ABSTRACTS OF PAPERS

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.

167. R. P. Agnew: *On oscillations of real sequences and their transforms by square matrices.*

The oscillation $\Omega(s)$ of a sequence s_n of complex numbers is defined by $\Omega(s)$ $=\lim \sup_{m,n\to\infty}|s_m - s_n|$, and the transform y_n of a sequence x_n by a matrix $A \equiv \|a_{nk}\|$ of complex constants is defined by $y_n = \sum_{k=1}^{\infty} a_{nk}x_k$, $(n = 1, 2, \cdots)$. This paper gives several characterizations of the matrices A having the property that $\Omega(y) \leqq \Omega(x)$ for each bounded real divergent sequence x_n. (Received March 5, 1938.)

168. A. A. Albert: *A note on normal division algebras of prime degree.*

The note gives a proof of the following theorem: Let D be a normal division algebra of degree p over K and let m be prime to p. Then if D has a normal splitting field W of degree mp over K with a cyclic subfield of degree m, the algebra D is cyclic. The result is seen to be a generalization of and to provide a new proof for the theorem that all normal division algebras of degree three over K of characteristic three are cyclic. (Received March 4, 1938.)

169. C. B. Allendoerfer: *An indicatrix for Riemann spaces.*

The spherical indicatrix of an n-dimensional Riemann space imbedded in an m-dimensional euclidean space is defined as a generalization of Gauss' indicatrix. This permits a discussion of the lines of curvature and the total curvature of such a space. It is proved that when the dimension of the indicatrix is r, there exist $n-r$ independent families of straight lines on the surface. Applications to special cases are given. (Received March 11, 1938.)

170. H. A. Arnold: *Fixed-point theorems in semi-ordered spaces.*

A comparative study is made of the fixed-point theorems of Tychonoff, Leray and Schauder, and Rothe, and generalizations are deduced for semi-ordered linear spaces. The calculus of Fréchet differentials in semi-ordered linear spaces, developed in a previous paper, is applied to obtain a generalization of a theorem of Leray and Schauder. (Received March 12, 1938.)

171. H. A. Arnold: *The theory of integration in linear L-spaces.*

The author studies the theory of functions on R to L^*, where R is the space of real numbers and L^* is a general linear space endowed with a notion of limit. A Rie-