962-Q1-390 **Craig P Bauer*** (bauerc@alpha.nsula.edu). *A History of Euler's Theorem that $(m,n)=1 \Rightarrow m^{\varphi(n)}=1$ (mod n) with Applications.* Preliminary report.

Euler's theorem that $(m,n)=1 \Rightarrow m^{\varphi(n)}=1 \pmod{n}$ is examined with emphasis on its applications. It originated from the special case known as Fermat's little theorem, which has been applied to primality testing. Euler's generalization of Fermat's result is of great importance in public-key cryptography. This is one example of a thread that can be used to tie together topics in a history of math class and give a sense of the evolution of mathematics and the undreamed of uses that are often found for pure mathematics. (Received September 13, 2000)