

MARITIME MINING RECORD

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COMPILED QUESTIONS AND ANSWERS.

We propose giving a series of articles in the form of questions and answers, which, though of an elementary character, may be of service to those engaged in mining, and who desire to have some theoretical knowledge of their work. We will make free use of whatever authorities we think the best for our purpose. We will begin with "Geology," which is of considerable value, especially in Nova Scotia, where the ground is frequently broken.

Question. Has the earth a 'crust'? The 'crust' of the earth being a term frequently heard.

Answer. Until a comparatively recent period it was thought by many that the earth consisted of an outer hard crust, perhaps a dozen miles in thickness, and that the interior consisted of molten matter or metal at a very high temperature. People may have been led to this belief from the fact that the deeper the earth is penetrated the higher becomes the temperature, and some argue that if the interior was not in a molten state, how are volcanoes to be accounted for, which spew out great masses of boiling slag. Notwithstanding the heat, and the eruptions, the best opinion is that the earth is solid throughout.

Ques. What is the earth composed of?

Ans. Rock, which once was mud. Rock consists of mineral matter in various combination. The chemist divides the substances found in the earth into bodies called elements, too numerous to mention, and all the names of the varying minerals have not yet been properly classified. Some known minerals have not yet been appropriately named. Of the various and numerous elements sixteen only play any important part. The most important and most frequently met with of the elements are oxygen, silicon, magnesium, calcium, sodium, potassium, iron and carbon. Oxygen forms about 50% of all the known rocks. The elements named above with aluminum forms 97% of the total of the elements.

Ques. Define Mineral and Rock.

Ans. Minerals are definite chemical compounds, the elements of which they are composed being present in proportions which are always constant in the same mineral. A mineral may consist of a single element, for example the diamond, gold, or native silver: As a rule minerals consist of two or more elements. According to Gerkie, "A rock may be defined as a mass of matter composed of one or more simple minerals, have usually a variable chemical composition with no necessarily symmetrical external form, and ranging in cohesion from mere loose debris to the most compact stone. Granite, sandstone, peat, mud, etc., are all recognized as rocks."

Ques. Into how many classes are rocks divided?

Ans. Three, aqueous, igneous, and metamor-

phus, or into two divisions, stratified and unstratified.

Ques. What are the characteristics of the classes?

Ans. Aqueous rocks are those which have been deposited, where we now find them, by the agency of water. They are generally in layers or beds, lying parallel to each other, and are often called sedimentary deposits. Igneous rocks are those which have been subjected to the action of heat, and have retained no traces of stratification or bedding. Metaphor rocks are rocks that have undergone change, a crystalline rearrangement of the materials originally constituting the mass. Therefore they are sometimes called altered rock. Marble is an example of what is meant.

Ques. What rocks are most frequently met with in coal mining, and what are some of their characteristics?

Ans. Clay, shale, sandstone, limestone, fireclay and ironstone. There are various qualities and colors of clay. It is a substance which when moist is plastic, when dry, hard and friable; when burned, used for building and other purposes. Shale is an indosedated laminated clay, which as a rule can be split into a number of thin parallel layers or laminae. Shales, which contain a sufficient amount of bituminous matter to be employed for the extraction of paraffin, are called oil shales. Such shales at times pass gradually into cannel coals. Very fine oil shales are found in Scotland. The stellar coal may be called a rich oil shale. Shales are abundant in New Brunswick and also in Nova Scotia, though their values as oil producers has not yet been well tested. Sandstone is compressed sand, cemented together probably by oxide of iron. The variety of the cementing material is responsible for the color of the stone, red, brown, white, or grey. Limestone is composed of the calcareous remains of certain organisms. It is found in layers of various thicknesses. From limestone, when burned and mixed with sand and water, is procured mortar. Fireclay is a white, grey or blackest grey clay, found abundantly underneath coal seams, and is composed principally of silicate of alumina with small per centages of iron, magnesia, lime, potash, etc. It is principally used in making fire brick, which will not readily fuse. It is held that fireclay represents the original soil upon which the plants and flora flourished, that have in process of time been converted into coal. Very frequently in fireclay are found the roots of sigillaria, one of the plants which grew luxuriantly in past ages, and which have subsequently been converted into coal. Limestone as found in the coal measures, is composed of iron, clay and carbonate matter. When there is a heavy per centage of coaly matter it is called Blackband. Ironstone is found in pockets, leads or seams, from a few inches to many feet thick. Coal is the mineral which has resulted, after the lapse of countless years, from the accumulation of vegetable matter, caused by the falling of leaves, and the fading of plants and spores from luxurious growths which existed at an early age, and