This presentation discusses the investigation of Gerchberg and Saxton’s phase retrieval algorithm. We observed the algorithm’s performance by experimentation using a numerical implementation of the algorithm that we wrote in MATLAB. We found that functions of the form \( f \times g \), where \( g \) is a Gaussian function, have better success than those of the corresponding \( f \). We also found that using a constant initial phase estimate produces more consistent and efficient results for non-centrosymmetric input than the random initial phase estimate used in the original algorithm. Our presentation includes a proof of error convergence and a description of the implementation of our modifications. (Received July 28, 2017)