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GEOLOGICAL SURVEY IN DAKOTA.

MEMORIAL

OF THE

LEGISLATIVE ASSEMBLY OF DAKOTA,

ASKING FOR

A geological survey of the Black Hill country and Bad Lands in Dakota Territory.

JANUARY 8, 1866.—Referred to the Committee on Public Lands and ordered to be printed.

To the honorable the Senate and House of Representatives of the United States in Congress assembled:

Your memorialists, the legislative assembly of the Territory of Dakota, most respectfully represent, that the Black Hills and Bad Lands of Dakota and Montana Territories, lying near the 102° meridian of longitude and between the Niobrara and Yellowstone rivers, is a region which has always excited the interest of geologists and explorers, but remains at the present time a mysterious untraversed belt of the continent where none but the wild beast and red man hold dominion; that on account of the determined and superstitious hostility of the Indians in that region no geologist has ever penetrated the interior of the Black Hills, and no scientific exploration has ever been made among the mysterious ruins of the Bad Lands, save a hasty survey by Evans in 1849 and Hayden in 1855–'56.

The Black Hills, says Lieutenant Warren, who visited their base, are composed of the same formations of stratified rocks as are found in the gold-bearing gulches of the Wind River and Big Horn mountains, these hills, in his opinion, being but an outcropping spur of the great Rocky mountain range in the vicinity of the Bannock and Virginia City mines.

Dr. Hayden, the geologist, says the lowest member of the Silurian period, or gold-bearing strata, is quite well developed in the Black Hills; and the recent discoveries made by General Sully's Indian expedition, which crossed the northern trend of the Bad Lands in 1864, clearly indicate that the next succeeding formation, known as the Devonian system, is brought to light in the floor of the great Bad Land basin; and whereas this system is known in geology as the period in the earth's formation which corresponds with the third day of creation, when the great coal measures of the earth commenced their slow formation with the first appearance of vegetation upon the globe; and whereas it is an estab-

lished geological fact that the most extensive coal deposits are met with in all countries next above the Devonian series, and that the petroleum or oil-bearing rocks are to be found in this and the lower Silurian period, which Dr. Hayden says are quite well developed in the Black Hills; and whereas it is now the prevailing opinion among geologists, based upon scientific reasoning, that the basin of the "Bad Lands" is the ancient bed of a great coal-field which became self-ignited at some distant period, and like many of the coal-fields of England has been slowly burned out by its own bituminous fuel; and whereas Colter and others in 1804–'5 crossed the northern trend of this great fire-land, where, at that early day, they represent the whole country as being on fire, emitting a carboniferous smoke and the sound of rumbling thunder from the heated earth, and as these phenomena were mentioned by Lewis and Clark in 1806, and by Hunt, McKenzie, and Crooks in their fur expedition to the mountains in 1811, there is conclusive evidence to sustain the statement made by General Sully in his official report of 1864, that "coal exists in all the country from the Missouri to the Yellowstone."

Humbolt and Lafond make mention of mountain reports being heard in the vicinity of these hills in the early part of the present century, which the wild and superstitious natives of that region believed to be the bursting of rich mineral deposits, the locality of which were revealed only to the red man. But modern discovery and science account for these strange phenomena by attributing the cause to an escape of hydrogen from subterraneous beds of burning coal.

Later travellers inform us that since the year 1830 these strange "fires and explosions" have ceased. Captain Bonneville in 1834 and Parker in 1835 found nothing but the silent, dismal, and mysterious ruins of this great subterraneous conflagration heaped in charred and crumbling towers and castles standing in the midst of a solitary valley of ashes, bones, and petrifactions.

This theory in the origin of the "Bad Lands" being sustained both by history and geology, it is confidently believed by the people of the northwest that coal-oil reservoirs will yet be found in great abundance at the north and east base of the Black Hills. Here, in the upheaval of this mountain range, geology points to the oil-bearing rocks of the Devonian and Silurian formations which have been thrown up through and above the surrounding coal-fields which border immediately upon the base of these mountainous hills.

Professor Owens, United States geologist, in his report of 1852, in speaking of this mysterious region, compares the Bad Lands to "some magnificent city of the dead, where the labor and the genious of forgotten nations had left behind them a multitude of monuments of art and skill. At every step objects of the highest interest present themselves. Imbedded in the debris lie strewn in the greatest profusion organic relics of extinct animals. All speak of the former existence of most remarkable races that roamed about in bygone ages high up in the valley of the Missouri towards the sources of its western tributaries."

This eminent geologist demonstrates that all the strata composing the formation in the vicinity of the Black Hills and Bad Lands "have been a succession of sediments or precipitates at the bottom of the ocean." "Thus," says he, "the geologist is able to prove, as satisfactorily as can be demonstrated a mathematical problem, that at the time these fossil mammalia of the Bad Lands lived, the ocean still ebbed and flowed over Switzerland, including its present site of the Alps, whose highest summits then reached only above the surface of the sea, constituting a small archipelago of a few distant islands in the great expanse of the ocean."

The same geologists inform us that the Black Hills of Dakota, the silver-bearing placers of the Amazon, the rich Cordilleras of South America, the Himilayha range of India, the Alps of Switzerland, and the volcanic Etna of

Sicily, have all emerged from the sea at the same geological period, and the same formation of mineral-bearing strata can be traced in each.

The actual discovery of Astor's fur parties in 1811, and of Captain Bonneville in 1834, of Harney in 1855, Warren in 1856–'57, of Dr. Hayden in 1858–'59, and General Sully in 1864, proves conclusively that the Black Hill region abounds not only in the precious metals, but in iron, coal, salt, and petroleum, aside from its vast forests of pine.

Your memorialists would therefore pray that a scientific investigation be made of that region in early spring, under the protection of the military forces under General Sully in this district.

And your memorialists, as in duty bound, will ever pray.

M. K. ARMSTRONG.