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**Neil Hindman\*** ([nhindman@aol.com](mailto:nhindman@aol.com)), Department of Mathematics, Howard University,  
Washington, DC 20059, and **Dona Strauss**. *Subsemigroups of  $\beta S$  containing the idempotents.*

If  $(S, +)$  is a commutative semigroup with the discrete topology and  $P(S)$  is the set of points  $p$  in the Stone-Čech compactification,  $\beta S$  of  $S$  with the property that every neighborhood of  $p$  contains arbitrarily large finite sum sets, then  $P(S)$  is a compact subsemigroup of  $(\beta S, +)$ , where the operation  $+$  on  $\beta S$  extends the operation on  $S$  and makes  $(\beta S, +)$  into a right topological semigroup with  $S$  contained in its topological center. Furthermore  $P(S)$  contains all of the idempotents of  $(\beta S, +)$ . Responding to a question of Vitaly Bergelson, we derive sufficient conditions guaranteeing that  $P(S)$  is not the smallest compact subsemigroup of  $(\beta S, +)$  containing the idempotents. We also derive sufficient conditions guaranteeing that the closure of the semigroup generated by the idempotents is not a semigroup. These latter conditions include any semigroup, commutative or not, which can be algebraically embedded in a compact topological group. (Received September 17, 2007)