$\frac{\text{Area}}{\text{Perimeter}} = \frac{25}{20}$ Log. 25 = 1·3979400
„ 20 = 1·3010300

2)0·0969100 = 1·25, mean depth.

0·0484550 = 1·118 $\sqrt{\text{mean depth}}$.

Area, 25 ft. Log. 1·3979400
$\sqrt{\text{mean depth}}$ = 1·118 „ 0·0484550

1·4463950 = 27·951 square feet.

$\frac{\text{Area}}{\text{Perimeter}}$ $\frac{43·528}{26·3904}$ Log. 1·6387640
„ 1·4214394

2)0·2173246 = 1·6494 mean depth.

0·1086623 = 1·2843 $\sqrt{\text{mean depth}}$.

Area 43·528 Log. 1·6387640
$\sqrt{\text{mean depth}}$ 1·2843 „ 0·1086623

1·7474263 = 55·902 square feet.

Now, as 27·951 : 55·902 : : 10,000 : 20,000.

So that both the above rules show that if an airway 5 ft. × 5 ft. = 25 square feet sectional area, and 6,000 ft. long circulates 10,000 cubic feet of air, an airway 6·5976 ft. × 6·5976 ft. = 43·528 square feet sectional area, and 6,000 ft. long will circulate double the quantity or 20,000 cubic feet, always provided that the circulating-pressure is the same in both cases.

The formula 113 A $\sqrt{RS}$ will also show that the larger of the two airways referred to will carry twice the quantity of the others. Airway, 5 ft. × 5 ft. = 25 square feet, 6,000 ft. long, with 2 in. on water-gauge (or 10·4 lb. per square foot).

Formula No. 2.

Area, 5 ft. × 5 ft. = 25 square feet = A.

$\frac{\text{Area}}{\text{Perimeter}} = \frac{25}{20} = 1·25$ „ = R.

$\frac{\text{Pressure}}{\text{Length}} = \frac{10·4}{6,000} = 0·0017333$ = S.

$\sqrt{RS} = \sqrt{1·25 \times 0·0017333} = 0·046547$

$\sqrt{RS}$ = 0·046547 Log. = $\bar{2}$·6678960
113 „ 2·0530784
Area, 25 „ 1·3979400
Seconds in a minute, 60 „ 1·7781513

3·8970657 = 7,889·9 cubic feet.

Say, 7,890 cubic feet per minute.

Formula No. 2.

Airway, 6·5976 ft. × 6·5976 ft. = 43·528 square feet, 6,000 ft. long, with 2 in. on water-gauge (or 10·4 lb. per square foot).

Area, 6·5976 × 6·5976 = 43·528 square feet = A.

$\frac{\text{Area}}{\text{Perimeter}} = \frac{43·528}{26·3904} = 1·6494$ „ = R.

$\frac{\text{Pressure}}{\text{Length}} = \frac{10·4}{6,000} = 0·0017333$ „ = S.

$\sqrt{RS} = \sqrt{1·6494 \times 0·001733} = 0·053469$

$\sqrt{RS}$ = 0·053469 Log. $\bar{2}$·7281033
113 „ 2·0530784
Area, 43·528 „ 1·6387640
Seconds in minute, 60 „ 1·7781513

4·1980970 = 15,780 cubic feet.

15,780 cubic feet per minute.

The carrying-capacity of the larger airway is twice the carrying-capacity of the other.

At page 142 of the "Miners' Guide" a rule is given to find the size of a rectangular airway equal to square airways (that is, equal in carrying-capacity). The question worked out is, What would be the width of a rectangular airway 7 ft. in height equal in carrying-capacity to a square