$$\begin{array}{ccccc@{\qquad}ccccc} \infty & 0 & 1 & i & i^2, & \infty & 1 & 0 & i^2 & i, \\ \infty & 0 & i & i^2 & 1, & \infty & 1 & i & 0 & i^2, \\ \infty & 0 & i^2 & 1 & i, & \infty & i & 0 & 1 & i^2. \end{array}$$

For $p^n = 5$, the only group solution is one equivalent to that by C. H. Judson in the *American Mathematical Monthly*, 1900, page 72. For $p^n = 7$ there are exactly four group solutions; for $p^n = 9$, there are four. The second group H_{72} actually furnishes solutions.

15. The second paper by Professor Dickson relates to the question of redundancies in Professor Moore's set of relations defining G for the $GF[p^n]$. It is an addition to a paper with the same title in the *Proceedings of the London Mathematical Society*, volume 35 (1902), pages 292–305, which treated the cases for which $p^n \leqq 48$. In the present paper, the theorem of the paper cited is proved, by fortunate devices, to hold for the two new cases $p^n = 3^5$ and $p^n = 5^3$.

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EVANSTON, ILL.,
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THE HEINE-BOREL THEOREM.

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This note has for its main object a proof that the Heine-Borel theorem is equivalent, as a continuity axiom, to the Dedekind cut proposition.* In §3 the equivalence of the closure of a set with what may be called the H-B property is shown to apply not only to the continuum but to any set of numbers.† This result applies in manifolds of any number of dimensions as well as to linear sets.

1. I. *If every number of an interval AB belongs to at least one segment σ of a set of segments $[\sigma]$, then there exists a finite sub-*

*The equivalence in question suggested itself to Mr. N. J. Lennes and myself while we were working over some elementary propositions in real function theory.

† This extends a theorem of Dr. W. H. Young to the effect that every closed linear set has the H-B property. Cf. W. H. Young, "Overlapping Intervals." *Proceedings of the London Mathematical Society*, p. 384, vol. 35 (1903).