Draw CD parallel to L to meet M in D, and from D draw $DE \perp$ to L.

Then DE is $\perp$ to both L and M, or is their common perpendicular.

For DE is $\perp$ to L by construction, and being thus parallel to CB, EC is a rectangle, and ED is normal to U, and therefore $\perp$ to M.

Cor. Since CD can meet M in only one point, only one common perpendicular can be drawn to two non-complanar lines.

EXERCISES A.

1. How many planes at least determine one line?

2. How many lines at most are determined by 3 planes? by 6 planes? by n planes?

3. How many planes at most are determined by 4 points? by 8 points? by n points?

4. Draw a normal to a plane from a point in the plane.

5. Through one of two non-complanar lines, to pass a plane to be parallel with the other line.

6. Show that the common perpendicular to two non-complanar lines is the shortest segment from one line to the other.

7. From a given point in one of two non-complanar lines, to draw a segment of given length to meet the other. The solutions are two, one, or none. Distinguish these cases.

8. Given two non-complanar lines, to draw a segment from one to the other so as to be perpendicular to one of them.

9. Given two non-complanar lines, to draw a segment from one to the other so as to make equal angles with each. Show that this angle may vary from a right angle to the complement of one-half the angle between the given lines.