1035-45-338 **Tanya G. Melton*** (tmelton@lsua.edu), Department of Mathematics & Physical Sciences, 8100 Highway 71 South, Alexandria, LA 71346, and **Aghalaya S. Vatsala** (vatsala@louisiana.edu), Department of Mathematics, P.O.Box 41010, Lafayette, LA 70504. *Improved Generalized Quasilinearization Method and Rapid Convergence for Nonlinear Volterra Integral Equations.*

The method of generalized quasilinearization combined with the method of upper and lower solutions yield monotone sequences which converge uniformly and monotonically to the unique solution of the nonlinear problem. Furthermore we can show that the rate of convergence is of n-th order. In this paper we extend this method to a nonlinear Volterra integral equation. Here we consider the situation when the component functions f(t, x, u)= p(t, x, u)+ q(t, x, u) and g(t, x, u) of the forcing function satisfy the following conditions: (n -1)-st derivative of p(t, x, u), q(t, x, u), and g(t, x, u) with respect to u exist such that p(t, x, u) and g(t, x, u) are non-decreasing in u whenever q(t, x, u)is non-increasing in u for n $>$ 2. Such models occur in population models in biology and the Hodgkin-Huxley model in medicine. Also, a numerical example is presented to demonstrate the application of our theoretical result. (Received September 03, 2007)