



Division of the History of Chemistry  
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## Citation for Chemical Breakthroughs



Demonstration that orbital symmetries control the stereochemical course of concerted reactions.

R. B. Woodward and R. Hoffmann *J. Am. Chem. Soc.* 1965, 87, 395-397

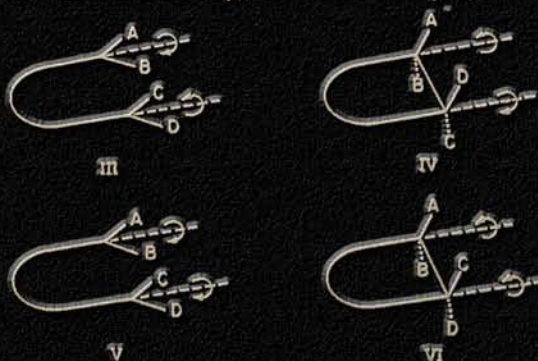
### Stereochemistry of Electrocyclic Reactions

Sir:

We define as *electrocyclic* transformations the formation of a single bond between the termini of a linear system containing  $k$   $\pi$ -electrons ( $I \rightarrow II$ ), and the



converse process. In such changes, fixed geometrical isomerism imposed upon the open-chain system is related to rigid tetrahedral isomerism in the cyclic array. *A priori*, this relationship might be *disrotatory* ( $III \rightarrow IV$  or *vice versa*), or *conrotatory* ( $V \rightarrow VI$ , or



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