Mathematics. — "*Perfect sets of points with positively-irrational distances*". By Prof. L. E. J. BROUWER.

(Communicated at the meeting of February 23, 1924).

The following construction of a set of points of the kind mentioned in the title is perhaps somewhat simpler than that which was developed by Prof. WOLFF in these Proceedings Vol. **XXVII**, p. 95– 96.

In the closed unity interval we determine a fundamental series of sets of points $s_1, s_2, s_3, \ldots$, in which each s_ν consists of 2^ν closed intervals having distances greater than zero from each other, whilst within each interval of $s_{\nu-1}$ two intervals of s_ν are situated, and the distance of two positively-different points of s_ν differs positively from each fractional number $\frac{a}{n}$ $(n \leq \nu)$. The greatest common divisor $\mathfrak{D}(s_1, s_2, \ldots)$ forms a perfect set of points two arbitrary positively-different points of which possess a positively-irrational distance.

In the above fundamental series the possibility of determining s_ν when disposing of $s_{\nu-1}$ follows from the property that in the closed unity interval for each positive integer ν and for each positive ε a finite set of closed intervals can be defined approaching each point of the closed unity interval at a distance $< \varepsilon$, and two arbitrary positively-different points of which have a distance positively differing from each fractional number $\frac{a}{\nu}$.

This definition can be given as follows: Let m be a positive integer such that the greatest common divisor of m and ν be unity, whilst $\frac{1}{m} \leq \varepsilon$, then the distance of two arbitrary points of the finite set of points π_m consisting of the points $\frac{1}{m}, \frac{2}{m}, \ldots \frac{m-1}{m}$, differs at least an amount of $\frac{1}{m\nu}$ from each non-vanishing fractional number $\frac{a}{\nu}$. So, if on each point of π_m as centre we lay a closed interval of length $\frac{1}{2m\nu}$, a finite set of closed intervals arises approaching each point of the closed unity interval at a distance $< \varepsilon$, whilst two arbitrary positively-different points of it have a distance differing at least an amount of $\frac{1}{2m\nu}$ from each non-vanishing fractional number $\frac{a}{\nu}$.