fined on the real line X is an example of a function which is locally an ϵ-mapping in the narrow sense, but which is not a polynomial mapping. In this case we have $f(X) \neq X$.

REMARK 2. From Theorem 3 it follows that if F satisfies the assumptions of Theorem 3, then there exists a point x such that $F(x) = x$ (i.e., $F: X \to X$ has a fixed point).

REFERENCES

1. M. Altman, *On a theorem of K. Borsuk*, Bull. Acad. Polon. Sci. Cl. III vol. 5 (1957) pp. 1037–1040.

2. K. Borsuk, *Ueber stetige Abbildungen der Euklidischen Raeume*, Fund. Math. vol. 21 (1933) pp. 236–243.

3. F. Hausdorff, *Grundzuege der Mengenlehre*, New York, Chelsea, 1949.

4. C. Kuratowski, *Topologie*. II, Warszawa, Monografie Matematyczne, 1952.

5. M. Reichbach, *Generalizations of the fundamental theorem of algebra*, Bull. Res. Council Israel vol. 7 (1958) pp. 155–164.

6. ———, *Some theorems on mappings onto*, Pacific J. Math. vol. 10 (1960) pp. 1397–1407.

TECHNION-ISRAEL INSTITUTE OF TECHNOLOGY, HAIFA, ISRAEL

A CHAINABLE CONTINUUM NO TWO OF WHOSE NONDEGENERATE SUBCONTINUA ARE HOMEOMORPHIC

JAMES J. ANDREWS

R. D. Anderson and Gustave Choquet [1] gave an example of a plane continuum no two of whose nondegenerate subcontinua are homeomorphic. The object of this note is to point out that there is a chainable continuum having this property. The only change we make in the construction given in [1] is to replace the n-ods used by R. D. Anderson and Gustave Choquet by chainable continua C_{n-2}.

A subcontinuum Y of a continuum X is a separating continuum of X if $X - Y$ is not connected and $\mathrm{Cl}(X-Y) = X$. A subcontinuum Y of a continuum X is a strong separating continuum if:

(1) Y is a separating continuum of X,

(2) $X - Y$ has two components, X_1 and X_2,

(3) there are points $y_1, y_2 \in Y$ such that $y_i \notin \mathrm{Cl}(X_i)$.

Let $V = \{(x, y)/y = |x| \text{ and } -1 < x < 1\}$. Let C_n be formed from n copies of V and $n+1$ "lines" so that each V is a strong separating continuum of C_n as in Figure 1 (for $n = 2$).

Received by the editors May 10, 1960.

FIGURE 1

Following [1] we construct a continuum X using C_n in place of the $(n+2)$-ods used in [1]. As in [1], if A and B are subcontinua of X we may assume $A-B$ is not empty and hence $A-B$ contains a separating continuum Y of A. Now Y contains k strong separating continua. No subcontinuum of B has this property. Hence A and B are not homeomorphic.

In order to show that X is chainable we first note that each M_i is chainable.

By Lemma 2 of [1] we have the following: For each number $\epsilon>0$ there is an integer i such that $D(\bar{f}_i^{-1}(p))<\epsilon$, for $p\in M_i$ and $\bar{f}_i$ the map induced by f_j: $M_{j+1}\to M_j$ of X onto M_i. This implies that there is a $\delta>0$ such that if U is open in M_i and $D(U)<\delta$, then $D(\bar{f}_i^{-1}(U))<\epsilon$.

One need only assume the contrary. Then for each $\delta>0$ there is a $U(\delta)$ such that $D(U(\delta))<\delta$ and $D(\bar{f}_i^{-1}(U(\delta)))>\epsilon$. Let p be a limit point of a set P of points $p_j\in U(1/j)$. If U is an open set containing p then $U\supset U(1/j)$ for some j and hence $D(\bar{f}_i^{-1}(p))>\epsilon$. But this contradicts our choice of M_i. In order to ϵ-chain X we need only δ-chain M_i.

REFERENCES

1. R. D. Anderson and Gustave Choquet, *A plane continuum no two of whose subcontinua are homeomorphic*, Proc. Amer. Math. Soc. vol. 10 (1960) pp. 347–353.

UNIVERSITY OF WISCONSIN