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KLONDIKE.

REPORT, FROM RECONNAISSANCE OF 1898, ON THE ECONOMIC VALUES OF THE KLONDIKE PLACER FIELD.

Dr. Everette gives the Result of his Study of the Topography, Gold Deposition, and Possibilities for Investment in the Klondike Gold Region of North-West British America.

GENERAL GEOLOGY OF THE KLONDIKE REGION.

In the belief, that our *practical knowledge*, of the innumerable methods which nature employs, to form metalliferous veins and placer deposits of gold-bearing detrital sands, gravels and schists is quite *inadequate* to account at all satisfactorily for their deposition in *every case or condition* which we may meet, no new theory, of such deposition, should be accepted, until it has been proven to be of practical application and utility. Students of geology, are well aware that when molten silica, or quartz, is forced by the enormous pressure of sirsmic or volcanic disturbances into rents and fissures of schistosic rocks, the openings so formed are filled with irregular and reticulating veins of silica, to which the name of *quartz lodes* has been given. It may, therefore, be presumed that the quartz of auriferous or gold-bearing rock, *in place*, must be of igneous origin, and *not* the result of the gradual deposition of quartz from an aqueous siliceous solution. But is this true? Is is not possible that aqueous solutions, of hot alkaline silicates, may have interpenetrated the cleavage lines of the schistosic rocks and therein deposited siliceous matter, radiating in every direction? Without going into detail, to satisfactorily account for the absence of enormous masses of clay, which should result in the decomposed felspars, to form the *alkali* of these alkaline silicates; or to account for the absence of hyaline and opaline quartz imbedded in the schists (as should be necessary when quartz is precipitated from an aqueous solution), I will only place before you certain facts, which have come to me through actual practical observation.

Geologically considered, the Klondike section of the Yukon Territory of Canada was, in comparatively recent time, marinely submerged. The great continental glacier or sheet ice, which covered the country, from the mouth of the Pelly River to the present lake system of the Yukon River, did not cover the present topography of the Klondike region. No evidence of *general* rock glaciation can be found in the Klondike country; and rarely is there found any evidence of *local* glaciation. Vast shearing, bending, and twisting of the rocks of the ocean beds, changing the basal rock into a schistosic and serpentine condition, most undoubtedly took place, ere emergence of these ocean floors began to rise above the surface of the ocean waters. The absence of soluble chlorides, borates, and nitrates of the alkalies, in this Klondike region, demonstrates that the emergence was sudden, of siesmic origin, quite flat or planelike in general topography, and was possibly caused by the last eccentricity of the earth's orbit. This flat or planelike condition would have formed low marshy lands, rapidly changing into a lacustrine or lakelike country. Bogs, marshes, and low lands were then covered with a rank growth of semi-tropical vegetation—for the thermal change, caused by the orbital eccentricity, undoubtedly caused a change from frigid to semi-tropical conditions.

The partially fossil flora and fauna found imbedded in the detrital matter underlying the *muck*, or peatbeds, of the Klondike region, show conclusively, that at the time of the formation of this "muck," the temperature of the air must have been similar to what is now found in the everglades of Florida. A long period of quiescence then took place, and lake system flowing into lake system was formed. Thence came sudden sirsmic or earthquake action, and terrace after terrace of ancient lake beaches and shores were formed. With the sudden emergence of the Klonkike Dome and its attendant peaks and ridges, this lake system was shattered and violently broken; so that the great terraces or barriers at the mouths of the Klondike and Indian rivers gave way, and the escaping lake waters drained their contents into the broken lake system, now, the valley of the Yukon river. The entire topography of the country was thus changed from a flat-terraced, lacustrine, or lakelike, marshy country into a region of canyons, gorges and rivers.

At the mouth of Hunker Creek this ancient lake bed is still visible, and extends for several miles down along the left limit of the Klondike River. When this tremendous and sudden change of the lakelike topography of the Klondike region took place, a glaciated condition of the lakes was then forming, and the enormous force of the escaping and agitated lake waters and broken masses of lake ice caused vast quantities of broken schists and serpentine slates, with siliceous rocks and blocks and fragments of ice, to form as detrital matter, gravels, boulders and mud, to deposit wherever the current took them. The specific gravity of the *muck*, being so very much lighter than that of the rocks, caused this muck and marshy mud to remain suspended in the agitated waters, so that it did not precipitate until all the detrital rocks had been deposited. Again, a long period of quiescence took place, and on the shores and bogs of the newly formed creeks and marshy, lake-like canyons, a new formation of vegetation began, and peatbeds and muck deposits, as we now find them, were thus made. *No change has since taken place.* The Klondike region, however, is still slowly rising, and, at the present rate of upward movement, in the course of a few hundred years, there must undoubtedly come a time when, again, a lacustrine or lake-like condition of the country will take place. So much for the genesis of the topography of the Klondike gold placer region.

DEPOSITION OF GOLD FROM SOLUTIONS OF ALKALINE SILICATES.

We will now endeavor to show the method of deposition of the placer gold (or the auric content of these