and strangeness of the record that lies before us. Scattered over the Heppner Ranger District and the adjacent area that includes the villages of Kimberly, Monument, Spray, Kinzua, and Fossil are found many remains of the distant past. Scientists tell us that these fossils indicate the Tertiary part of the Cenozoic period. In our words that means that the remains found here belong to the time when mammals were spreading over the earth and reptile dominance was on the decline. How long ago was that? Our only conception of this distant data is based on the time required for nature to pile up two or three thousand feet of rock and wear it down again to the fossil record. Of course, some fossils are not as old as others are. Those left in the upper layers are necessarily much younger than the deeper lying fossils. I believe the fossils along the north edge of the district to

be much younger than in the deep cuts bordering the John Day Canyon. Also, in the southern part of the district are found mainly animal fossils; in the northern part are found mostly plant remains.

The great record found here is indicative of the type of plants, animals, and soils that made up an ancient area that would coincide with the present Oregon, Washington, and North-western Idaho.

That country would be a strange sight to us now, because it was so different from what we know. Probably we will disregard many of the things that are familiar sights to us now and dwell mostly on those that are strange. Such is the mind of man. The strange is more interest-ing. Distant pastures are greener. Let us think of the unfamiliar part of the past.

Let us think of the past topography. In general, the original land surface was much lower, with the higher mountains being some of our present Blue Mountain peaks. Then come the age of lava flows covering all except the highest peaks of that old Blue Mountain Range.

It alone stood above a broad high table land of hot lava and ash. Next, erosion cut deep canyons into that tableland until many parts are mountainous with the more resistant portions of lava remaining as peaks. The last is the topographic picture as we now see it.

Another incident that left an important record was the presence of the great John Day Lake. Lying between the Blue Mountains and the young growing Cascades it was almost an inland sea. It is believed that the outlet was over a ridge country somewhat south of the Colum-bia River. As the lake drained over this country, it gradually wore down its outlet, thus causing its own lowering. Geologists prove these facts by pointing out ancient lake beaches still existent on some slopes. This lake had much to do with the fossils we find. One type of fossil was formed in the deltas the streams made in the lake. Materials in the stream water combined with those in the lake water, forming a type of water glass. Carcasses and plant remains naturally

lodged along the deltas. There they were permeated by the water glass material and made hard and lasting. Thus we find some of the richest fossil beds in the old deltas.

Many of the leaf imprints were caused by leaves sinking to the bottom of the lake and being covered and compressed with layers of volcanic ash silt washed down from old ash beds or sifted on the water by active volcanoes. This later material, called tufa, holds most of the vegetable fossil remains found along the northern edge of the district. Fossilization seems to have occurred mostly with the aid of water because the stream-loving species of trees have left by far the most numerous fossils.

Let us next consider the climate of that ancient country.

"Impossible", you say, "Absurd". Still, with the knowledge of a few of nature's secrets, scientists have come pretty close to getting the exact type of climate. All about us we find fossil imprints of sequoia, oak, willow, alder, and palm. In the moist part of California are now found those same trees. Would it be too much to say that Heppner district had a warm damp climate several million years ago? The evidence is written in the rocks. With the Cascades not yet grown to their stature and the Coast Ranges hardly above the sea, there would be little to hinder the prevailing westerlies from blowing a warm dampness of the Japanese current far across the country. The warmth loving plants and the great volume of the John Day Lake attest to this fact.

In reconstructing the vegetable life, we find the records not as complete as we should like. Although the stream-loving species of tree fossils are found most numerous, we cannot assume that they were the only trees. Surely, the country could not have been all stream. The higher and dryer land species are scarce in fossil form because they were not so easily transported through the thick stream growths to the water where they could fossilize. Also the herb imprints are very seldom found because those plants usually cure and disintegrate where they grow. Being, by nature, of low growing habit, they are not easily broken off by the wind to be transported through the dense growth along the water. So, the best we can do to reconstruct

the old picture is to use what water-loving tree fossils we have as indicative material, consider the percentage of the species, and compare it to a country having similar life along its streams. The country comparing most closely to the past here is the Redwood Forest country of California. On the west slope of Johnson Creek, leaf fossils are readily found. The animal life story of the Heppner District is more complete than the plant record. On the southern end of the district, fossilized bones are easily found. In a couple of hours time in Haystack Canyon, I found three pieces of jawbone with teeth and several quarts of odds and ends. The green mounds seem to be the most favorable places to search. The parts of the skeletons that are last to disintegrate are jaw bones. No doubt that is because of their being necessarily harder in construction.

From this district and the John Day Valley to the south have gone fossilized remains to the great museums of America and Europe. In fact, the statement is made that the John Day group of fossil remains in one great American museum are so numerous that it would cost about $25 to a hire a typist to copy the record. A few of the more common mammals were the three-toed horse, the elephant, the rhinoceros, a pig-like tapir, saber-toothed tiger, and the camel. The reptiles had the forms of turtles, lizards, and odd swimming beasts.

The three-toed horse skeletons are small, about for size, but still distinctly of the horse family. It is believed that the tapirs roved the country in droves because their remains are often found in groups. Many elephant teeth have been picked up in Bologna and Haystack canyons and other places. Huge rhinoceros bones are found in scattered places of the lower levels. Several forms of large extinct camels have been found here. Their likenesses have never been found elsewhere. Another animal believed to have originated in horrible imagination or nightmare is the saber-toothed tiger. One was found in a curious manner. Some fossil hunters working for a museum grew curious about a spire-shaped formation in Haystack Valley. Upon investigation they found it to be capped by a white colored object. The sides of the spire were so precipitous they could not be climbed. The top was so slim it could not support a pole up

which a man could climb. There was no good way of climbing up to get the object, and the hunters did not want to do it possible injury by breaking down the spire. Finally the dilemma was overcome by one Bill Day (I believe) who threw a long lariat rope over the top, drew it snug several feet below the curious thing, then climbed the rope and managed to stand on the tight loop and lift off a fine specimen of saber-toothed tiger skull with three inch tusks. The hard skull had withstood the elements and had protected the soil below it from the erosion of the down-beating rain. This caused the spire that stood above the eroded valley floor. In thinking of these fierce animal inhabitants of that old country, we like to conjecture whether or not man was there, if so, what a time he must have had, did he dominate the beasts, etc. No definite proof of human habitation during this period had been discovered. Several times the evidence pointed toward human life but it was explained away in the proof.

Once arrowheads and human bones were found mired among bones of elephant, rhinoceros, and tiger. Great excitement stirred the scientific world. Had the oldest record of man been found? A great paleontologist of a California college calmed the stir. He showed that the fossilized animals had been uncovered at a great depth by erosion. Sand then blew in and recovered them quite deeply. Several hundred years ago Indians lived on the sand. Then because of drought and wind, the sand slowly drifted away. The heavier human remains and implements were not moved by the wind, but gradually settled down to the level of the ancient animals remains. Thus, though they were found together, they were not of the same age.

Recently, in Bologna Canyon, Joe Carsner of Spray found a human skull near elephant remains. Of course, the explanation may have been the same as the other finding, but we shall possibly never know. After being exhibited around Spray for a while, the skull has disappeared.

Human remains of a rather cultured or capable civilization have been found in the top layers of earth in several parts of the district. Being as they are, in the upper crust, they do not have the great antiquity of the remains a couple of thousand feet lower. Their embattlements,

mines, methods of work and strategy far surpass anything done by the Indians that were here when the white man came. That they were far back in the pages of history is proven by the fact that their mine dumps have weathered and become soil that now supports four-foot pine trees. How many rotations of pine trees have grown there and disintegrated is a thought for conjecture.

The museums deplore the fact that the original fossil hunters thought only the skulls were important and left the remainder of the skeleton where it lay. Also, many valuable fossil finds have been ruined by persons who separate the bones from their original positions.

Although we were not conscious of the great importance of these beds until a group of great geologists came through here a few years ago, we did know that the country had been a collecting place for the museums for the last seventy-five years.

Well, we have several pieces of the picture. Let us gaze again into that old deep gash showing the cross section of ancient Oregon and try to organize it all into a composite picture.

A rolling green country we see, with the Blue Mountains standing high above all. A blue sky, flecked with fleecy white clouds. A clean fresh smell to the often washed air. Giant, towering redwoods, interspersed with maple, willow, and oak. Palms in favorable places. Many rush bordered streams draining the freshly moist forest. Peccaries, rhinoceros, and the three-toed horse roam gloriously happy in the specially made heaven.

The only menace in the picture is the distant, rumbling, smoking volcanoes. But the picture is so beautiful and peaceful little thought is given to the disagreeable.

After centuries, the devilish jealousy of the volcanoes can no longer be bounded. They steam up and rumble forth to destroy the picture. The earth quivers, cracks, and spews forth broad streams of molten rock. Ash stifles the air. The melted rock pours on and on. Trees go up in smoke, animals scream and cry in fear and agony and run terror stricken everyway.

Still the lava source is inexhaustible. Sulphurous gases destroy the remaining life. In some spots, the ashes cover plants and animals deeply before the scorching flame arrives. Lava flows thickly over the ash sealing it and its dead forever. The holocaust cools, rain falls, seeds blow in, animals return. Peace reigns again for centuries; then all Hades breaks loose again. This repeats time after time until thousands of feet thicken the earth by lava and ash. Even now where the old lava plain is cut by the John Day River, at least seven great shelves formed from the old flows can be easily seen.

Life does not always return in the same forms. One time the rhinoceros failed to reappear. Another time, the tiger, then the elephant and horse. Never more to live here until the white man brought them. Often the destruction was so great there was no life left to propagate. Naught was here but a bleak, gassy, hot, lonesome plain.

In some great thicknesses of strata we find no evidence of life — absolute death for great ages except for the great red-leery eyed volcanoes who chuckled in the deep guts of the earth and sportively spit tons of searing lava at each other for lack of better targets.

As with all fits of temper, their viciousness began to abate. Moisture collected about it in the great basin between the Blues and the Cascades and overflows to the north. A huge lake forms. Sequoias, palms, willow, and maple collect about it in great profusion. A new animal life appears and enjoys a happy life. Through the centuries the lake level lowers, its outlet to the north is wearing down. Low parts of the Heppner District gradually emerge. The forest follows the waters edge as if entreating it to stay. The Cascades push higher, the coast ranges go up and together they steal the moisture needed here. Moisture requiring trees die out. Sequoias and palms go. Drought resisting trees appear. Pine and Juniper are established. Animal life changes with the vegetation. The moisture starved lake dries up, leaving only the John Day and Deschutes Rivers for memory's sake. The moisture required to make fossils is largely gone. Recent fossils are not numerous, even the walking ones are sparse.

What greater enjoyment can man have than the observation and appreciation of nature? Here on the Heppner District the present is full and varied; the past, tremendous and strange beyond comprehension; and the future — what will it hold?

George Gillis