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**Kevin Ford\*** ([ford@math.uiuc.edu](mailto:ford@math.uiuc.edu)), Department of Mathematics, 1409 West Green St.,  
University of Illinois, Urbana, IL 61802. *Sieving very thin sets of primes.*

We discuss a new method to bound the number of primes in certain very thin sets. For each prime  $p$ , only 1 or 2 residue classes modulo  $p$  are omitted, and so the traditional small sieve produces poor bounds. The sets  $S$  under consideration have the property that if  $p \in S$  and  $q|(p-1)$ , then  $q \in S$ . We prove that either  $S$  contains all primes or  $\#\{p \in S : p \leq x\} = O(x^{1-c})$  for some positive  $c$ . We describe applications of such prime sets to Carmichael's conjecture, iterates of arithmetic functions and recent work of the speaker, Konyagin and Luca on groups with Perfect Order Subsets. (Received November 15, 2012)