

length of one of the sides; and of a rectangle the area divided by the sum of top, bottom, and sides, in each case the flowing water in contact with and rubbing against the whole of the perimeter. In an open race or watercourse the hydraulic mean depth is the area divided by that portion of the border of the sectional area with which the water is in contact and rubbing against. The hydraulic mean depth in all cases is the depth of water that would cover the wetted border if it were stretched out in a horizontal position.

Now, in the above formula the "pneumatic mean depth" is the depth of air that would cover the perimeter of a section of the airway if such perimeter were stretched out in a horizontal position, and as in airways the flowing air is in contact with and rubbing against top, bottom, and sides, the area of a section of the airway divided by the whole of the perimeter is the pneumatic mean depth.

In Gordon's "Miners' Guide," pages 136, 137, 138, and 139, an illustration is given of 60,000 cubic feet of air passing through four splits of the following sizes and lengths:—

No. 1, 6 ft. by 6 ft., 1,000 ft. long)	Evidently with a pressure of 3·88 lb. per square foot. See pages 138 and 139.
No. 2, 6 ft. by 5 ft., 800 ft. "	
No. 3, 6 ft. by 4 ft., 700 ft. "	
No. 4, 5 ft. by 4 ft., 600 ft. "	

Now, if the proposed formula $113 A \sqrt{RS}$ is applied, practically the same result is obtained as in the elaborate calculations in the "Miners' Guide."

Formula Nos. 1 and 2.

Split No. 1.—6 ft. by 6 ft., 1,000 ft. long; pressure, 3·88 lb. per square foot.

$$\text{Area} = 6 \text{ ft.} \times 6 \text{ ft.} = 36 = A.$$

$$\text{Area divided by perimeter} = \frac{36}{24} = 1\cdot5 = \text{pneumatic mean depth} = R.$$

$$\text{Pressure per square foot divided by length} = \frac{3\cdot88}{1000} = 0\cdot00388 = S.$$

$$\sqrt{RS} = \sqrt{1\cdot5} = 0\cdot00388 = 0\cdot0763.$$

$$0\cdot0763$$

$$113$$

$$2289$$

$$763$$

$$763$$

$$8\cdot6219 = \text{velocity, in feet per second.}$$

$$36 = \text{area.}$$

$$517314$$

$$258657$$

$$310\cdot3884 = \text{cubic feet per second.}$$

$$60 = \text{seconds in a minute.}$$

$$18,623\cdot3040 = \text{cubic feet per minute.}$$

"Miners' Guide" gives 18,644 cubic feet per minute.

Formula Nos. 1 and 2.

Split No. 2.—6 ft. by 5 ft., 800 ft. long; pressure, 3·88 lb. per square foot.

$$\text{Area} = 6 \text{ ft.} \times 5 \text{ ft.} = 30 = A.$$

$$\frac{\text{Area}}{\text{Perimeter}} = \frac{30}{22} = 1\cdot36 = R.$$

$$\frac{\text{Pressure}}{\text{Length}} = \frac{3\cdot88}{800} = 0\cdot00485 = S.$$

$$\sqrt{RS} = \sqrt{1\cdot36 \times 0\cdot00485} = 0\cdot0812.$$

$$0\cdot0812$$

$$113$$

$$2436$$

$$812$$

$$812$$

$$9\cdot1756 = \text{velocity, in feet per second.}$$

$$30 = \text{area.}$$

$$275\cdot2680 = \text{cubic feet per second.}$$

$$60 = \text{seconds in a minute.}$$

$$16,516\cdot0800 = \text{cubic feet per minute.}$$

"Miners' Guide" gives 16,562 cubic feet per minute.