During the Middle Orodovician (~480-450 mya), what is now western New England was a tropical continental shelf. The shelf was subjected to tectonic forces originating to the east during the Taconic Orogeny (~460 mya) and was fragmented and moved through a variety of bathymetries before being buried beneath ocean muds. The overall timing of the orogeny has been fairly well constrained; however, specific timing of its onset has not. The Middlebury Formation, a rock unit comprised of multiple limestone and dolostone layers in west-central Vermont, was deposited on the eastern portion of the shelf. The presence or absence of evidence of faulting in the Middlebury Formation can give a more constrained age to the Taconic Orogeny if the absolute age of the formation is known. To date, studies have yielded only a relative age of the Middlebury Formation. In my study, I attempted to use fossil biostratigraphy in order to determine the absolute age of the Middlebury Formation by identifying conodont species within the Middlebury Formation and surrounding rock units and comparing those conodont species to species found in rock units of known age. I collected 30 two kilogram samples from the Middlebury, Glens Falls, Crown Point and Beekmantown Formations, crushed them to 1cm fragments, dissolved them in dilute acetic acid and used heavy liquid separation in order to extract and identify conodont fossils. I used lithium heteropolytungstates, a new and less toxic heavy liquid, and a major outcome of my study was refinement of the separation protocol. My samples yielded few, highly fragmented and unidentifiable conodonts and consequently, I was unable to assign an absolute age to the Middlebury Formation; however, the presence of fragmented fossils coupled with the highly deformed nature of the Middlebury Formation likely indicate that the Taconic Orogeny was occurring during deposition of the Middlebury Formation.