The Standard Model of Particle Physics is wildly successful. It has passed all experimental tests over a wide range of energy scales. Nevertheless, there are good reasons to keep testing it, particularly by probing the highest energies. On the other hand, at energies where it is well understood, we can use the Standard Model as a tool to study other fundamental phenomena. We will discuss parity violating elastic electron scattering with GeV electron beams. The focus will be on two precision experiments being carried out at Jefferson Lab. One experiment aims at the equation of state of neutron matter, necessary to understand neutron stars. The other experiment probes physics Beyond the Standard Model at TeV energy scales. Both experiments are technically challenging and push the state of the art, but I will hopefully convince you that the payoff is worth the effort.