

MARITIME MINING RECORD

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MANAGERS PAPERS.

—GEOLOGY.—

Time—One hour.

- 1.—What is the difference between arenaceous shale and fire clay?
- 2.—How should you proceed to prove a fault? Describe a fault that you know.
- 3.—To what geological age does the coal-bearing system belong?
- 4.—Explain the terms bed, vein, strike, dip, slate, shale, stratum, igneous, metamorphic, tertiary and sedimentary.
- 5.—How is geology useful in coal mining?
- 6.—What is a coal seam? Compare its mode of occurrence with gold, silver, copper, lead and iron.

—SURVEYING.—

Time—Two and a half hours.

- 1.—Would you use a compass in making a survey where accuracy is required? Give your reasons.
- 2.—State your ideas as to having figures showing datum levels on your working plans.
- 3.—Describe the various modes of surveying mines and of connecting the surface and underground workings, with respect to plans.
- 4.—Plot the following to scale 100 feet to one inch, and close the survey by latitudes and departures. Calculate the closing course and distance.

	Sine	Cos.
A—B N. 87°00' E. 520.0 ft.	.93863	.05324
B—C N. 61°30' E. 200.0 ft.	.78261	.62251
C—D N. 69°15' W. 140.0 ft.	.93514	.35429
E—F N. 9°30' E. 270.0 ft.	.16505	.98629
F—G N. 45°00' W. 410.0 ft.	.70711	.70711
G—H Sine.		

- 5.—What precaution would you take in making a survey to connect two shafts, tunnel to be in same vertical place as shafts?

- 6.—Describe how you would establish a true meridian.

—VENTILATION.—

Time—Three Hours.

- 1.—An airway 600 yards, size 6 x 6 ft., passes 3,000 cubic ft. per minute, what quantity will pass

through another airway, 700 yards long, size 5 x 5 ft., ventilating pressure remaining the same?

- 2.—What should be the theoretical diameter of port of entry of a fan, to pass 200,000 cubic ft. of air per minute?

3.—With 2 H. P. we have 10,000 cubic feet air per minute in an airway 10 x 10 ft. and 3,000 feet long. How many (horse power) will be required to circulate the same amount of air in an airway 5 x 5 ft. and having the same length?

4.—If 40,000 cubic feet of air is delivered at the foot of a downcast shaft, and there divided into two airways of equal section, but of such unequal length that the resistances are to each other as 4:1, what is the quantity passing in each airway?

5.—How and why does a fan or furnace cause a current of air to flow through the workings of a mine?

6.—How would you proceed to increase by half, the air current without altering the size of the airway? How much will the water gauge be increased to produce the above current?

7.—In the year 1888, the equivalent orifice of our mine was equal to 350 square feet for a quantity of 125,000 cubic ft. of air per minute. Now, in 1908, the equivalent orifice for the same quantity, in the same mine, is equal to 216 sq. ft. only, how do you account for this difference, and while you are busy, please give the ventilating pressure for 1888 and 1908?

8.—How would you examine a safety lamp, to see that it is in perfect order? Describe all the parts which are likely to be out of order in a lamp you are acquainted with.

9.—If it require a pressure of half an inch of water gauge to blow a certain quantity of air through an airway 1,500 feet long, and having a height of 6 feet and a breadth of 9 feet what should be the area of an opening made by a regulator-shutter, to pass $\frac{1}{4}$ of the quantity that moves through the unobstructed airway?

—MODES OF WORK.—

- 1.—State fully your experience in mines and mining giving in detail in what occupations such experience has been gained; also in what capacities you have been employed in different countries or districts. (Note—It is important that candidates answer the above question as fully as possible).

2.—Draw up a list of questions with respect to safety and condition of mine, which, in your opinion, Underground Manager, Overmen and Examiners should report to you daily, as Manager.

3.—In a mine where two seams of coal are being worked, seams are 200 feet apart vertically, pitching thirty (30) degrees from horizontal. Show by sketch