Recent experimental results from our continuing study of the Rydberg states of Calcium Monochloride will be summarized.\textsuperscript{a,b} At last year’s Symposium, results were presented with regard to the predissociation of $^2\Sigma^+$ states in the $n^* = 3-7$ region.\textsuperscript{c} The potential energy curve of the $^2\Sigma^+$ repulsive state responsible for these predissociations was quantitatively determined by direct observations of line broadening in the $n^*=6-7$ region via REMPI and ion-dip techniques and qualitatively determined in the $n^*=3-5$ region by OODR fluorescence detection. Unanswered questions propelled further REMPI studies of the low-$n^*$ region ($n^*=3-5$), which is expected to be extensively predissociated by $^2\Sigma^+$ and possibly $^2\Pi$ repulsive states. Preliminary results indicate the presence of three unobserved members of two known core-penetrating $^2\Sigma^+$ Rydberg series ($n^* = 3.50, 3.77, 4.50$) as well as the resonant detection of predissociation by TOF measurements measuring the atomic Ca photofragment channel. Further experiments in this $n^*$ region should determine the potential energy curve of the $^2\Pi$ repulsive state as well as several new members of the two known $^2\Pi$ Rydberg series.

\textsuperscript{c}ibid, Presentation TB03, "53rd Ohio State Symposium on Molecular Spectroscopy", 1998.