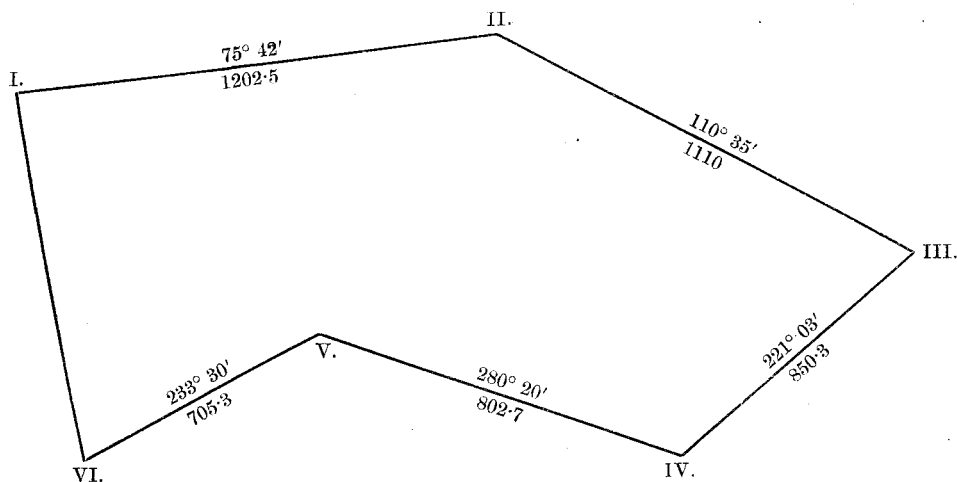


SUBJECT J.—*The Effect that Faults, Slides, and Mullock-bars have on Lodes, and how to ascertain the direction of Slides and Heavals.*

1. Are breaks, slides, and faults, from your own experience, frequent in New Zealand mineral lodes? and give examples fully described.
2. When a "throw" cuts off a lode having a N. and S. course, how would you proceed to prove and overcome it in the working of the mine?
3. What is a "heave," and how does it affect a "lode fissure"?
4. What is the difference between a "slide" and a "fault," and when they are encountered in underground workings by what signs are they to be distinguished from each other, and from "throws" and "heaves"?

SUBJECT K.—*A knowledge of Underground Surveying, and of making Plans of the Underground Workings, showing the Dip or Inclination and Strike of the Reefs or Lodes.*

1. State what instruments and implements are used in ordinary surveying.
2. What is a vernier? Describe how it is constructed.
3. Find the bearing and distance of the line VI-I; co-ordinate and tabulate the traverse; compute the area. Distances given in links.



4. Describe the adjustments of a plain theodolite.
5. Explain the respective merits of a plain and a transit theodolite.
6. Describe the adjustments of a "Dumpy level."

SUBJECT L.—*A knowledge of the different Rocks where Gold, Silver, Tin, Copper, Zinc, Lead, and Antimony are found, and the Formation of Lodes and Leads.*

1. What metallic ores have been found in New Zealand?
2. Give their chemical composition.
3. If they occur in "lodes" or "veins," what rocks do they intersect?
4. Give an example of the considerations which would guide you in reporting on a proposed mining venture.

QUESTIONS USED IN EXAMINATION OF BATTERY SUPERINTENDENTS FOR CERTIFICATES.

SUBJECT A.—*The Different Modes of Reducing and Pulverising Ores.*

1. State where, and by whom, and in what capacity you were employed in crushing-batteries. Give the dates that you were employed at a cyanide plant where auriferous and argentiferous ores were subjected to cyanide treatment.
2. Describe the mode of pulverising ore by stamps, Blake-Marsden crushers, Huntingdon mills, and Krupp mills. Give the dimensions, speed, and capacity of each, and the horse-power required to work them.
3. Describe how you would construct the foundation for a stamp mill. How would you fix the mortar-box to the foundation? Give the dimensions of the framing for stamps having a weight of 1,000 lb.
4. If you were using a Pelton water-wheel for driving twenty heads of stamps, having a weight of 1,100 lb. each, with a drop of 7 in., making 100 blows per minute, show by calculation the diameter of the nozzle you would use to give the necessary horse-power, with the head of water on the nozzle giving a pressure of 60 lb. per square inch.
5. Describe how you would fix the dies in the mortar-box, and what height you would place the screens about the dies for dry and also wet crushing, and give the reason for same.
6. Give the maximum number of drops per minute that stamps having a drop of 8 in. can be safely worked at without falling on the cams, and show by calculation how you arrive at the result.