heat, C_v, below and above the transition forms a continuous curve within the experimental scatter of about 1 % the excess energy consumption of the transition could be calculated from

$$\Delta E = (C_v^* - C_v)\,\Delta T$$

where ΔT is the temperature interval for which C_v^* had been measured and C_v is the interpolated specific heat at the centre of the heating interval. Within the experimental accuracy different heating intervals led to the same values of ΔE. This proves that the observed C_v^* data correspond to a real transition. The latent heat, L, of a transition is defined as the enthalpy change for the transition at constant pressure. As ΔE has been observed at constant volume a correction has to be applied to obtain L. This correction to ΔE turns out to be small for both ^{3}He and ^{4}He so that ΔE can be taken as virtually L. In table 3 we include values of the transition entropy $\Delta S = L/T$ and of the volume change ΔV calculated from the Clausius–Clapeyron equation.

The pressure at the transition temperature could be obtained from the pressure at the beginning of melting (as calculated from the data of Mills & Grilly) by the relation

$$p_{\mathrm{tr.}} - p_m = \int_{T_m}^{T_{\mathrm{tr.}}} (\delta p/\delta T)_v \,\mathrm{d}T = \int_{T_m}^{T_{\mathrm{tr.}}} (\delta S/\delta V)_T \,\mathrm{d}T. \tag{3}$$

For ^{3}He we obtain the phase separation line as

$$p_{\mathrm{tr.}} = 1609 + 1133(T - 17{\cdot}80)\ \mathrm{Kg/cm^2}, \tag{4}$$

where the triple point is at $T = 17{\cdot}80$ °K. It has been assumed here that the phase line is linear.

3·4. *The fluid range*

Measurements in the fluid range were extended up to 29 °K. The results for some selected molar volumes are included in figures 5 and 6. Smooth curves have been drawn through the experimental points and values of C_v read from these curves are given at rounded temperatures in tables 4 and 5. The scatter in the fluid range is much more pronounced

TABLE 4. SPECIFIC HEAT OF FLUID ^{4}He AT ROUNDED VALUES OF TEMPERATURE

	V = 16·25	14·55	12·22	11·77
T (°K)	C_v	C_v	C_v	C_v
7	1·84	—	—	—
8	1·99	—	—	—
9	2·13	—	—	—
10	2·25	2·12	—	—
11	2·36	2·22	—	—
12	2·47	2·32	—	—
13	2·56	2·42	—	—
14	2·65	2·51	—	—
15	2·72	2·59	—	—
16	2·79	2·67	—	—
17	2·85	2·75	—	—
18	2·90	2·81	2·64	—
19	2·93	2·87	2·72	—
21	2·99	2·98	2·85	2·79
23	3·02	3·05	2·95	2·90
25	3·04	3·10	3·04	3·00
27	3·04	3·12	3·11	3·09
29	3·04	3·13	3·16	3·16

Units: V (cm^3/mole); C_v (cal mole^{-1} deg^{-1}).