

from a large lead on the north wall, which at one time was not considered worth taking down, but now yields from five to ten pennyweights—thus showing that our gold-saving machinery has improved.

There has been a rich lead discovered on the Eldorado Company's property, on what once belonged to the Nova Scotia Land and Gold Crushing and Gold Amalgamating Company, which goes to prove (if further proof were necessary) that that Company's business was mismanaged. The Eldorado Company are sinking a shaft on this lead, and also repairing their crusher. This Company, in future, will be under the management of Capt. Seth Williams.

The same lead is also being prospected for on the McIntosh property, and shows in the street between the McIntosh and Eldorado. The Eureka and Orient Companies have large crews of men to work, but they will have no quartz crusher, as the Orient mill is being repaired.

The Eureka Company have no mill yet, but will commence building soon. One or two other promising properties are expected to change hands shortly, which will still further improve the district.

One hundred and forty-four areas have been already applied for in August, besides some prospecting applications, thus showing that the interest in this district is not decreasing.

UNIACKE.—The results from this district, quite warrant the favor in which it is generally held by those who are not biased by eastern interests.

The "Uniacke" Company in making a cross cut at 150 feet level, have opened an exceedingly rich lode, which improves at every foot of descent.

The "Queen" Company are also taking down a new lode, rich in coarse gold, at 75 feet. They have now 130 tons from previously opened veins, waiting to be crushed by their own mill, which is just ready. This lot is expected to give an average of four ounces. The last batch of ore from the same lode, consisting of 13 tons 15 dwt., crushed at the Uniacke Company's mill, gave 47 ozs. 11 dwt. 22 grs. Some large and splendid specimens taken last Friday from the bottom of the shaft, were on view at the office of Mr. John Stairs, Hollis street, the early part of this week.

The explorations on the "St. Lawrence" Co.'s property have met with good results, and we have been shown some pieces of quartz full of large sights obtained near the surface. A detailed report will appear in our next issue.

The "Central" Company expect to derive the benefit of the new lode discovered on the "Uniacke" Company's areas.

The explorations of the large tract owned by the "Montreal" Company is carefully conducted by Mr. Tonquoy, during the temporary absence of Mr. A. Michel. As the work proceeds the indications of future profitable development, become more and more apparent.

An Association has been formed under the title of the "North Uniacke Mining Company" to explore a tract of 114 areas, immediately north of block 3, and about half a mile north of the developed gold band. The existence of paying lodes on that portion of the field has yet to be proven.

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

Prof. T. S. Hunt, of Montreal, Canada, presented views "On the chemico-geological relations of metals," the object being to sustain the theory of the aqueous origin of auriferous veins. This treatise gave rise to some discussion.

Prof. Silliman expressed his impression that metallic veins are not contemporaneous with the rocks, but that they have filled the fissures north, east and west, and which have, in some sense, had a growth like that of indigenous trees. He had perceived, everywhere, a singular dualism on

the adjacent walls of the same fissure—if on the one side is pyrites, there is the same on the other side, exhibiting the deposit from a central place or axis, the spread of the walls being due to the crystallizing action demanding more space, the fissure showing the length of time of the deposit and the amount of matter. He could no longer hold that the fissure was as wide formerly, a line of force, geodesic in character, northeast and southwest, having determined the deposition, widening from fifty to one hundred, and in the Comstock lode to two hundred feet. These, as Dr. Hunt had shown, exhibit no evidence of infiltration except seepage from the vein as slickensides, debris, etc. In the gold-bearing veins most constant in tenor, the metallic sulphides are always found, as of iron, copper, and more rarely lead; with sometimes zinc and arsenic. The condition of gold in the sulphides was a vexed question. Sometimes we see the gold, but not generally, and it will not yield to amalgamation in any profitable degree; hence the process of extraction must be chemical and not mechanical—the method of chlorination after roasting being the most rational.

Mr. Bassnett, of Ottawa, asked if the Stanislaus lode at Carson's Creek did not negate, so far as itself was concerned, the proposition of Prof. Silliman.

Prof. Silliman had examined it, and found it to exhibit no evidence of igneous origin.

Dr. Blaney asked if it was supposed that the brilliant iron and copper pyrites are precipitated from solution.

Prof. Silliman replied in the affirmative and denied that any man could put his finger upon any evidence of igneous origin in metallic veins. He had been a disciple of the igneous school, but his convictions had been changed after much toil in the field.

Dr. Hunt, in support of his proposition, mentioned the effect of the thermal spring upon the pipes conducting it, the pipe being of bronze, in dissolving.

Dr. Blaney asked whether the Doctor believed that the materials held in solution were deposited by double decomposition.

Dr. Hunt replied that there was a difficulty in stating how substances existing in solution were deposited. Generally it was a mere question of temperature.

Professor Blake, of California, commended the manner and matter of the paper, remarking that its observations were confirmed by all that he had seen in California and Nevada. He understood that the deposits were brought up by hot waters or vapors, and deposited by reason of contact with the rocks, the water carrying the metal in solution. He had observed that there was an outflow of hot water, for example, in the Comstock lode, and the miners in Nevada first found the mineral adjacent to a spring. This was so in the great Ophir Mine, which, being followed down seven hundred feet, there was still hot water, charged with various salts.

Prof. Stoddard asked if the veins were richer as they descend, as would follow from the law of saturation, and release from pressure. If this were not so, he asked how it could be accounted for.

Prof. W. P. Blake, remarked that his observations for several years upon the gold-bearing veins of California and other regions fully sustained the view of the aqueous origin of quartz veins, and the deposition of gold and silver from thermal waters ascending along fissures. In California there were several interesting confirmatory examples. Gold had been found in visible grains in semi-opal, clearly the result of aqueous deposition. He would even go farther than Prof. Hunt, and maintain the view that gold was even now rising to the surface in springs, and depositing in appreciable quantities, near or at the surface, either by diminution of pressure or of temperature, or by chemical decomposition by contact with infiltrations from the surface, or from the sides of

the fissures. A fine example of the formation of quartz veins is found in the well known Steamboat Springs of Nevada, where hot water rises along a fissure for half a mile, and is depositing quartz, and possibly gold and silver. Prof. Blake believed that future chemical investigation of thermal waters in such localities would show the presence of gold and silver, although perhaps in very small quantities. At the celebrated Ophir Mine of Nevada, from which such a flood of Silver had been sent forth, there was originally a spring of water at the service, and a flow of water had been found even at a great depth, and that there the water is hot, and holds various salts in solution.

ORIGIN OF PETROLEUM.

Professor HUNT read a paper "On the Upper Silurian and Devonian Rocks of Ontario." He observed that the paleozoic rocks of the Southwest Ontario region are covered by a thick layer of clay which have rendered examinations of them extremely difficult, but more recently borings for petroleum have greatly modified or entirely removed these obstacles. The stratification of the rocks was noticed at length. The Genesee black slate, the Hamilton group, the sandstone formations were specifically noticed. The distribution of the gray Hamilton shales and black shales has been pretty clearly determined by the borings. The entire thickness of the Portage group is 224 feet. The Hamilton group attains a thickness of 1,000 feet in some places. The calcareous formations are from 200 to 400 feet thick. The Lower Devonian or corniferous limestone is from 60 to 275 feet in thickness, increasing towards the west. In the northwest the thickness is greatest. Here a boring of 700 or 800 feet was made before reaching a soft marl; below was a layer of rock-salt forty feet thick. This salt formation measures nearly 1,000 feet in New York and on Lake Huron. Gypsum is also found in the lower soil. This shows a condition of very slight precipitation of moisture and of very great evaporation at that time. The petroleum was thought to originate in the lower Devonian limestones. An oilwell in Inniskillen was sunk to a depth of 776 feet. Other very deep wells were mentioned to confirm the theory of the origin of the oil. Similar wells occur in the corniferous limestones in Kentucky. Oil is also found in the lower Silurian. The borings show geological horizons far below the bottoms of the lakes, and that the southwest portions of lakes Erie and St. Clair have been excavated from the quaternary formations.

In the discussion that followed Professor Newberry remarked that the present bed of Lake Erie did not well represent the ancient basin either in extent or depth. The lake was once only a river, and rivers now running into it from the south have their beds one hundred feet above their ancient ones. The rock formations along the river valleys show the undisturbed geological order. He had a different theory from that of Professor Hunt concerning the genesis of petroleum. If it originated in rocks then we can extract it from them. The Hamilton black shales are carbonaceous, and afford some oil. In the Chemung and other groups great oil reservoirs are found. The origin of it must be looked for above where it is found. He thought the black shales, and not the corniferous limestones furnished the petroleum. The carbonaceous matter is derived both from animal and vegetable organism. The lower Silurian limestone is highly carbonaceous, and affords oil in some regions. He showed that a high temperature was not essential to a production of oil from hydro-carbonaceous depositions; a lower temperature only retarded the process.

One member remarked that there was a difference between the Canada and Pennsylvania oils.

Professor Hunt thought these differences of minor importance. He proceeded to review the remarks of Professor Newberry, rather confirming his former position. He would recognize different sources of oil in different regions. Even gravel