

3. EXPERIMENTAL RESULTS

3.1. Specific heat of solid helium

The specific heat of solid ^4He was measured at four different molar volumes, and of solid ^3He at ten different molar volumes. The results are shown in figures 5 and 6. Debye temperatures θ_D were calculated from the experimental points and are shown in figures 7 and 8. Included in figure 7 are earlier measurements by Keesom & Keesom (1936).

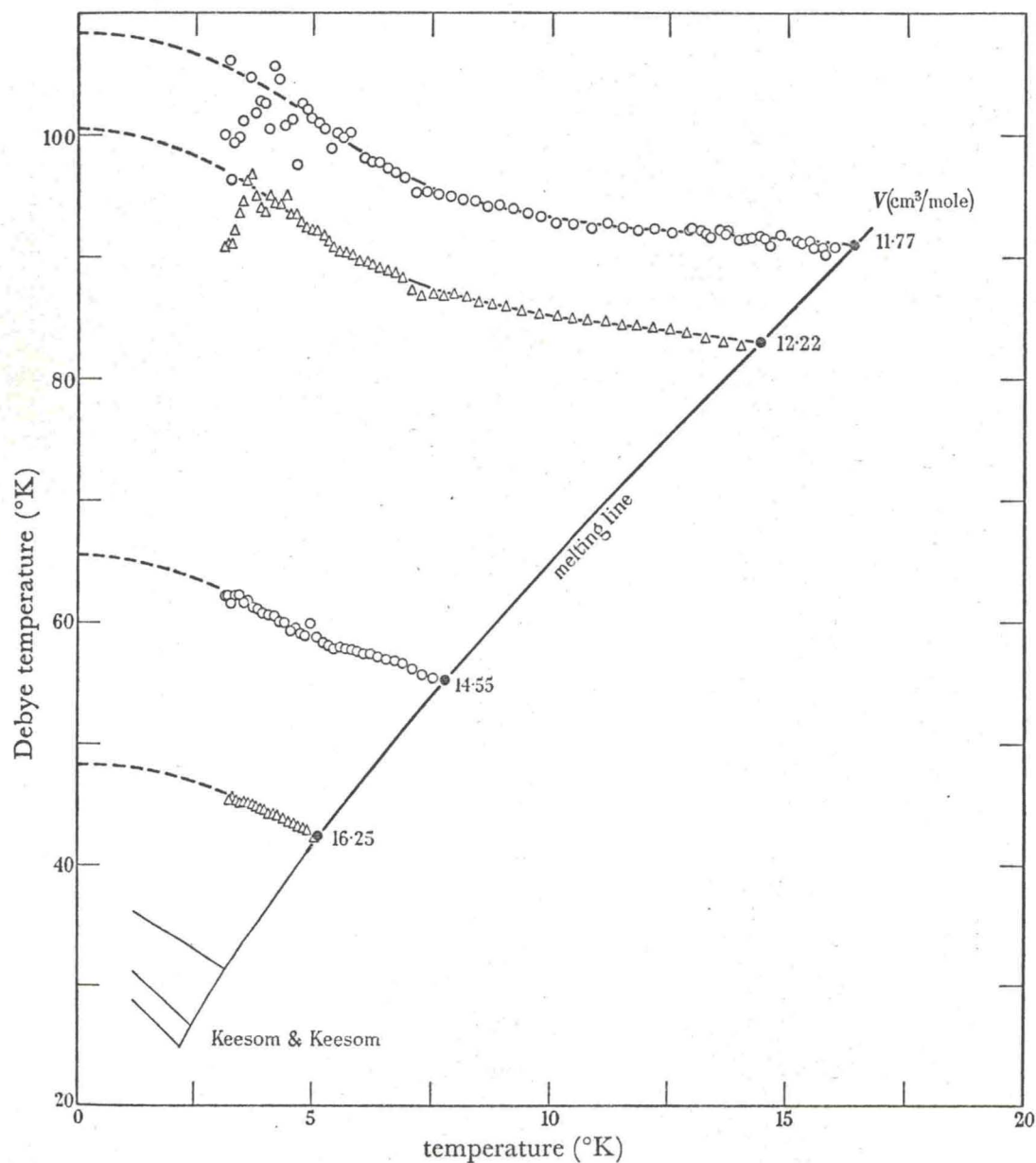


FIGURE 7. The Debye temperature of solid ^4He as a function of temperature at different molar volumes.

The heat capacity of the helium samples contributed from 30 to 40% of the total measured heat capacity near the melting point. This ratio became progressively worse with falling temperature and varied from 5 to 25% at 3°K. The accuracy is therefore greatly reduced below about 5°K, especially for samples of low molar volume. Because of this we feel that