An Introduction to Loci

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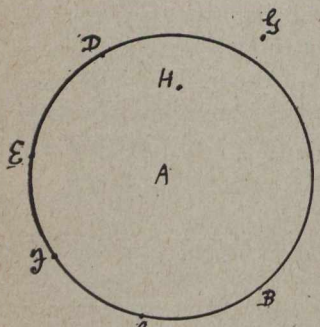

Fig. 1.

I. Mark any point A on the blackboard. Ask the class how we could get a point $1\frac{1}{2}$ inches from A. With one point of the compass at A and a distance between the points of the compass of $1\frac{1}{2}$ inches, mark a point. Call it B. How could we obtain another point at the same distance from A? In a similar way. Call this point C. How could we get another point to fulfil the same condition? In a similar way. Call it D. Then ask them how we might get a figure on which these points, at the distance of $1\frac{1}{2}$ inches from A, would lie. The answer would be, "With centre A, and a radius of $1\frac{1}{2}$ inches, describe a circle." What can we say of the location of all points $1\frac{1}{2}$ inches from A? They all lie on this circumference. If we take any points E and F on this circumference, what can we say of them? They are $1\frac{1}{2}$ inches from A. If we take any point G, $1\frac{3}{4}$ inches from A, what can we say about it? The point G does not lie on the circle. If we take any point H, not on the circle what can we say of it? The point H is not $1\frac{1}{2}$ inches from A. What then can we say of this geometrical figure that we have constructed? All points $1\frac{1}{2}$ inches from A are located on it, and every point on it is $1\frac{1}{2}$ inches from A.

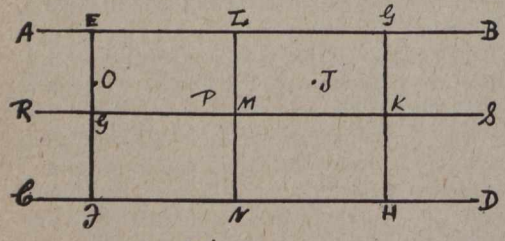

Fig. 2.

II. AB and CD are 2 parallel lines. How could we get a point whose distance from AB and CD is the same? Take any point E on AB and draw $EF \perp AB$. Bisect EF at G. G is equidistant from AB and CD. How could we get another point equidistant from the two lines? In a similar way, by drawing $GH \perp AB$ and bisecting it at K. In a similar way we could get the point M. How could we get the geometrical figure which would be the location of these points, equidistant from AB