

unequal axes, one of which is inclined to the plane of the other two, at an oblique angle.

5. Triclinic system, each of the three axes are inclined to the plane of the other at an oblique angle.

6. Hexagonal system, has three axes on one plane at equal angles from each other, and of equal length, intersected by a vertical axis of unequal length. Quartz crystals belong to this system.

GOLD, (symbol Au., atomic weight 196) has been universally employed as a medium of exchange from the earliest times. The origin of gold can be traced generally to quartz veins in the primary or volcanic rocks as granite, gneiss, porphyry, clayslate or greenstone. Quartz is silicic acid, or oxide of silicium. Gold is recognized as the king of metals the world over. Pure gold is valued at \$20.67 per ounce by the mints throughout the world. A pennyweight is usually valued at \$1.03; its actual value being \$1.0353. The gold coin of the U. S. is 9.10 fine, or not quite 22 carats fine. English gold coin is 11-12ths fine, 11 parts gold and 1 alloy. Coins wilfully mutilated is a punishable offence. The specific gravity of gold is 19.3 and is a brilliant lustrous heavy metal, of a magnificent yellow color. A number of other things are mistaken for gold, but gold is seldom mistaken for anything else. Doubtless gold originally existed in quartz veins, usually associated with metallic sulphides, particularly the sulphate of iron, pyrites, called fool's gold.

If the pyrites be dissolved in nitric acid, the gold is left in minute threads and crystals.

A coarse grained sugary looking quartz is a good sign. Quartz of a glassy vitreous lustre with no grain to its texture, seldom carries gold. Quartz stained with iron rust and full of cells with iron dust in them, is considered a good prospect. Mica in small flakes; pyrites; (sulphur of iron) and chalcopryrite, (sulphide of iron and copper) are mistaken for gold more than any other substance.

Mica is much lighter and shows as a rule laminations under a strong glass. Pyrites are hard, auguract brittle, copper pyrites are soft and brittle and cuts into a dark powder.

TELLURIDE ORES—Silvanite is a telluride of gold and silver and takes its name from Transylvania, where it is supposed to have been originally found. Is soft, (hardness 1.5 to 2) heavy, (specific gravity about 8); luster, metallic; color, steel gray to silver white, sometimes yellow. It is called graphic tellurium, because of a resemblance in the arrangement of the crystals to written characters. It gives a metallic bottom of gold and silver under the blow pipe, and a tellurium coating on charcoal.

Nagyarite is a telluride of lead, containing gold and usually silver and copper with sulphur.

Petzite is a telluride of silver and gold. It shows hardness, 2.5; gravity 8.7 to 9; color, steel gray to iron black; brittle.

(To be continued.)

THE ROCKS.

HOW THEY WERE MADE AND THEIR BEARING ON MINING AND MINERALOGY.

In the begining, amongst other things, was the world; but there were other things first. There existed primarily space and the universe.

Through some agency, which is not our province to give a name to here, a portion of this universe was given a motion, a circular one, somewhat in the form of a whirlwind, with the consequent bringing together

of molecules, these by contact forming atoms, the latter again forming particles and eventually compact bodies, which, through the pressure of their particles toward a centre and through motion, became heated, forming molten masses heavily surcharged with chemical material, one of these masses was our earth, in the beginning. At some period the rotary motion became lessened and as a consequence those particles lying farthest from the centre became cooled, forming a crust and constituting the primary stratum of our rocks (the granites). Consequent on this cooling off, the vapours surrounding the globe became condensed and fell upon the still hot surface of the crust, forming the waters which must at some time have completely enveloped the earth in a thin sheet. The surface of the crust became chipped and eroded, forming under the water the second series of rocks (gneis).

Some time about this stage of the creation the intense evaporation caused a freezing of the waters and constituted the glacial period, and the crust became fissured, as any suddenly cooled globe of brittle material with an internal pressure naturally would, and the molten mass and the expansive gases of the interior forced their way through in places, cooling off in turn as they approached the surface, crushing, upheaving and folding the older formations, causing them to rise above the water in certain parts and casting the latter back into confined areas. This formed the first eruptive epoch and at the same time caused the existence of land and ocean. The area of the former would appear at first to have been but small, probably consisting of only a small narrow strip of the western portions of the American continents, and a very small part of the north eastern portion of North America; a portion of eastern and a small portion of the southern extremity of Africa and detached portions of Europe.

Naturally the folded and distorted portions of crust became greatly weakened and it is along these lines that imprisoned gases, always expanding, have found a vent and cooling off in bursting through formed the more recent eruptions.

There are many theories with regard to the first thawing out of the ices of the glacial period, portions of which still remain lifted up on the tops of the mountains formed by after eruptions proving the erstwhile existence of the epoch.

Space would not allow in such a treatise as this, or is it at all essential to the subject, to go into the various theories, suffice it to say that it did occur and that the waters returned to the liquid state and washed upon the shores of the then existing and later formed continents and islands forming, by abrasion, the sands and depositing the limes contained in themselves which formed the later, more recent crystalline and sedimentary rocks.

(To be Continued.)

GRAND FORKS.

R. A. Brown, after a brief visit here, left to-day for the Similkameen to direct operations on the Sunset, the famous Copper Mountain proposition. He is negotiating for the purchase of a five-drill compressor for the Volcanic, north fork of Kettle River. Shipments of coke from the Crow's Nest coal fields have arrived here for the Grand Forks smelter, which will be "blown in" within six weeks. The first roast heap consisting of 1,000 tons of City of Paris ore, is now being built. The dam across the north fork is nearing completion. Eight hundred thousand feet of lumber are being utilized in its construction. Mechanics are