

effects it rapidly, causing it to decompose, and breaks up the obdurate mass into particles. Thus granite, one of the most dense and enduring rocks entering into the construction of our planet, of all others perhaps the least generally affected by chemical re-agents, yields to the gentle influence of a chemical power so apparently feeble as that of carbonated water.

We shall immediately have to notice how great are the effects produced in nature by this means. The effect on granite is as follows: Granite being largely composed of felspar contains a considerable quantity of alkali in its composition for which the carbonated water has an affinity, that is it has a tendency to unite with and to dissolve the alkali. The consequence is that the alkali being dissolved the mass crumbles in pieces and in the course of time becomes quite a different substance. Such is the influence of this in decomposing granite that it is found in quarries in Dartmoor to be decomposed to a depth of 60 ft. or more.

It is a singular fact that we are indebted for the most of our porcelain to the results of the decomposition just described. Some of the finest white clay is the result of this decomposition of granite rock and it is largely used in the potteries; in fact all clays are products of granite rocks due to the decomposition of their felspar, and the fact that we get clays of different colors is because of other small admixtures.

Limestone is also easily dissolved by water charged with CO_2 . I can easily show you this by the following experiment: I have here a siphon of soda water prepared for me by Thorpe & Co., and composed of nothing but common water charged with carbonic acid gas. By adding a little of this to some lime water we get a marked precipitate which is calcium carbonate or simply chalk. On putting in more of the soda water, the carbonic acid begins to dissolve the chalk until, finally, when sufficient has been added, the precipitate is wholly dissolved, and the liquid is once more as clear as pure water. Lime is formed by heating limestone or CaCO_3 , which then loses a molecule of CO_2 , and a molecule of lime, CaO , is left. Now on the addition of CO_2 we simply added the same atoms which we took away, and formed again the same substance.

As this experiment shows you the solvent power of CO_2 on the small scale, you may perhaps be able to form some idea of the magnitude of this action in nature. The baths of San Phillippo in Tuscany are mentioned by Sir Charles Lyell as consisting of water containing so much lime in solution that in four months it yields a stratum a foot thick. In a pond into which they are conducted they have deposited a solid mass 30 feet thick in a period of twenty years. The mineral contents of the water are turned to profitable account by the establishment of a manufactory for medallions in *basso-relievo*. Moulds exposed to the falling waters are coated over in a short time with a beautifully white crust as hard as marble.

I explained to you when speaking of oxygen the oxidising effect it had on metals, generally forming rust. One instance will show a pronounced effect which it has in nature. This took place at a point on the west coast of Ireland. The cliffs on this coast contain a large quantity of alum and iron pyrites, and being incessantly exposed to the violent action of the Atlantic billows, large caverns have been formed by the unequal washing away of different strata. Some years since part of these cliffs assumed an appearance of very extraordinary character. The waves by continued dashing had worn and undermined the cliff, which giving away fell with tremendous violence into the sea. The consequence was that several great strata of pyrites were exposed to the chemical influence of the air and sea water. Rapid

oxidation took place eliminating such an intense heat as very shortly to set the whole cliff on fire. For days the great rocks continued to burn with much fierceness, torrents of steam and smoke rising up as the heavy billows of the Atlantic leaped upon the glowing masses, and at a distance presented all the appearance of some violent volcanic disturbance. After the fresh substance thus exposed had become oxidised, the steaming cliff gradually cooled down, and now the slow and silent work of mechanical and chemical change is being carried on without any external manifestation of its existence.

Trout Lake District.

[CONTRIBUTED]

TROUT LAKE CITY is situated on Trout Lake, a beautiful sheet of water twenty miles long by two and a half miles wide, fed on the upper end by the Lardeau River and emptying into the Kootenay Lakes by the Lardo River. On either side of the lake the mountains, covered with magnificent timber, slope gradually to the water's edge, while here and there mighty glaciers peep out to beautify and give a grandeur to the scene—in fact, in the late summer it is the ideal home of the artist. The lake abounds with silver salmon, lake trout, and char, from five to fifteen pounds in weight, and the hills are stocked with game, *viz*: caribou, bear, deer, wolf, wolverine, grouse, and birds of endless varieties. The prospector finds no trouble in supplying himself with fresh meat.

The town is situated on a flat delta, which is formed at the upper end of the lake and surrounded by magnificent timber. The town at present is small and affords one general store, owned by C. B. Hume & Co.; mining record office; the Queen's Hotel, A. Brahamson Bros., proprietors; and the Trout Lake Hotel, Bourke Bros., proprietors. The Lardeau River for some miles from the town is lined with cabins where the prospectors and others reside. The winter population does not at present number over 100, but in summer this number is greatly increased.

The Lardeau Creek is well known as a placer producer and has been extensively worked for gold, many good finds having been made at different points. It extends from the lake to the head of the south fork fifteen miles, and to the north fork nine miles, showing alluvial deposits its entire course. Landmarks, test pits, etc., go to show that this creek was prospected 25 or 30 years ago. This creek will at no distant date be one of the leading hydraulic propositions in West Kootenay. All work up to this time has been done by private enterprise with small capital, and results show that if taken in hand by capital splendid returns would be given.

The Silver Cup Mine on the south fork of Lardeau Creek, about eight miles from Trout Lake City, has been developed by a force of from ten to twenty-five men for some months past with very encouraging results. A few carloads of ore have been recently forwarded to the smelter, and more will follow. The property is owned by Messrs. Downs, Holten, and others, and is at present under bond to Dan. McGillivray. A shaft has been sunk to a depth of 90 feet and levels extended 150 feet in a good vein of silver-lead ore, averaging from twelve to thirty-six inches and assaying from 300 to 500 ozs. silver, fifteen per cent. copper, and \$18.00 in gold per