BULLETIN OF THE
AMERICAN MATHEMATICAL SOCIETY
Volume 77, Number 4, July 1971

SEMIAPOSYNDETIC NONSEPARATING PLANE CONTINUA ARE ARCWISE CONNECTED

BY CHARLES L. HAGOPIAN[1]

Communicated by Steve Armentrout, August 3, 1970

It is known that if H is an aposyndetic nonseparating plane continuum, then H is locally connected. This follows from a result of Jones' [2, Theorem 10] that if p is a point of a plane continuum H and H is aposyndetic at p, then the union of H and all but finitely many of its complementary domains is connected im kleinen at p.[2] As a corollary of these results, each aposyndetic nonseparating plane continuum is arcwise connected. Closely related to the notion of an aposyndetic continuum is that of a semiaposyndetic continuum, studied in [1]. A continuum M is *semiaposyndetic* if for each pair of distinct points x and y of M, there exists a subcontinuum F of M such that the sets $M-F$ and the interior of F relative to M each contain a point of $\{x, y\}$. Note that a nonseparating semiaposyndetic plane continuum may fail to be locally connected. The main theorem of this paper is that each semiaposyndetic nonseparating plane continuum is arcwise connected. A complete proof of this result will appear elsewhere. For definitions of unfamiliar terms and phrases see [4].

Throughout this paper S is the plane and d is the Euclidean metric for S.

DEFINITION. Let E be an arc-segment (open arc) in S with endpoints a and b, D be a disk in a continuum M in S, and ϵ be a positive real number. The arc-segment E is said to be *ϵ-spanned* by D in M if $\{a, b\}$ is a subset of D and for each point x in a bounded complementary domain of $D\cup E$, either $d(x, E)<\epsilon$ or x belongs to M.

DEFINITION. A point y of a continuum M *cuts* x from z in M if x, y

AMS 1969 *subject classifications*. Primary 5475, 5455; Secondary 5422.

Key words and phrases. Nonseparating plane continua, aposyndesis, semiaposyndesis, arc-wise connectedness.

[1] The author gratefully acknowledges the help and encouragement of Professors E. E. Grace and F. B. Jones.

[2] A continuum H is said to be *aposyndetic* at a point p of H with respect to a point q of $H-\{p\}$ if there exist an open set U and a continuum L in H such that $p\in U\subset L \subset H-\{q\}$. A continuum H is said to be *aposyndetic* at a point p if for each point q of $H-\{p\}$, H is aposyndetic at p with respect to q. If H is aposyndetic at each of its points, then H is said to be *aposyndetic* (Jones).