ance amount to ¼ franc per yd., and custom duties to 2½ francs per yd. What should be the selling price in Canadian currency, so as to gain ⅛ of total cost, given that 10 francs= $1.92? *Ans.* 4.08\frac{3}{11}$.

X. A man walking beside a railroad track, at the rate of 4 miles per hour, notices that a train going in the same direction in which he is walking passes him in 20 seconds. Given that the rate at which the train was moving was 20 miles per hour, find its length. *Ans.* 156$\frac{4}{9}$ yds.

XI. In the previous problem, had the man and train been been moving in opposite directions, other conditions remaining the same, what would have been the length of the train? *Ans.* 234$\frac{8}{9}$ yds.

XII. A bridge is 50 yds. in length, and a train 120 yds. long crosses it in 30 seconds; what is the rate of the train in miles per hour? *Ans.* 11$\frac{1}{11}$.

XIII. Two men own equal shares in a plot of ground, in the form of a circle 100 yds. in diameter. They divide it in such a way that one of them retains his share as a circular plot, the other getting his part as a ring on the outside. Find the diameter of the central plot. *Ans.* 70.7 yds.

XIV. A rope 100 feet long, one end of which is fastened at the top of a building on one side of the street, will, when drawn tight, just touch the ground at a point 80 feet from the foot of the building; but it will also touch the building on the opposite side of the street at a point 10 feet from the ground. Find the width of the street.

Ans. 86.6 ft.

XV. There are two trains moving on parallel tracks, one 120 yds. long, the other 150 yds. long, their rates being respectively 20 and 30 miles per hour. How much longer will they be in passing one another when going in the same direction than when going in opposite directions? *Ans.* 44$\frac{4}{11}$".

XVI. The depth, breadth and length of a reservoir are to one another as 3 : 5 : 8, and it holds 20,250 gals. Find its dimensions in feet, given that a gallon of water weighs 10 lbs., and a cubic foot 62½ lbs.

Ans. 9, 15, 24 ft.

XVII. A house was insured for a sum sufficient to cover its value and also the premium of 2½ per cent. paid on the policy; but when the house was burned the company retained $250 of the amount of the policy; on this account the owner lost his premium and $125 besides. What was the value of the house? $4,875.

XVIII. Divide 23 into 3 parts, such that the first, being multiplied by 2, the second divided by 3, and the third increased by ⅓, the results shall be equal.

Ans. 2$\frac{14}{23}$, 15$\frac{6}{23}$, 4$\frac{3}{23}$.

XIX. The diameter of a circle is 84 yds. What is the width of a ring surrounding this circle, whose area shall just be equal to that of the circle? $\pi=3\frac{1}{7}$. *Ans.* 17.388.

XX. In a hollow sphere, what is the ratio between the radius of the outer surface and that of the inner, so that the volume of the enclosing shell shall be just equal to that of the enclosed cavity?

Ans. 1 : $\sqrt[3]{2}$.

A SUBSCRIBER has asked for solutions to Deductions 71, 82, 90, 92, and 100, as found in Geometrical Exercises of Book I., Pott's Euclid.

71. If the given lines be produced it is *evident* by 1-29, that since angle *CEB* equals angle *AGE*, and angle *CEB* equals angle *EHD*, therefore *AGE* equals *EHD*.

82. By supposing the point *P* found on the straight line *AB* such that the angle contained by *AP*, *PC* may be bisected by the straight line *PD*; *CP* is evidently equal to *CD*. Hence the solution; a similar proof may be deduced for the side produced.

90. Let *ABCD*, *AEFG* be a square and rectangle of equal area, having angular point *A* common, and let *EF* cut *CD* in *L*, then must rectangle *EL*, *LC* equal rectangle *DL*, *LF*; but *EL* is greater than *LD*, and therefore *LC* is less than *LF*; therefore perimeter of square is less than that of rectangle. Again, let *AHKG* be a parallelogram equal in area to above rectangle *AEFG*, these figures having a common base, *AG*, and are between the same parallels, *AG* and