

Edwin Hall

State Capitol,

Cheyenne, Wyoming, December 31st, 1910.

To His Excellency,

Bryant B. Brooks,

Governor of Wyoming,

Cheyenne, Wyoming.

Sir:-

I have the honor herewith to submit a brief report of the office of State Geologist for the year ending December 31st, 1910.

Respectfully submitted,

State Geologist.

New Lodge 3

Introduction.

The work that I have done pertaining to the duties of the State Geologist for the past two years, circumscribed as it has been, by the meagre contingent of One Thousand Dollars per Annum, was devoted to what in my best judgment conduced "to encourage the growth and development of the Mining Industry of the State" by making a thorough investigation of the mining camps of the State, through frequent visits to the same and close inspection.

I feel safe to say from the development of this industry now going on in the different parts of Wyoming, that the natural resources of the State will in a very short time be the chief source of wealth to its population.

In my official visits over the State I find that in nearly every county Oil and Coal exists, and where these products have been developed they are found in abundance; I also find that the mountain ranges of the State abound in fissure veins carrying gold, silver and copper, and in some places other precious metals. Some of the sedimentary districts contain large deposits of natural soda and sulphur.

The Mining Industry is one of our most valuable assets and its present ~~and~~ active and prosperous condition should be appreciated accordingly.

My official duties have been chiefly confined to the encouragement of the development of the State's natural resources, and to put an end to "Wildcatting".

From an official point of view the period in question has been both busy and eventful and it is gratifying to be able to state that the progress made in the development of the Mining Industry may be termed very satisfactory.

MINERAL RESOURCES.

----- GOLD.

✓ Until two years ago gold was thought to be a very scarce metal in our State, but the prospector has proven that gold exists in paying quantities in the igneous rocks in the Bear Lodge Mining District, and in the Sunlight Basin District of Park County.

In my judgment I believe it can be found in all other igneous districts of the State.

I have made two visits to the Bear Lodge Mining District in Weston County and find it to be fast developing into a gold camp. The rocks of the camp are fissured with fluorine veins carrying values as high as One Hundred and Twenty Dollars per ton in gold. I also find large deposits of pegmatite rock carrying gold values of Five Dollars and better per ton, the gold being principally free.

Several companies are operating in this district on promising properties, and two plants of machinery are now being installed. there are several other igneous uplifts in Weston County that deserve the attention of the prospector.

In the latter part of October of this year I made a visit to the Sunlight Mining District situated Fifty miles West of Cody, and made a thorough examination thereof. This mining district is situated around Stinking Water and Sunlight peaks. These peaks rise to an altitude of Twelve Thousand feet approximately, and are great masses of igneous rocks literally cut with fissure veins and ~~pyrophy~~ porphyritic dykes. Assays taken from this district by me show that these veins and dykes carry excellent values in gold. The Winona Company has about a thousand feet of development work which has exposed several veins large and rich enough to be immensely profitable when transportation facilities are available. They are driving their main tunnel into Stinking Water peak and will cut several large and rich veins.

There are about fifty prospectors in this district who have excellent properties. From this district to Cook City about fifty miles away there are excellent showings and some day will be the scene of many camps.

The South Pass and Atlantic Mining Districts situated in Fremont County about Forty miles from Lander have produced in years past probably about Five Million Dollars. Considerable development work has been going on in these districts in the past year, which proves that the district has only been scratched. As soon as transportation Facilities are available these districts will again become large and valuable producers.

Gold is also found in many places in the Laramie Range, Big Horn, Wind River and in fact all of the Mountain Ranges of the State.

COPPER.

Copper is the most widely distributed metal of the State and is found in nearly all of the Counties. The Bear Lodge and Sunlight Mining Districts have large porphyritic deposits of Copper ore, which although not much developed are very promising.

The Sunlight district has much ore which carries gold and copper.

The Copper Mountain mining district is fast developing two copper mines which ~~promise to pay~~ show large quantities of ore carrying high values in copper. Many other properties in this district are very promising.

The South Pass mining district has a copper belt that is being developed with splendid results. Shipments from this district in the past year show good values in copper ore.

North Laramie Peak mining district situated about forty miles South of Douglas is very highly mineralized and is traversed by large dykes and veins, which show a heavy iron cap or gosses. Considerable development work has been done in this district, which has proven that there are large bodies of copper ore under the oxidized iron cap. Mr. H. C. Saul of Douglas operated a hand diamond drill on one of the principle gosses veins this last year and found that copper values were increasing with as depth was gained. The Laramie range from Tie Siding on the Union Pacific Railroad to Casper Mountain near Casper is very heavy mineralized, and wherever I have visited it I have found very promising copper prospects.

The Silver Crown mining district twenty miles West of Cheyenne has been the scene ~~of many~~ ^{of} in my judgment many foolish mining failures. It is apparent in my opinion that the miners in this district have been misled by the richness of the small veins and have failed to make any attempt, as far as I could see, to develop the large low grade deposits of copper ore until this year, when the Bon Brothers of Cheyenne started a shaft on one of the large iron cap veins of the district. I visited their workings this last Summer and found that at a depth of twenty feet they had gone through the iron capping, and that the entire shaft below the oxidized zone was in sulphide copper ore running about six per cent copper and carrying small values in gold and silver. I have been informed that in sinking the shaft deeper this ore has continued. In my opinion this will make a very profitable mine when developed.

The Hartville Uplift in the North part of Laramie County has produced a great deal of copper metal and is deserving of a great deal of attention.

The Copper Belt Mining Company of Rawhide Buttes about fifteen miles South of Lusk has close to Four Thousand feet of underground development. They recently purchased the Michigan mine in Muskrat Canyon and are now installing a plant of machinery. This property has already produced One Hundred Thousand Dollars. The vein is very large and crops to the surface carrying values in copper high enough to make even the surface ores profitable. There are many copper croppings in this district.

I have not visited the copper camps in the Southern part of the State this year, but I am told that much progress has been made.

The new Rambler mine in Southern Albany County during the past year has been equipped with a reduction plant that has put it on a paying basis. This property not only produces copper but also gold, platinum and pladium. This mine is a mineral museum.

I have only mentioned the principle copper camps of the State many other copper camps will be opened up in the different

mountain ranges of the State.

SULPHUR.

The Wyoming Sulphur Company near Thermopolis lost their plant this last year by fire. The plant has been rebuilt and they are again producing sulphur in large quantities. This company has a property ~~of~~ containing very rich deposits of sulphur ore.

In the Sunlight Basin there is a deposit of sulphur about One Thousand feet wide several Hundred feet high and about Three miles long. The Samples that I took from this property were half sulphur and while these samples was not an average of the entire deposit they were ^{below} ~~above~~ an average of a large portion of it.

ASBESTOS.

During this year two mills have been constructed in the Casper Asbestos fields, and are now marketing chrysotile fibre. Both of these mills are small but by putting the Wyoming asbestos product on the market they have demonstrated that ~~asbestos~~ ~~asbestos~~ ~~asbestos~~ of chrysotile asbestos in the Casper and other fields is to become one of the State's revenue producers.

Near Glenrock an asbestos quarry has been opened up and the Company owning the same gives out the information that they are preparing to install a new mill in the Spring.

Mica.

In developing the Asbestos mine near Glenrock a body of plate mica forty feet wide was encountered. Ground mica is worth from Fifty to Eighty Dollars per ton and this company intends to put up a mica plant.

SODA.

Sweetwater and Uinta Counties have many very large soda lakes. The Sweetwater deposits contain several million tons. Railroad facilities will make these deposits very valuable.

Graphite.

Halleck Canyon in the Laramie Range contains large deposits

of amorphous graphite. Analysis from this deposit show the carbon contents to run as high as seventy per cent. Graphite is also found in Plumbago Canyon, Indian Grove Mountains, and in several other localities in the State.

OTHER MINERALS AND SUBSTANCES.

Volacnic Ash, Building Stone, Manganese Ore, Clays, Bentonite or Soap Clay, Quartz, Glass Sand, Fibreus Talc, Mineral Springs, Salt, and Felds Spar are found in numerous places in the State.

Gypsum is found along the Anticlinals and Mountain ranges, and is found in very thick beds and in a very pure state. During the past year a cement plaster mill with a capacity of a Thousand Bags per day was built at Wyopo in Fremont County.

Limestone of excellent quality is abundant in every county in the State. During the past Summer a Lime Kiln was built at Wyopo and is producing an excellent Lime. A great deal of the lime used in the State is shipped in from Wisconsin and other states.

The Colorado Fuel and Iron Company has shipped about Six Hundred and Fifty Thousand Tons of Iron from their mines at Sunrise in Laramie County. These mines are equipped with the most modern machinery and are carrying the development work years ahead of their production. Iron Ore is also found in large quantities near Dubois in Fremont County, in the South Pass mining district, at Rawlins and at Seminoe, and in many other places in the State.

Natural Gas has been found in all of the oil fields of the State, in small quantities. At Greybull Wyoming there has been a large gas field developed in the last two years. The gas is under an immense rock pressure. A gas pipe line has been constructed from the field to Basin where it is being used for fuel and illuminating purposes, and also I have been informed it is to be used in the town of Greybull in the Railroad shops.

COAL.

The coal output in Wyoming for the past year in value is estimated to be about Twenty Millions of Dollars. Three new mines have been opened up at Lost Springs, Converse County and

two Railroads have been built to the same.

The Chicago and Northwestern Railroad has equipped many of its engines to burn lignite coal thus creating a market for the Wyoming product. There has been very little new development in the coal industry of the State owing to the fact that the Government has withdrawn all of the known coal lands from entry. Unless something is done in the near future this going to be a serious problem to our State. The withdrawal is giving the present coal producers a monopoly on this product, which not only works a hardship on the coal consumers in the State, but also on the coal producers, inasmuch it does not allow them to open up new territory ahead of production, and if this condition is allowed to go on indefinitely it is sure to bring about a coal famine.

---- OIL----

Oil is found in nearly all of the counties of the State.

Within the last year there has been more legitimate oil development than ever before. In the Dallas Oil Field Ten miles South of Lander, Colonel Power of Lander and London England has built him about Fifty producing wells, which run from forty to two hundred and fifty barrels per day. Colonel Power constructed a Six Inch pipe line ~~through~~ from the Dallas fields to Wyojo through which the oil is conveyed and stored in two steel tanks having a capacity of Thirty Seven Thousand Five Hundred barrels each.

The Chicago and Northwestern Railroad Company are burning oil on many of their passenger engines, which it is said to make a saving of about Fifty per cent over Wyoming Coal. The Dallas field is located on the Southern end of the anticlinal fold which extends for a distance of fifty miles in a Northwestern direction. Oil wells have been drilled in many places along its course.

Salt Creek Oil Field is located about Forty miles North of Casper in Natrona County. Shallow oil from this field probably from the pierre shales has been hauled in years gone by in wagons to Casper, where it was refined into a very high grade lubricating oil. The real worth of this field however was not

discovered until about a year ago, when Mr. Fitzhugh and associates commenced actual development, since which time they have drilled in about Fifty wells, which has proven the field to extend over a large area. Wherever wells were drilled through the oil sand they are large producers of very high gravity illuminating oils, of a paraffine base. The Company known as the Holland or Dutch Company, the Franco-Wyoming Oil Company are operating this field with marked success. I am of the opinion that the flat anticlinal composing the Salt Creek field will some day be found that it extends to Casper Wyoming.

The Powder River Oil Field Located on the South Fork of the Powder River about Twenty miles West of the Salt Creek oil field. This field in my opinion will be the large fuel oil producer of the State. The structure is perfect and in some places the dome of the anticlinal is eroded away and you can walk on the saturated oil sand. Very little development has been done in this field.

There are very many oil fields in Uinta County. Spring Valley being the only one that I have visited. From the Spring Valley field oil is now being shipped to Salt Lake, Utah where it is refined. The producers I am informed are selling their oil for a Dollar and Eighty Cents per barrel. My time in this vicinity was somewhat cut short, however from what I saw I was greatly impressed with the future possibilities of this field.

The Newcastle Oil fields located near the town of Newcastle in Weston County has been the scene of considerable development with more or less success. This oil is heavy and does not carry much kerosene or gasoline. It is an excellent lubricant in its natural state, in fact a great deal of it has been hauled by freightors to the Black Hills where it was used as a lubricant on machinery.

Oil has been found near Moorcroft and Upton and I believe both of these fields have a prospective future.

In Big Horn and Park Counties there are many promising territories. Near Cody, Wyoming, several wells have been drilled which are producing high grade oils. Several other places in the

vicinity of Cody are very promising. At Byron, there is an oil refinery in operation, refining oil from that vicinity. Considerable oil development from the Bonanza oil fields and the Cottonwood oil fields in Big Horn County has been carried on.

In the Douglas oil field there has been no activity in the past year.

The Dutton oil field is situated partly in Fremont and partly in Natrona Counties. This field has many oil springs and promises also to be a gas producing field.

The Rattlesnake oil fields show a great deal asphaltum and will be one of the good oil fields of the State.

There are many other sections of the State that will produce oil in immense quantities when they are developed, I speak especially of a field commencing about half way between Manville and Lusk and extending in a Northerly direction for about Sixty miles.

During the past year I have visited Three Hundred mines and prospects which carried me in all but two counties of the State, and in the past two years I have travelled in the interest of the State Forty Thousand miles, this was done during my term of office.

During my term of office I have answered Two Thousand Letters of inquiries relative to the mining industry of Wyoming. I have distributed pamphlets of the mineral resources of Wyoming to a number exceeding over a Thousand; have also sent out about four hundred copies of the Mining laws of this State.

My chief effort that I have constantly made during my term of office was to put an end to "wildcat mining speculations" and I feel satisfied that my untiring efforts in this matter has been fully awarded.

I have written a great many articles for the newspapers and journals both at home and abroad concerning the natural resources of this State while in the office of State Geologist.

During my term of office there has been no serious mine accidents.

Expenses.

Travelling Expenses	421.01
Board & Lodging	291.85
Stenographer & Clerk Hire	454.50
Postage, Telephone, Telegraph, Box Rent	37.12
Records, & Printing	50.75
Books Stationery Etc	86.81
Furniture	15.00
Miscellaneous	<u>265.10</u>
TOTAL-----	1622.14

RECOMMENDATIONS.

The natural resources of our State if under State Control and properly handled would build our public roads, educate our children and eliminate the tax question for all time to come.

Believing this as I do, I would recommend that every effort be made by the people and governing bodies of the state to secure State control of our natural resources.

I would also recommend that the existing laws relative to the office of the State Geologist be repealed and that the legislature create an economic and geological survey; the State Geologist being the director of this work, and that he would have one field ~~assistant~~ geologist and assistant, one chemist at his service in the State University, one stenographer and office clerk.

The employees named above to be paid out of the Contingent of the State Geologist which with running expenses the legislature should in my estimation appropriate the sum of Fifteen Thousand Dollars per year. I would also recommend that the salary of the State Geologist be raised from the present sum of Twenty four hundred Dollars per annum, to the sum of Three Thousand Six Hundred Dollars per annum.

Unless the office has a more substantial support than at the present time, I repeat what I said in my previous report "that the legislature of the State make more adequate provisions for the support and extension of the work of this office, or else that the office be pretermitted."

An economic survey would be of importance to every community in the State. After each district was surveyed it would be mapped and a bulletin issued which would become a part of the State literature. This bulletin would give the Section, Township and Range on which any thing of economic importance was found.

For example, if the survey found a body of brick material it would be measured and analyzed and the exact location given, which would be of great value to a man hunting a place to go into the brick business.