

1096-AC-1436      **Michael Filaseta\*** ([filaseta@math.sc.edu](mailto:filaseta@math.sc.edu)), Mathematics Department, University of South Carolina, Columbia, SC 29208. *Applications of the prime factorization of the product of consecutive integers to polynomials.*

In 1934, Erdős published one of his first few papers on an elementary proof of a theorem of Sylvester stating that, for every positive integer  $k$ , the product of  $k$  consecutive integers  $> k$  is always divisible by a prime  $> k$ . Over forty years later, in 1975, Erdős and Selfridge established that the product of two or more consecutive positive integers is never a power, that is never of the form  $m^k$  where  $m$  and  $k$  are integers with  $k > 1$ . There have been a number of variations of these results since, and in this talk we will discuss some of these and focus largely on several ensuing applications to the irreducibility of polynomials and to a recent result on the Galois group associated with the generalized Laguerre polynomials. (Received September 15, 2013)