

SUBJECT No. 9.—*Tapping Water in Mines, and Mode of constructing Dams.*

1. What precautions are necessary in approaching old workings known to contain dangerous accumulations of water? Describe fully, giving sketches.
2. Sketch and describe a dam capable of withstanding heavy pressure, and give considerations guiding you in selecting site of same.

SUBJECT No. 10.—*Blasting, and the Use of Explosives.*

1. Under what conditions would you adopt blasting in a coal-seam? What explosives would you use in fiery and non-fiery mines, and what precautions would you adopt to insure safety generally?
2. In driving a tunnel from existing workings to a seam of coal expected to give off a large body of explosive gas,—(a) what measures would you take to insure safety, (b) what explosives would you use, (c) how would you fire the shots, and (d) assuming a blower of gas becomes ignited to an extent beyond what can be extinguished with wet bags, how would you extinguish the flame?
3. Is coal-dust an element of danger in a mine? If so, state under what conditions it is dangerous, and the various methods adopted for reducing the danger as far as practicable. Give advantages and disadvantages of same.

SUBJECT No. 11.—*Effect of Faults on Coal-seams.*

1. What is meant by the following:—

- (a.) Downthrow fault;
- (b.) Upthrow fault;
- (c.) Overlap fault.

Show effect by sketches.

2. What is meant by the term “dyke” in coal-mining, and what is the effect of such on coal-seams?
3. Having driven against a downthrow fault, what steps would you take to ascertain amount of displacement, and how would you proceed to recover the seam and open out again?

SUBJECT No. 12.—*Knowledge of Arithmetic.*

1. How much money is required to pay the following day-work wages to five men, and what is each man's share?—

First man, 4 days at 4s. 6d. a day;
 Second man, $5\frac{3}{4}$ days at 5s. a day;
 Third man, 6 days at 4s. 3d. a day;
 Fourth man, $2\frac{1}{4}$ days at 4s. 2d. a day;
 Fifth man, $3\frac{1}{2}$ days at 3s. 11d. a day.

2. A collier receives £2 4s. for getting and filling 24 tons of coal, and he pays 5d. a ton for filling: how much does he receive for getting?
3. The wages of a company of miners at standard rate amounts to £15 10s.: what will the amount be if an advance of 27 per cent. on standard is made?

SUBJECT No. 13.—*A Knowledge of the Provisions of “The Coal-mines Act, 1891.”*

1. Describe the provisions of the Act with regard to—
 - (1.) Ventilation;
 - (2.) Reporting accidents;
 - (3.) Shaft signals;
 - (4.) Explosives;
 - (5.) Duties of firemen and underground manager.
2. What are the principal points to be observed in managing a fiery mine in order to comply with the provisions of the Act?
3. Give provisions of the Act regarding fencing of abandoned places, providing second outlet and refuge-holes.