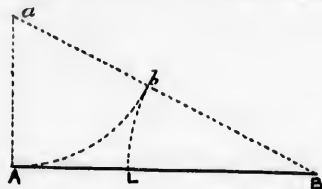


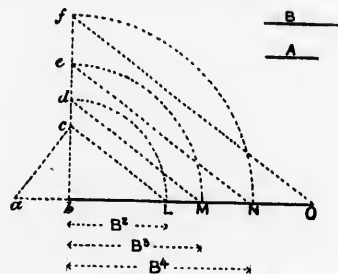
PROBLEM 20.—TO DIVIDE A STRAIGHT LINE AB INTO EXTREME AND MEAN RATIO, (*i.e.*) IN MEDIAL SECTION.



At one end of the line A erect a perpendicular Aa and make it equal to one-half AB . Join aB .

Make ab equal to aA and Bb equal to Bb . The point L will divide the line AB in extreme and mean ratio, that is, $AL : LB :: LB : AB$.

PROBLEM 21.—TO DETERMINE ANY REQUIRED POWER OF A GIVEN LINE B , THE UNIT A BEING GIVEN.

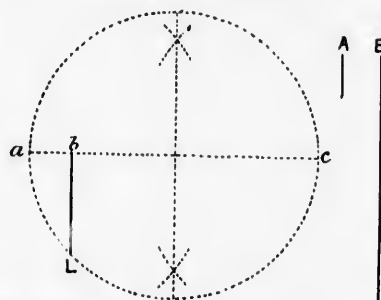


Draw two lines ab , bc , equal respectively to A and B , and at right angles to each other.

Join ac and draw ceL at right angles to ac , meeting ab produced in L . bL will be equal B^2 to the unit A .

On bc produced make bd equal to bL , and draw dM parallel to ceL , meeting bL produced in M . bM will equal B^3 to the unit A , and similarly bN , bO , etc., may be obtained respectively equal B^4 , B^5 , etc., etc.

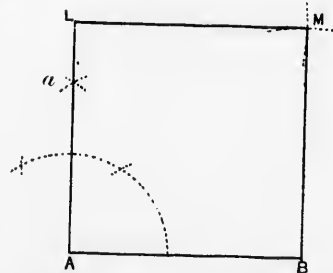
PROBLEM 22.—TO FIND THE SQUARE ROOT OF A GIVEN LINE B , REFERRED TO ANY UNIT A .



Make ab equal to A and bc in ab produced equal to B .

Describe a circle on ac as a diameter and at b erect a perpendicular, meeting the semicircle in L ; bL will be the square root of the length B for the unit A .

PROBLEM 23.—UPON A GIVEN LINE AB TO CONSTRUCT A SQUARE.



At A in BA erect a perpendicular Aa (Prob. 4 b) and cut off AL equal to AB . Similarly at B , draw LM equal and perpendicular to LA ; or parallel to AB , and equal to it.

Join MB . $ALMB$ will be the required square.