15. A circular fish-pond is to be made in a garden, that shall take up just half an acre; what must be the length of the chord that strikes the circle? *Ans.* 27¾ yards.

16. A gentleman has a garden 100 feet long, and 80 feet broad. Now a gravel walk is to be made of an equal width all round it; what must the breadth of the walk be, to take up just half the ground? *Ans.* 12·9846 feet.

17. A silver cup, in form of a frustum of a cone, whose top diameter is 3 inches, its bottom diameter 4, and its altitude 6 inches, being filled with liquor, a person drank out of it till he could see the middle of the bottom; it is required to find how much he drank? *Ans.* ·152127 ale gallons.

18. I have a right cone, which cost me £5 13*s.* 7*d.*, at 10*s.* a cubic foot, the diameter of its base being to its altitude as 5 to 8; and would have its convex surface divided in the same ratio, by a plane parallel to the base; the upper part to be the greater; required the slant height of each part?

Ans. { 3·9506486, the slant height of the upper part.
1·0854612, the slant height of the under part.

19. How many acres of the earth's surface may be seen from the top of a steeple whose height is 400 feet, the earth being supposed to be a perfect sphere, whose circumference is 25000 miles. *Ans.* 12120981·338267112 acres.

20. Two boys meeting at a farm-house, had a tankard of milk set down to them; the one being very thirsty drank till he could see the centre of the bottom of the tankard; the other drank the rest. Now, if we suppose that the milk cost 4½*d.*, and the tankard measured 4 inches diameter at the top and bottom, and 6 inches in depth; it is required to know what each boy had to pay, proportionable to the quantity of milk he drank?

Ans. { 14·1802815 farthings for the first.
3·8197185 farthings for the second.

21. If the linear side of a certain cube, be increased one inch, the surface of the cube will be increased 246 square inches: determine the side of the cube.

Ans. 20 inches.