## J. S. DUGDALE AND J. P. FRANCK

the apparent decrease of  $\theta_D$  at the low temperature end of the measurements is probably due to experimental error. Above 5 °K we have about 1 % scatter in  $C_v$ . An error of about 0.5% has to be assigned to the determination of the sample mass. We therefore estimate the error in  $C_v$  above 5 °K at about 1.5%.

In tabulating the results we have proceeded as follows. Smoothed lines were drawn through the plot of Debye temperatures  $\theta_p$  against T and extrapolated from about 5 to 0 °K



FIGURE 8. The Debye temperature of solid <sup>3</sup>He as a function of temperature at different molar volumes.

along the dashed lines. This extrapolation is at present very tentative and is discussed more fully in §4·1 together with the recent measurements of Heltemes & Swenson (1961, 1962). Values of the specific heat  $C_v$  were calculated from the smoothed  $\theta_D$  plot above 3 °K at rounded values of temperature and are given in tables 1 and 2. It can be seen in figures 7 and 8 that close to the melting point the Debye temperatures tend to be low for some runs. This was attributed to pre-melting phenomena and depends probably on the method of freezing the sample. We have therefore extrapolated the  $\theta_D$  plot smoothly towards the