1001-11-352   **David Applegate**, 180 Park Avenue, Building 103, Florham Park, NJ 07932-0971, and **Jeffrey C Lagarias*** (`lagarias@umich.edu`), Dept. of Mathematics, University of Michigan, Ann Arbor, MI 48109. *The 3x+1 Semigroup.* Preliminary report.

Let S be the multiplicative semigroup generated by 2 and the positive rational numbers of form $(2n+1)/(3n+2)$, for nonnegative integers n. We consider the question: Which integers belong to S? This problem was raised by Herschel Farkas, and represents a weakened form of the 3x+1 problem, in that the backwards 3x+1 iteration can be encoded in terms of generators of S. The (unproved) 3x+1 Conjecture implies that all positive integers should belong to S. We prove uncoditionally that this is the case. In doing so we obtain a complete description of S. (Received August 31, 2004)