15. Therefore the square described upon the side BC, is equal to the squares described upon the sides BA, AC.

Conclusion.—Therefore in any right angled triangle, &c. (*See Enunciation.*) *Which was to be shewn.*

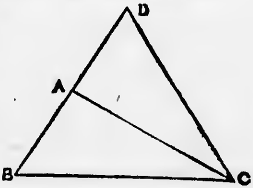
PROPOSITION 48.—THEOREM.

If the square described upon one of the sides of a triangle be equal to the squares described upon the other two sides of it, the angle contained by these two sides is a right angle.

Hypothesis.—Let the square described upon BC, one of the sides of the triangle ABC, be equal to the squares described upon the other sides, BA, AC.

Sequence.—The angle BAC shall be a right angle.

Construction.—1. From the point A draw AD at right angles to AC. (*Prop.* 11, *Book* I.)



2. Make AD equal to BA. (*Prop.* 3, *Book* I.)

3. Join DC.

Demonstration.—1. Because DA is equal to AB, the square of DA is equal to the square of AB.

2. To each of these equals add the square of AC.

3. Therefore the squares of DA AC, are equal to the squares of BA, AC. (*Axiom* 2.)

4. But the square of DC is equal to the square of DA, AC (*Prop.* 47, *Book* I.), because the angle DAC is a right angle. (*Construction* 1.)

5. And the square of BC is equal to the squares of BA, AC. (*Hypothesis.*)

6. Therefore the square of DC is equal to the square of BC. (*Axiom* 1.)

7. And therefore the side DC is equal to the side BC.

8. And because the side DA is equal to AB (*Construction* 2), and AC common to the two triangles DAC, BAC, the two sides DA, AC, are equal to the two BA, AC, each to each.

9. And the base DC has been proved equal to the base BC. (*Proof* 7.)