TABLE II (*Continued*)

130.87°K		120.86°K		110.77°K		100.76°K	
P	*V*	*P*	*V*	*P*	*V*	*P*	*V*
0.229	32.78	0.205	31.55	0.198	30.26	0.208	28.97
0.290	32.08	0.273	30.91	0.263	29.78	0.267	28.67
0.365	31.38	0.346	30.35	0.341	29.30	0.339	28.32
0.447	30.74	0.443	29.72	0.418	28.88	0.412	28.00
0.530	30.18	0.534	29.23	0.493	28.52	0.505	27.60
0.612	29.71	0.630	28.77	0.585	28.12	0.593	27.30
0.724	29.16	0.726	28.37	0.685	27.75	0.693	26.98
0.827	28.71	0.834	27.97	0.792	27.39	0.720	26.89
0.928	28.32	0.930	27.65	0.914	27.02		
1.038	27.94	1.059	27.25	1.031	26.70	94.72°K	
1.157	27.56	1.201	26.87	1.147	26.42	*P*	*V*
1.272	27.24	1.360	26.48			0.211	28.32
1.442	26.80	1.662	25.85			0.273	28.03
1.589	26.47					0.345	27.74
1.740	26.15					0.426	27.43
1.909	25.84						
2.083	25.52						
2.133	25.45						

[a] Molar volume data for the isotherm at 210.16°K may be in error by as much as 0.3%.

had been obtained, the pressure was released to atmospheric pressure and the weight of the "empty" vessel at the temperature of the isotherm was recorded. After a small correction for the amount of argon in the vessel at atmospheric pressure this weight was then subtracted from the other total weights to give the weight of the argon in the vessel at each point.

The data for a typical isotherm through the solid–fluid phase transition are shown in Fig. 4. It can be seen that the transition is quite sharply defined so that it is possible to obtain accurate values for the molar volumes of the solid and fluid phases at melting. The values obtained for these quantities have been previously reported,[4] but are repeated here in Table I

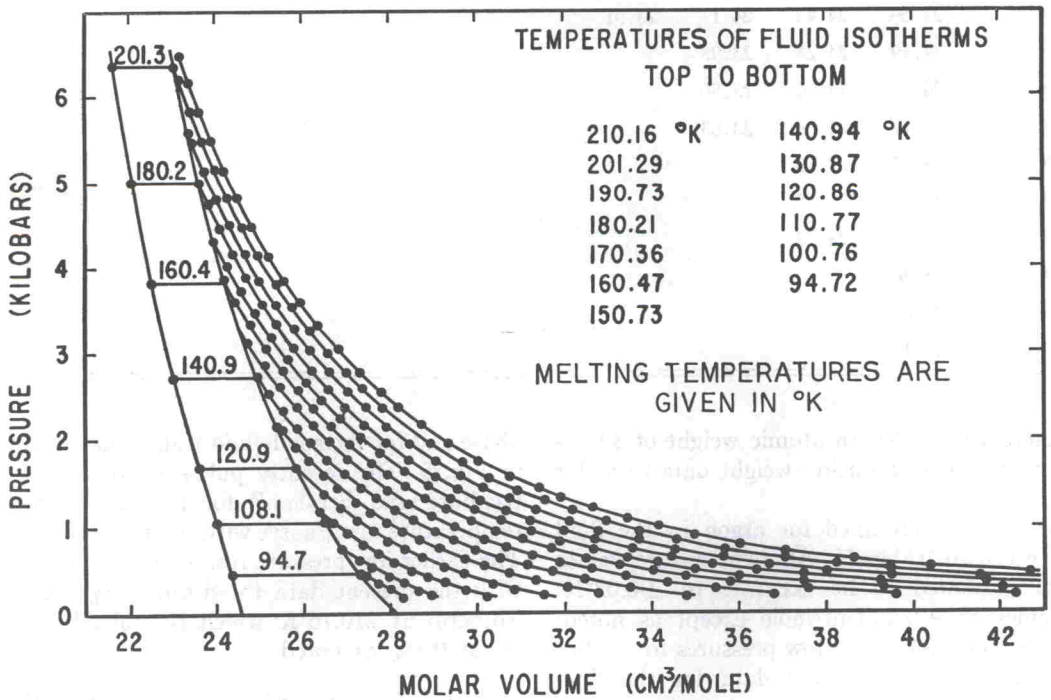

FIG. 5. *P–V–T* data for argon.

[4] R. K. Crawford and W. B. Daniels, Phys. Rev. Letters **21**, 367 (1968).

TABLE III. Molar volume (in cubic centimeters per mole) of argon at round values of pressure and temperature.

	T										
P (kilobars)	200°K	190°K	180°K	170°K	160°K	150°K	140°K	130°K	120°K	110°K	100°K
0.20	57.15	51.68	46.80	42.81	39.55	36.93	34.78	33.01	31.47	30.13	28.94
0.40	41.83	39.84	38.02	36.36	34.85	33.46	32.17	30.98	29.90	28.91	27.99
0.60	37.28	36.01	34.81	33.68	32.64	31.62	30.63	29.70	28.83	28.00	27.21
0.80	34.80	33.82	32.90	32.03	31.19	30.34	29.53	28.76	28.02	27.31	
1.00	33.11	32.30	31.53	30.80	30.09	29.38	28.68	28.01	27.37	26.74	
1.20	31.85	31.15	30.47	29.83	29.21	28.59	27.98	27.39	26.82	26.26	
1.40	30.84	30.22	29.62	29.06	28.51	27.95	27.40	26.86	26.35		
1.60	30.01	29.46	28.92	28.41	27.91	27.41	26.90	26.41	25.93		
1.80	29.31	28.81	28.31	27.84	27.38	26.91	26.45	25.99			
2.00	28.70	28.24	27.79	27.35	26.94	26.50	26.06	25.62			
2.20	28.17	27.74	27.32	26.91	26.52	26.11	25.71	25.31			
2.40	27.70	27.30	26.91	26.52	26.15	25.77	25.37				
2.60	27.28	26.90	26.53	26.17	25.82	25.46	25.07				
2.80	26.89	26.54	26.19	25.85	25.51	25.17	24.81				
3.00	26.54	26.20	25.87	25.54	25.22	24.89					
3.20	26.22	25.90	25.57	25.27	24.96	24.64					
3.40	25.92	25.61	25.30	25.00	24.71						
3.60	25.64	25.34	25.04	24.75	24.47						
3.80	25.38	25.10	24.81	24.53	24.25						
4.00	25.14	24.86	24.58	24.31							
4.20	24.91	24.64	24.37	24.10							
4.40	24.69	24.43	24.17	23.91							
4.60	24.49	24.24	23.98								
4.80	24.30	24.06	23.80								
5.00	24.12	23.88	23.63								
5.20	23.95	23.70									
5.40	23.79	23.55									
5.60	23.62	23.38									
5.80	23.46										
6.00	23.32										
6.20	23.18										

for easy reference. (*Note*: An atomic weight of 39.944 for argon[5] was used in reducing weight data to molar volumes.)

The P–V–T data obtained for argon in the fluid region are given in Table II. All temperature values quoted are estimated to be accurate to ±0.02°K; molar volumes to ±0.02 cm³/mole except as noted; and pressures from ±1 bar at low pressures to ±4 bar at the highest pressures. These data for the fluid phase and for the solid–fluid transition are summarized in Fig. 5. The recently published results of van Witzenburg and Stryland[6] for a smaller pressure and temperature range agree with these data to about 0.4%. The earlier low-pressure results of Michels *et al.*[7] agree with the present data to within 0.1% except for our isotherm at 210.16°K which is probably in error by about 0.3% as noted.

[5] *Handbook of Chemistry and Physics*, C. D. Hodgman *et al.*, Eds. (Chemical Rubber Co., Cleveland, Ohio, 1964), 45th ed.

[6] W. van Witzenburg and J. C. Stryland, Can. J. Phys. **46**, 811 (1968).

[7] A. Michels, J. M. H. Levelt, and W. de Graaf, Physica **24**, 659 (1958).