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.

397. Ben Dushnik and E. W. Miller: *Concerning similarity transformations of linearly ordered sets.*

This paper is concerned with the following questions: (1) Is every linearly ordered infinite set A similar to a proper subset of itself? (2) Let A be a linearly ordered set such that if f is any similarity transformation of A into a subset of itself, then $f(a) \geqq a$ for every a in A. Is it true that every such set A is well ordered? It is shown that the answer to each of these questions is in the affirmative if A is denumerable. An example is constructed to show that these conclusions need not hold if A is non-denumerable. (Received August 23, 1939.)

398. J. J. DeCicco: *The circular group in an infinite plane of the Kasner space.*

A horn-set (γ) consists of all the curves of the plane which pass through a given point in a common direction and have the same curvature γ. Let $x=2\gamma'$, $y=5^{1/2}\gamma''$, $z=2(\gamma'''-\gamma^2\gamma')$, where $(\gamma', \gamma'', \gamma''')$ are the first three derivatives of the curvature γ of any curve C of a horn-set (γ) at the common point. A horn-set (γ) may be regarded as a three-dimensional space, called the Kasner space K_3, where any point of K_3 is a curve $C(x, y, z)$ of the horn-set (γ). The group of conformal transformations induces a special affine five-parameter group G_5 between the Kasner spaces. The ∞^2 planes $4z=-b^2x+4by+4c$ are called the infinite planes of K_3. If $u=-x$, $v=bx/2-y$ denotes any point of an infinite plane, the group G_5 induces the metric $M_{12}=(u_2-u_1)^3/(v_2-v_1)^2$ between any two points of an infinite plane. The circles are the semicubical parabolas $(u-a)^3=R(v-b)^2$. The circular group is $U=au+c$, $V=bv+d$. A minimal characterization of this group is also obtained. (Received August 2, 1939.)

399. D. W. Hall (National Research Fellow) and G. T. Whyburn: *An analysis of arc-preserving transformations.*

Arc-preserving transformations have previously been defined and studied by one of the authors (G. T. Whyburn, American Journal of Mathematics, vol. 58 (1936), pp. 306–312) and the present paper results from a continuation of that investigation. Let K denote the set of all cut points and end points of a compact locally connected continuum A. A point of $A-K$ is called an internal point of the cyclic element of A containing it. Then (i) if $T(A)=B$ is continuous, in order that T be arc-preserving the following conditions are necessary and sufficient: (a) for each true cyclic element E_b of B there exists a true cyclic element E_a of A mapping onto E_b topologically under