

the apparent decrease of θ_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 θ_D against T and extrapolated from about 5 to 0°K

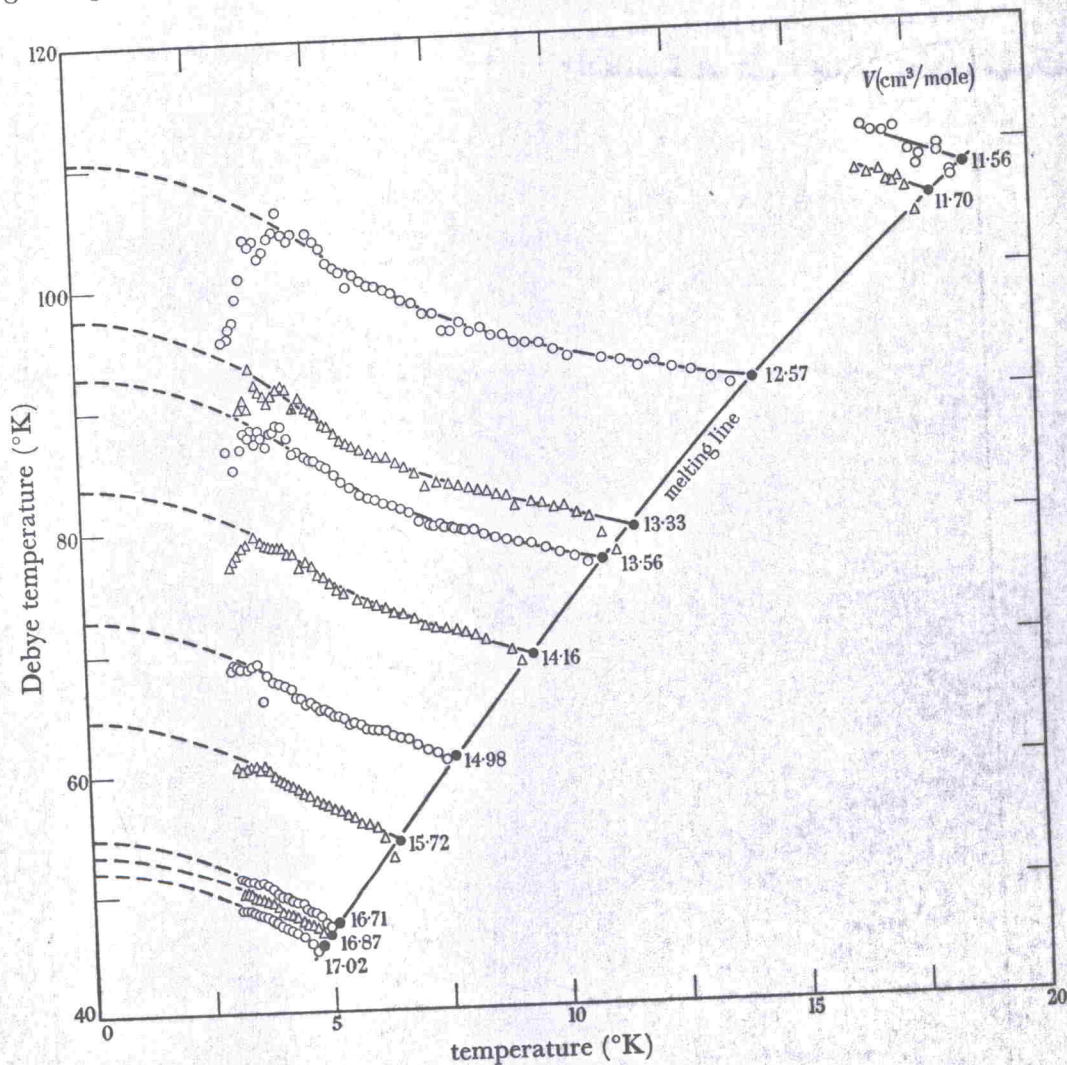


FIGURE 8. The Debye temperature of solid ^3He as a function of temperature at different molar volumes.

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 θ_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 θ_D plot smoothly towards the