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The descent set of a sequence  $a_1a_2\dots$  is the set of indices  $i$  such that  $a_i > a_{i+1}$ . Consider the  $n!$  cyclic permutations of  $\{1, 2, \dots, n+1\}$  written in one-line notation, and for each one of them remove the last entry  $\pi(n+1)$ . We show that the descent sets of these objects have the same distribution as the descent sets of permutations of  $\{1, 2, \dots, n\}$ . We give a bijective proof of this fact, as well as an alternate derivation using work of Gessel and Reutenauer. (Received August 27, 2009)