fit the data with more complicated functions. However, with a limited amount of Hugoniot data and the positions of the Hugoniot curves not well defined, it is not in general possible to test or to determine any thermodynamic properties conclusively. Specifically, it is not possible to test the validity of $(\partial e/\partial p)_v = f(v)$ with our data because the experimental Hugoniot points do not lie on isochores in the (p-v) plane. Many more data points obtained with explosive driver systems producing an improvement in wave flatness and pressure uniformity are required to achieve a more definitive characterization of the (e-p-v) surface.

The temperature calculations in this paper use more thermodynamic data than previous methods of calculating shock temperature. The shock wave Hugoniot data and the atmospheric data for silicone fluid span a larger domain of the (p-v) plane than either the water data used by Rice and Walsh[3] or the metals data used by Walsh and Christian[2]. In the domain of the (p-v) plane where it is possible to calculate temperature without making assumptions about specific heat, the present method of calculating temperature is considered to be better than methods based on the assumption of a constant specific heat. The comparison of temperatures on the 25°C Hugoniot curve below 58 kbar calculated using the present method, with those calculated using the Walsh and Christian model based on the constancy of $C_v$ and $(\partial e/\partial p)_v$ suggests that the Walsh and Christian model gives an upper estimate for shock temperature. The comparison of temperatures on this Hugoniot above 58 kbar calculated using the Walsh and Christian method but with different values of $C_v$ substantiates this suggestion. However, the difference between the temperatures calculated above 58 kbar resulting from the difference between the numerical values of the constants emphasizes the problem of determining the temperature of shocked liquids. The fact that it is possible with the Walsh and Christian model to calculate different temperatures with a constant value of $(\partial e/\partial p)_v$ once again reflects the independence of the (e-p-v) and (T-p-v) equations of state. Because of the identity $(\partial e/\partial p)_v = C_v/(\partial p/\partial T)_v$, the (T-p-v) equation of state is not determined by an (e-p-v) equation of state based on an experimental Hugoniot curve and the assumption of constant $(\partial e/\partial p)_v$. The constancy