BOOK I.

DEFINITIONS.

I. A Point is that which has no parts.

This is equivalent to saying that a Point has no magnitude, since we define it as that which cannot be divided into smaller parts.

II. A Line is length without breadth.

We cannot conceive a visible line without breadth; but we can reason about lines as if they had no breadth, and this is what Euclid requires us to do.

III. The Extremities of finite Lines are points.

A point marks *position*, as for instance, the place where a line begins or ends, or meets or crosses another line.

IV. A Straight Line is one which lies in the same direction from point to point throughout its length.

V. A Surface is that which has length and breadth only.

VI. The Extremities of a Surface are lines.

VII. A Plane Surface is one in which, if any two points be taken, the straight line between them lies wholly in that surface.

Thus the ends of an uncut cedar-pencil are plane surfaces; but the rest of the surface of the pencil is not a plane surface, since two points may be taken in it such that the *straight* line joining them will not lie on the surface of the pencil.

In our introductory remarks we gave examples of a Surface, a Line, and a Point, as we know them through the evidence of the senses.