

## ABSTRACTS OF PAPERS

## SUBMITTED FOR PRESENTATION TO THE SOCIETY

The following papers have been submitted to the Secretary and the Associate Secretaries of the Society for presentation at meetings of the Society. They are numbered serially throughout this volume. Cross-references to them in the reports of the meetings will give the number of this volume, the number of this issue, and the serial number of the abstract.

104. Mr. Garrett Birkhoff: *Combinatorial relations in finite projective geometries.*

Under the restriction of finiteness, it is shown that  $B$ -lattices satisfying a (non-unique) complementarity relation are equivalent to direct joins of Boolean algebras and projective geometries. This has interpretations in projective geometry and group theory. (Received January 24, 1934.)

105. Mr. Aaron Fialkow: *General theorems on trajectories and lines of force.*

We generalize certain theorems of Kasner relative to the geometry of arbitrary fields of force (Science, June 24, 1932; p. 671). Consider the motion of a particle which starts from rest at a point where the line of force has contact of the  $n$ th order with its tangent. Kasner has shown that the trajectory has the same contact and that the ratio of the infinitesimal departures of the line of force and the trajectory from their common tangent is  $2n+1$ . We extend these results to the more general cases in which the contact between the line of force and its tangent is of any order, finite (integral, fractional or irrational) or infinite, as well as to cases in which no definite order of contact exists. In general, the ratio of departures approaches all values within a closed interval (rather than a single point), the interval varying with the order of contact. We also show that the limiting values of the ratio are uniquely determined by the direction of the force along any segment of the tangent line which includes the initial point. Kasner's theorems for the cases of non-zero speed and motion in a resisting medium are also generalized. (Received January 15, 1934.)

106. Professor E. V. Huntington: *Independent postulates related to C. I. Lewis's theory of strict implication.*

This paper presents an abstract mathematical system of which Lewis's system (as verbally formulated) may be regarded as an instance. *Base*: a class  $K$  (interpretable as "propositions"); two subclasses  $Q$  and  $D$  (interpretable as "false" and "necessarily false");  $a \times b$  (interpretable as " $a$  and  $b$ ");  $a'$  (interpretable as the "contradictory" of  $a$ ); and  $a = b$ , meaning that  $a$  and  $b$  are interchangeable for the purposes of the system. *Definitions*: (I) ( $a$  in  $P$ ) means ( $a$  in  $K$  and  $a$  not in  $Q$ ). (II) ( $a$  in  $A$ ) means ( $a'$  in  $D$ ). (III) ( $a < b$ ) means ( $ab'$  in