ABSTRACTS OF PAPERS

SUBMITTED FOR PRESENTATION TO THIS 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.

231. Miss Beatrice Aitchison: *Concerning the mapping of locally connected continua on to simple arcs.* Preliminary communication.

Mazurkiewicz has determined a necessary and sufficient condition to be satisfied by a dendrite D, so that there exists a real continuous function over D, taking any value only a finite number of times at most and transforming D into a simple arc (Fundamenta Mathematicae, vol. 18). Results already obtained indicate that, by methods being developed in the present paper, based on the cyclic element structure of locally connected continua, it will be possible to find a sufficient condition for such a continuum C to be transformed by a similar function into a simple arc. If the space C has a countable number of end points it can be transformed by a function of this type into a dendrite D, which satisfies a part of Mazurkiewicz's conditions. If under known suitable conditions on C, D can be shown to satisfy all of these conditions, and hence can be transformed into a simple arc in this definite way, the space C can also be transformed into a simple arc by this special type of function. (Received September 2, 1932.)

232. Dr. E. Sperner: *On topological transformations of a plane without invariant points.*

In the first part of this paper new and simple proofs are given for the theorems of L. E. J. Brouwer concerning path curves and transformation fields of sense-preserving topological transformations of a plane without invariant points. In the second part necessary and sufficient conditions are derived for a topological transformation of the plane to be topologically equivalent to a translation. (Received September 2, 1932.)

233. Professor H. P. Robertson: *Possibilities for a universe with non-negative pressure.*

A survey is made of the long-range behavior of all spatially homogeneous and isotropic space-times suitable for relativistic cosmology subject to the restriction $p \geqq 0$. (Received August, 30, 1932.)