1009-06-149 **Matthew E Horak*** (matthew.horak@trincoll.edu), Department of Mathematics, Trinity College, 300 Summit Street, Hartford, CT 06106-3100, and **Melanie Stein**, Department of Mathematics, Trinity College, 300 Summit Street, Hartford, CT 06106-3100. *An order-theoretic characterization of groups admitting actions on oriented order trees.*

The order-theoretic properties of a group are often studied by way of its actions on $\mathbb{R}$ or, more generally, an oriented order tree. In general, a suitably nice action of a countable group on an oriented order tree endows the group with a left-invariant partial order, which we call a *simply connected partial order*, provided that the tree has a point with a totally ordered stabilizer. Conversely, a countable group with a simply connected left-invariant partial order acts on an oriented order tree in such a way that there is a point with a trivial stabilizer. We extend these results to actions for which there is no point with orderable stabilizer. These actions correspond to partial orders in which the set of elements that are not comparable to the identity but that share both upper and lower bounds with the identity forms a subgroup such that the set of cosets by this subgroup inherits a simply connected partial order. (Received August 14, 2005)