of a containing ring around the wafer enhances the prospect of obtaining pressures in the $5x10^5$ psi range, especially at the wafer center. Evidence is presented, Figures 14 and 15, which supports the argument that the stress state in a radially supported pressure cell approaches a hydrostatic condition with a sufficient increase in applied load. The containing ring need not remain elastic, nor should it act solely on the wafer, if the main purpose is to generate ultra-high pressures. The reason for doing such here is to obtain an experimental model that is more nearly compatible with the mathematical assumptions. The limited information obtained for high surface friction, iron oxide lubricant, indicates that the shearing stresses restrain the radial expansion of the wafer, in much the same manner as a containing ring, and serves to intensify the stress level at the wafer center, and to increase the axial variations of pressure.

This thesis entertains the effects of the variables pertinent to pressure cell constructions that have not previously been resolved. The method of solution permits a re-evaluation of the simpler analysis now available, and lends itself to an extension to problems of more complexity. The experience gained in performing this analysis should aid in extending the solutions to include the variations listed in the previous section. This work is not terminal, and will be pursued from different points of view until more elaborate and satisfactory results have been achieved.