A. $(e''+e)\neq e$, by 8(ii). B. $(e''+e)\neq(a'+a)$, by 6(i). C. $(e''+e)\neq[b'+(a+b)]$. For otherwise, by 3, 9(i), 2 and 4, either (i) $e'=b$ and $e=(a+b)$, or else (ii) $e=b'$ and $e''=(a+b)$. But (i) is impossible since $(a+b)'\neq b$ by 5(ii), and (ii) is impossible since $e\neq b'$ by 8(i). D. $(e''+e)\neq\{(b'+c)'+[(a+b)'+(a+c)]\}$. Indeed otherwise in view of 3, 11, 2 and 4, either (i) $e'=(b'+c)$ and $e=[(a+b)'+(a+c)]$ which contradicts 8(ii), or else (ii) $e''=[(a+b)'+(a+c)]$ and $e=(b'+c)'$ which contradicts 8(i) and also 11.

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CONCURRENCE AND UNCOUNTABILITY*

BY N. E. RUTT

1. *Introduction.* The point set of chief interest in this paper, a plane bounded continuum Z, is the sum of a continuum X and a class of connected sets $[X_\alpha]$, each element X_a of which has at least one limit point in X and is a closed subset of $c_u(X+X_b)$, where X_b is any element of $[X_\alpha]$ different from X_a and where $c_u(X+X_b)$ is the unbounded component of the plane complement of the set $X+X_b$. Upon a basis of separation properties, order† may be assigned to the elements of $[X_\alpha]$ agreeing in its details with that of some subset of a simple closed curve. We shall use some definite element X_r of $[X_\alpha]$ as reference element, selecting as X_r one of $[X_\alpha]$ containing a point arcwise accessible from $c_u(Z)$. A countable subcollection $[X_i^h]$ of $[X_\alpha]$ excluding X_r is called a *series* if for each j, $(j=2, 3, 4, \cdots)$, the elements X_j and X_r separate X_{j-1} and X_{j+1}. Two different series $[X_i^h]$ and $[X_i^k]$ are said to be *opposite in sense* if there exist different subscripts m and n such that X_m^h and X_m^k separate both X_n^h and X_n^k from X_r; otherwise they are said to have the *same sense*. They are said to be *concurrent* if they have the same sense and if there exists no element of $[X_\alpha]$ which together

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† R. L. Moore, *Concerning the sum of a countable number of continua in the plane*, Fundamenta Mathematicae, vol. 6, pp. 189–202; J. H. Roberts, *Concerning collections of continua not all bounded*, American Journal of Mathematics, vol. 52 (1930), pp. 551–562; N. E. Rutt, *On certain types of plane continua*, Transactions of this Society, vol. 33, No. 3, pp. 806–816.