

melting curve data by means of the Clausius-Clapeyron equation) and by Keesom & Keesom (1936) and Dugdale & Simon (1953) (from calorimetric data). It appears that the present data are from 1 to 2% lower than Grilly & Mills's data, but show the same temperature-dependence. This deviation is probably within the combined limit of error. The agreement with the earlier data of Keesom & Keesom, and of Dugdale & Simon is not so close.

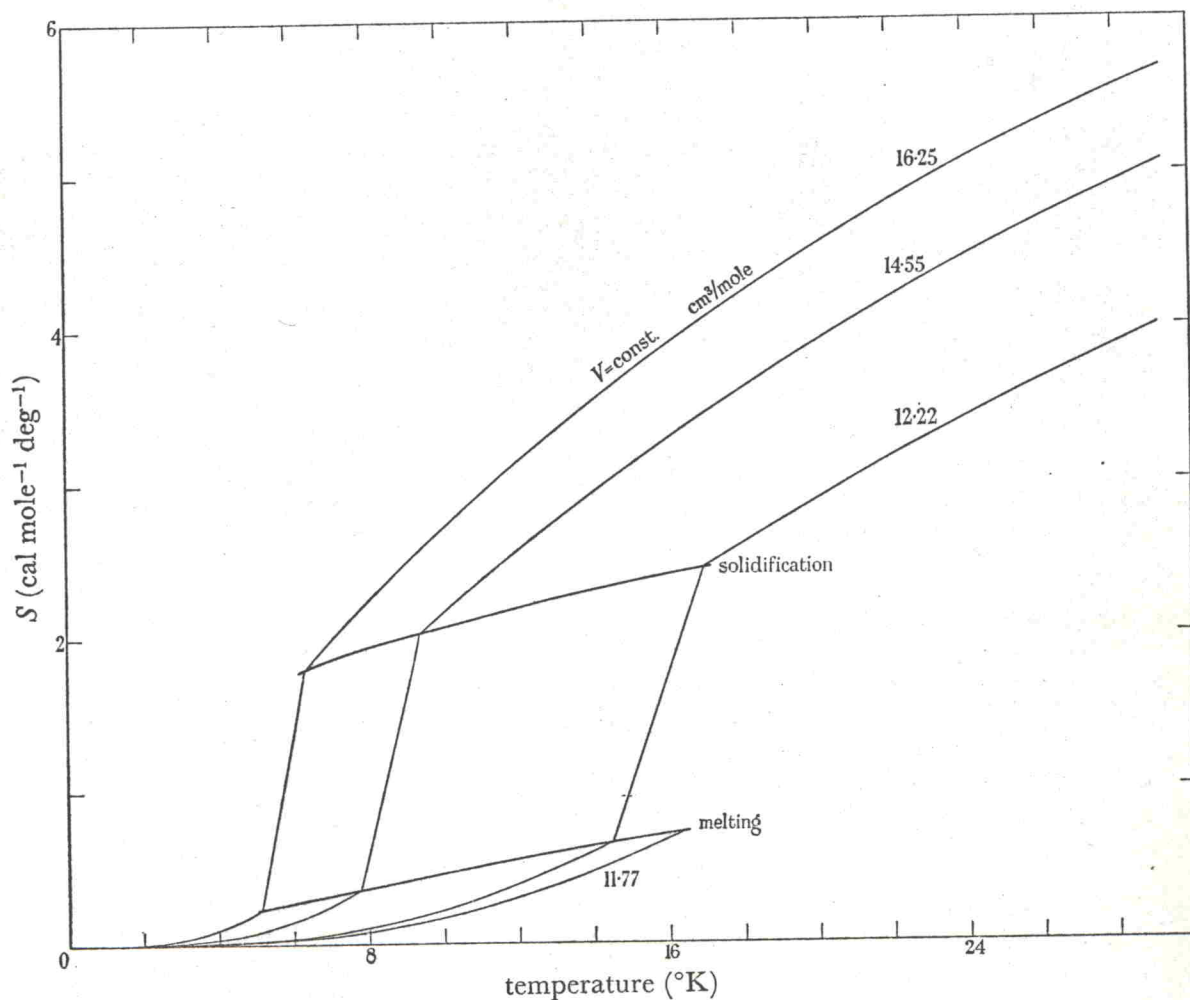


FIGURE 9. The entropy of ⁴He. The numbered lines are lines of constant volume.

3.6. Calculation of related thermodynamic properties

The results given in the previous sections were derived by using the present experimental information only. A complete thermodynamic description, however, cannot be obtained from specific heat data alone. In addition to this one p - V - T relation over the experimental range covered has to be known. For this relation we took the melting curve, p against T and V against T as given by Mills & Grilly (1955), and Grilly & Mills (1959).

3.6.1. Isochores and isotherms of solid ⁴He and ³He

According to one of the Maxwell thermodynamic relations

$$(\partial S/\partial V)_T = (\partial p/\partial T)_V. \quad (7)$$