GEOLOGY AND MINEROLOGY

By Wade Huston

From the material available for constructing a geological history of the region of Crook County is only possible to summarize what appears to be the most important geological events.

The evidence indicates that the area is more or less magratory thousands of feet thick, overlying masses of rocks that form an intrusive foundation. The foundation becomes more calcareous towards the top. The lower cretacious is present in the Suplee country a large amount of limestone. Deep sea conditions prevailed during deposition of of the upper carboniferous and fossils are abundant in its limestones.

The lower cretaceous was an epoch of shale and sandstone, which was closed by extensive mountain and abundant insrusion of volcanic rocks that continued till the end of the Mesozoic.

The Upper Cretacious, therefore, is in part at least unconformable to the underlying rocks, and forms the main portion of the Ochoco mountains, numbering several thousand feet, consisting of thick beds of drabshale. These are mostly marine, as shown by the sea shell in them, with fossil impressions of leaves very like, but not identical with those of the present day shows that land and fresh water existed at the time.

The Laramie joines the upper group of the Cretacious, and contains our principal western coal fields, and abounds in fossil remains of tropical foliage, and makes an important era in our Blue Mountain regions, which the Ochoco mts., are the western spur, where an island, against which all the previous sediments had been forming, mainly beneath the sea, were elevated into mountain masses, dragging up with them portions of the sea bottom and exposing it as land surface which was completed in the following age and has continued to the present.

Shore conditions are indicated in the Crooked river and Ochoco river regions by the coarse conglomerate rocks. The Tertiary rocks include clay, sand and lignites with abundant plant forming beds and indicates that Tertiary deposition depositions began in an area of low relief where sluggish streams, lakes and swamps prevailed. The main event of the close of the Tertiary may be summarized as follows: consolidation, elevation, folding, intrusion of volcanic rocks, metamorphism, erosion. Much deposition material became interbedded with the sediments. Volcanic rocks, rhyolitic basalt, phonolitic and porphyrcies are present in abundance in many parts. The larger irregularities of the surfaces above 4,000 ft., are due to the presence of the more resistant igneous rocks that have withstood erosion of time.

The hills above the rivers and creeks exhibit preserved rock cut benches to their summits which are flat topped and often correspond in level to the tops of neighboring hills. The present vallies of Crooked river and Ochoco river have been inter benched in an older valley floor, so the present canyons of these streams have been cut in older valley floors whose remnants appear as well developed benches along their sides; on the lower benches gravel is still present. It seems most reasonable to regard the still higher levels of the plateau as having been developed under former drainage conditions and having later been elevated and subjected to great direction, just as the benches of the present streams are cut by minor tributaries into many fragments. The Ochoco Mountains which extend east and southeast from Grizzly mountains to the south fork of the John Day river, is the most promising field for mineral wealth. The upper cretaceous formation predominates which has been given above. Great coal beds underly the Ochoco mountains that have been prospected to some extent eighteen miles north of Prineville, Oregon. The strike of the beds are paralled with the shore line of the old land mass, and their dip conforms with the gently warped surface of the mountains.

There are known to be five distince beds of coal, in a space of three hundred feet, which range in thickness from one foot to five feet, and have been pronounced as high grade of bituminous coal. The extent of these beds are no doubt the same as outcrop in Wheeler county near Mitchell, Oregon, near Suplee Crook County, Oregon.

The great fault which Crook County is traversed with is from Bear Creek Buttes to Round Mountain in the Ochoco range which extends from southwest to northeast; a distance of about thirty miles. The line of the fault is shown, on Crooked river at the Mayfield ranch, and on Eagle Creek and is easily traced by similar arches and sags. Pilot Butte just east of Combs Flat is a volcanic cone, and it lies in the great fault line.

The Ochoco mines are in or near this fault, which are twenty-five miles east of Prineville and have been mined. Both placer gold and a body of base and free ores, have been mined and worked for over thirty years or more, which has never proved to be an eldorado, but has payed well, considering the primitive processes of mining that have been in vogue. There is no doubt if these mines were equipped with modern equipment, and competent mining men in charge, they would prove to be a great asset, not only to Crook County, but to the State.

We have quicksilver mines on Lookout Mt., a few miles south east of the Ochoco mines. Cinabar was discovered a few years ago, and was worked to a certain extent by installing a furnace and mined and made several runs, but as the installation of the plant was not proper, a portion of the runs were lost; also for the lack of capital and competent management in many ways, there has not been developed a quicksilver mine in Crook County.

There is an opportunity for someone to take this over and make good for as to the quantity and quality of the cinnabar ore, on Lookout mountain, there is no doubt.

In many places along the Great Fault, samples have been taken and assays show that it carries gold from a few cents to three or four dollars per ton.

There are two distinct deposits of Gypsum, one is located on Bear creek, thirty miles south of Prineville, and has been mined and used to some extent as land plaster. The other one is on the Ochoco creek on the George Russell place which has never been worked but is accessible. There are other sources of mineral wealth in Crook County also; we have feldspar, and are almost sure to have petroleum.

CLIMATIC CHANGES

The Oregon country has undergone various changes as to its climate. Marked difference in a climate may be observed within a single lifetime. But in the long period required for the complete transfusion of the Oregon climate, a lifetime is of less consequence than the tick of a watch compared to the full sweep of the hour hand in its circuit. This change of climate was so great that vegetable and animal life finally appeared on a barren waste and the Oregon country came to be admirably adapted to the requirements of man. Hence the transition of the Oregon is worthy of the most careful study.

There have been at least three widely diverse climates in the Oregon country. There were an antarctic climate, a tropical climate and a temperate climate. There were probably more.

As to change of climate, geologists without a known exception assure us that the Oregon country passed through a period when glaciers carried debris and vast rocks over its surface plowing the earth and grinding deep and smooth the stone in their course. Great Moraines and transported stones attest the existence of the glacial period over this region when the ice had a majestic current over this country.

During the glacial period growth of vegetation was prevented by prevailing conditions. Animal life, if such existed, continued only under the most adverse circumstances. we are told that mastadon and other huge animals protected with a heavy coat of hair existed in that icy period. But how about the jungly forests that were converted into great coal fields extending from the northernmost limits of Alaska? The answer is that Alaskan climate, as well as the climate of the Oregon country was different then from what it is now.

After a long period of extreme cold the snow and ice slowly dissappeared and grass gradually carpeted the earth. Vines and flowers flourished. Trees grew. The climate became so warm that according to the late Dr. Thomas Condon, at one time Oregon State geologist, "the banks of the Columbia river were frequented by the rhinocerous, the wild horse—dwarfted and giant—the tapir, the camel and many stranger forms that have passed away." Among these stranger forms were dinosauria, imperial elephant, mastadons, hippopotami and other massive tropical animals that roved about like slow moving hills of flesh in the valleys of the Oregon country, where their remains are found imbedded in the earth as unmistakable evidence of their presence since the Columbia river sawed its channel through the Cascade range of mbountains.

The fauna and flora of the Oregon country at that time could not now thrive north of Central America or countries farther south. Also the presence of coal deposits and evidence of oil fields indicate the luxurious vegetation that at one time existed in this region. It is now a physical impossibility for that kind of animal and vegetable life to flourish in Oregon. Hence this condition has called forth various explanations for the climatic changes in the Oregon country.

There is a theory that the air once contained much more carbonic acid gas and moisture than it does now. The presence of carbonic acid gas and moisture in air perhaps made it retain a much larger percentage of heat received from the sun. The carbonic acid gas and moisture in the atmosphere caused the atmosphere to act as a sort of a cloak to prevent the escape of heat from the earth. According to this theory the climate of the Oregon country may have been tropical for a long period.

In support of this theory it is claimed that as limestone and other rocks were formed so much oxygen was taken from the air for this purpose that the atmosphere became thinner and cooler, and as a result the tropical climate was gradually changed to that of a temperate zone.

Others attribute the presence of glaciers in the Oregon country to the high altitude of the region in which they believe the air once much lighter than it is at present. The theory however, does not satisfactorily explain how the climate came to be subtropical, because it is not probable that the general depression of the earth was of sufficient depth to produce the requisite density of the air.

By many it is claimed that the glacial movement of the Oregon country was local and that it followed the period of huge animals and tall palms. This theory, like the others mentioned, indicates that a long time was necessary for the changes that took place. Hence it serves the purpose of this article in proving the great age of the region, and that the Oregon country is a part of the old world—not the new.

Another theory is based upon the hypothesis that when much of the Oregon country was yet covered with water the gulf stream found its way far into the interior, thus raising the temperature; but as the sea and greater lakes dissappeared the temperature gradually lowered.

United States Seal.

The seal of the United States was decided upon June 20, 1782. The obverse is the familiar side bearing eagle, arrows, olive branch, etc. The reverse, which has never been cut as part of the seal, shows an unfinished pyramid, above which is an eye in a blue triangle. The lowest course of the pyramid bears the Roman number MDCCLXXVI. Beneath on a golden scroll is the motto: "Novis Ordo Saeclorum" (A new era in the ages) and above the pyramid is the motto, "Annuit Coeptic" (He prospers our beginning).

Suggestions in Order.

Jud Tunkins says a bird that can sing and won't sing must be made to sing—but how are you going to make it?

Remarkable Apparition.

Edward Fitzgerald, the translator of "Omar" and one of the least superstitious of men, told of an apparition he was quite unable to explain on natural lines. He saw clearly his sister and her children having tea in his dining room, through the window from his garden, although they were not visiting him at the time. He also saw his sister quietly withdraw from the room, as though fearing to disturb the children. At that moment she died in Norfolk.

Picnic Under Beech Tree.

When in full foliage the beech tree is remarkable for its close shade and coolness. The branches and such parts of the tree as cannot be more usefully employed make capital firewood.

Habits of the Birds.

Most birds' families do not keep together, but scatter upon leaving the nest. But the bluejay, bluebird, the kingbird and a few others less generally known live together the greater part of the year, says John Burroughs.

Novel Pistol.

A Frenchman has perfected the invention of a "poison pistol." If one is not permitted to carry firearms, a poison pistol will do the work as efficiently. It is like an ordinary gun in appearance but without bullets or cartridges. The handle of the gun contains a poison gas fluid. If the trigger is pressed a thin stream of the poison fluid shoots out and acts instantly.

Medals Long in Use.

Medals are of ancient origin. The word medal, or medallion, was first applied to productions of the mint of ancient Rome, or struck in provinces under the empire. Medals were made by belligerent nations during the war and awarded to soldiers in recognition of distinguished service.

Hint for Inventors.

If I were an inventor, I should try to invent something the public wants, but is unable to get, rather than something that the public might like after getting used to it, but would have to be educated "up to."—The Nation's Business.

The Villain.

A rural exchange tells of an old woman being "knocked unconscientious by a chauffeur, who then speeded away." We have our own opinion as to which was the unconscientious party.—Boston Transcript.

Should Never Have Left Sarah.

"My dear," said an old lady, "I felt I ought never to have taken the holiday. Scarcely had I set foot in my apartments when I was handed a telegram from Sarah. 'Parrot laid an egg. Wire instructions.'"

Leading Industries.

According to the latest available statistics the leading industries of the United States are as follows: 1. food; 2. textiles; 3. iron and steel; 4. lumber; 5. leather; 6. paper and printing.

A Big New Lemon.

A new lemon called the Ponderosa, is now being cultivated. It grows to the size of grapefruit and, although its flavor is rather mild, may be used in every way in which ordinary lemons are used.