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**Neil Hindman\*** (nhindman@aol.com), **Dona Strauss** and **Yevhen Zelenyuk**. *Longer chains of idempotents in  $\beta G$ .*

Given idempotents  $e$  and  $f$  in a semigroup,  $e \leq f$  if and only if  $e = fe = ef$ . We show that if  $G$  is a countable discrete group,  $p$  is a right cancelable element of  $G^* = \beta G \setminus G$ , and  $\lambda$  is a countable ordinal, then there is a strictly decreasing chain  $\langle q_\sigma \rangle_{\sigma < \lambda}$  of idempotents in  $C_p$ , the smallest compact subsemigroup of  $G^*$  with  $p$  as a member. We also show that if  $S$  is any infinite subsemigroup of a countable group, then any nonminimal idempotent in  $S^*$  is the largest element of such a strictly decreasing chain of idempotents. (It had been an open question as to whether there was a strictly decreasing chain  $\langle q_\sigma \rangle_{\sigma < \omega+1}$  in  $\mathbb{N}^*$ .) (Received September 06, 2012)