from the assumption of the existence of such an elementary series. There is, however, no ground for believing that either of these problems can be solved.*

Hence it has become evident that also the theorem of Bernstein, and with it the positive part of the theory of potencies, does not allow an intuitionistic interpretation.

So far my exposition of the fundamental issue, which divides the mathematical world. There are eminent scholars on both sides and the chance of reaching an agreement within a finite period is practically excluded. To speak with Poincaré: "Les hommes ne s'entendent pas, parce qu'ils ne parlent pas la même langue et qu'il y a des langues qui ne s'apprennent pas."

SHORTER NOTICES.

Essai de Géométrie analytique modulaire a deux Dimensions. By GABRIEL ARNOUX. Paris, Gauthier-Villars, 1911. xi + 159 pp.

WITH respect to a given prime m, modular space of two dimensions contains just m^2 distinct points (x, y), where $x, y = 0, 1, \cdots, m - 1$. One identifies (x_1, y_1) with (x, y) if $x_1 \equiv x$, $y_1 \equiv y \pmod{m}$. The distance of (x, y) from the origin is an integer if $x^2 + y^2$ is a quadratic residue of m, but is a Galois imaginary if $x^2 + y^2$ is a non-residue. If we join the origin to one of our points and take the sine or cosine of the angle made with the x-axis, we obtain either an integer or a Galois imaginary modulo m; but the tangent is always an integer modulo m.

The set of points (x, y), where x, y range over all sets of integral solutions of $F(x, y) \equiv 0 \pmod{m}$, is called the modular curve $F \equiv 0$. The book under review is devoted chiefly to functions F of the first or second degree, the methods being analogous on the whole to those of ordinary analytic geometry. Homogeneous coordinates are not used.

* Such belief could be based only on an appeal to the principium tertii exclusi, i. e., to the axiom of the existence of the "set of all mathematical properties," an axiom of far wider range even than the axioms of inclusion, quoted above. Compare in this connection Brouwer, "De onbetrouwbaarheid der logische principes," *Tijdschrift voor Wijsbegeerte,* 2e jaargang, pp. 152–158.