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SOCIETY.

## General Williams' Prizes.

EXAMINATION PAPERS—JUNE 1871.

### MINERALOGY IN ITS APPLICATION TO MINING.

Examiners { HENRY YOULE HIND, Esq., M. A.  
JOHN RUTHERFORD, Esq.  
R. S. FRECHEVILLE, Esq.

C. Sz.

#### I.—CHEMISTRY AND PHYSICS.

- 1.—How would you determine the specific gravity of a body?
- 2.—I take a glass tube, bent in the shape of a horse shoe, and nearly fill it with a saturated solution of Sulphate of Potassium, colored blue with tincture of violets, in one leg I place the positive and in the other the negative electrode of a voltaic battery. What happens and why?
- 3.—The handle of a metallic corkscrew is connected with the positive pole of a battery, and the point with the negative. A bar of soft iron inside the screw becomes magnetized. How are its poles situated? How can its polarity be reversed?
- 4.—The Atomic weight of Nickel is 58.8 and of Silver 108. Equal weights of each metal being taken, which will give out the most heat in cooling from 100° C. to 0° C.?
- 5.—How many kinds of chemical action are there?
- 6.—How would you prepare chlorine gas. Explain the reaction that takes place by an equation.
- 7.—What takes place when Sulphide and Oxide of Lead are heated together, and how many pounds of Sulphide of Lead will 100 lbs. of Oxide of Lead decompose? (the atomic weight of Lead being 207—Oxygen 16—Sulphur 32.)
- 8.—I pass Sulphuretted Hydrogen through an acid aqueous solution of the following compounds: Nitrate of Copper, Arsenious Acid, Nitrate of Mercury, and Sulphate of Tin. I then take the precipitate and boil it with yellow Sulphide of Ammonium. What takes place?