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Question and Answer.

EASY LESSONS FOR BEGINNERS.

(Science and Art of Mining.)

Q.—What are segregated veins?

A.—Veins which occur conformable with the bedding or foliation of the rocks, are called segregated veins.

Q.—How do these veins differ from true veins?

A.—True veins traverse all formations independently of stratification and foliation.

Q.—What is the most important mineral found in this class of vein?

A.—Gold; with which is associated pyrites.

Q.—What is important to notice in regard to the mineral deposits in true veins?

A.—The evidence frequently exhibited of repeated openings of the fissure, and of fresh depositions of mineral.

Q.—What are lenticular segregations?

A.—Segregated veins which occur in lenticular, or double convex shapes, are called lenticular segregations. Deposits of auriferous quartz, cupriferous and iron pyrites, and some other minerals, occasionally assume the form of a series of lenticular masses, which, lying between the foliations of the strata, follow one another, both in length and depth, in such a way as to constitute interrupted veins.

Q.—Give in brief particulars in regard to the occurrence of segregations of ore in the joints of rocks.

A.—Segregations of ore sometimes take place at the inter-sections of the main joints in rocks.

Q.—What are contact deposits?

A.—Contact deposits are metalliferous veins, often found between the planes of contact of dissimilar rocks

Q.—What is peculiar in regard to the rocks enclosing these contact deposits?

A.—In deposits of this kind the vein is usually very productive between two formations of different geological ages, and also different in their mineral contents.

Q.—What are stratified rocks, and by what characters may they be known?

A.—Stratified rocks are those which occur in layers or beds over extensive areas their orgin being attributed to water agencies. They may be known by the following characters:—(1) By their being built up in regular beds or layers; (2) by the water-worn particles, or finely powdered matter, of which they consist; (3) by their abundant fossiliferous character.

Q.—What are igneous rocks, and what is known as to their origin?

A.—Igneous rocks are those which occur as intrusive masses; the evidence contained in these rocks being of such a character as to prove the agency of heat in their origin.

Q.—By what three characters may these igneous rocks be known?

A.—First, by their being destitute of stratification; second, by their mode of occurrence; third, by their being usually of a sub-crystalline structure.

Q.—What is a unit of work?

A.—A unit of work is done when one pound of force is exerted through the space of one foot.

Q.—How many units of work are performed in raising a weight of 927 pounds through the space of 290 feet?

A,—As the weight in pounds multiplied by the distance in feet equals units of work, then in our example $926 \times 290 = 268,830$ units of work are performed.

Q.—How many units of work are done in lifting a weight of 65 tons through the space of 20 yards?

A.—Tons must be converted into pounds, and yards into feet. There are 2,240 pounds in a ton, then $65 \times 2,240 = 145,600$ pounds in 65 tons; also there are three feet in one yard, then $20 \times 3 = 60$ feet in 20 yards. Now $145,600 \times 60 = 8,736,000$ = units of work.

Q.—What are the units of work in a theoretical horse-power?

A.—A theoretical horse power is equal to 33,000 units of work per minute.

Q.—What must be the horse-power of an engine to perform 396,000 units of work per minute?

A.—$396,000 \div 33,000 = 12$ = theoretical horse-power.

Q.—Water has to be pumped from a depth of 200 fathoms at the rate of 165 gallons per minute; what horse-power of an engine will be required?

A.—$200 \times 6 = 1,200$ depth in feet. A gallon of water weighs 10 pounds, therefore $165 \times 10 = 1,650$. Then $1,200 \times 1,650 = 1,980,000 \div 33000 = 60$ theoretical horse-power.

Q.—What is the modulus of an engine?

A.—The modulus of an engine is the amount of useful work done.

Q.—What is the co-efficient of friction of an engine?

A.—The co-efficient of friction is the amount of work lost by friction on the moving parts of the engine.

Q.—The modulus of a winding engine being .4, what is lost by friction?

A.—$1.0 - .5 = .6$ or 3-5ths.

Q.—The modulus of a hauling engine being .7 what is lost by friction?

A.—$1.0 - .7 = .3$ or 3-10ths.

Q.—The modulus of a pumping engine being .6 what is lost by friction?

A.—$1.0 - .6 = .4$ or 2-5ths.

Q.—The theoretical horse-power of a winding engine is calculated to be 650; what will be the useful work done by this engine?

A.—$650 \times .4 = 260$ horse power.

Q.—The theoretical horse-power of a pumping engine is 720; what will be the useful effect.

A.—$720 \times 6 = 432$ horse-power.

Q.—Why should the miner be acquainted with the