in all probability true for the manifolds ∞^{nf_i}, ∞^{mf_i}, $n > m$; and for ∞^{f_i}, ∞^{f_j}, $i > j$; but where is a proof to be found? The question is of interest both for analytic functions and for general continuous functions.

EDWARD KASNER.

Vorlesungen über ausgewählte Gegenstände der Geometrie. Erstes Heft: *Ebene analytische Kurven und zu ihnen gehörige Abbildungen.* Von E. STUDY. Leipzig, Teubner, 1911. 126 pp. M. 4. 80.

As the title indicates, this monograph contains the first part of a series of lectures on a number of selected geometric topics and deals with the geometry in the complex domain, defined as a cartesian plane with ordinary complex numbers as coordinates. Points of such a domain are, for example, imaginary points of intersection of algebraic curves.

In the introduction we find a summary of von Staudt's famous treatment of imaginary elements by elliptic involutions. The disadvantage of this method is that in order to apply it to the solutions of even some very simple problems concerning positional relations a very clumsy apparatus has to be set in motion.

It is therefore desirable to devise a scheme by which problems involving imaginaries can be handled in a simpler and more effective manner. This is exactly what Study accomplishes in a very thorough manner in his valuable monograph.

He starts out by defining the first and second picture (erstes und zweites Bild) of an imaginary point (ξ, η) in a plane. Designating by $\bar{\xi}$ and η the conjugates of ξ and η, the first picture is obtained as the real pair of points of intersections of the left and right handed minimal lines through (ξ, η) and $(\bar{\xi}, \bar{\eta})$. As indicated in a footnote on page 10, this representation is (apparently) due to Laguerre. It is well to state at this point explicitly that as a pioneer in the field of the complex domain Laguerre accomplished as much as any other man and may be justly put on the same level with von Staudt. As early as 1853 Laguerre found the remarkable result that the radian measure of an angle may be defined as the product of $\frac{1}{2}\sqrt{-1} = \frac{1}{2}i$ and the cross-ratio formed by the two sides of the angle and the isotropic lines through its vertex. In two further articles "Sur l'emploi des imaginaires en géométrie,"