

TABLE 7. ISOCHORES FOR SOLID  $^3\text{He}$ 

$T = 0$	2	4	6	8	10	12	14
$V$	$p$	$p$	$p$	$p$	$p$	$p$	$p$
12.5	1128.8	1128.8	1129.0	1129.7	1132.4	1138.7	1167.6
13.0	931.7	931.7	931.9	932.9	936.1	943.4	—
13.5	772.9	773.0	773.3	774.6	778.8	787.8	—
14.0	644.1	644.2	644.6	646.3	651.7	—	—
14.5	538.9	539.0	539.4	541.8	548.7	—	—
15.0	453.7	453.8	454.4	457.4	—	—	—
15.5	383.7	383.8	384.6	388.5	—	—	—
16.0	326.4	326.5	327.4	—	—	—	—
16.5	278.3	278.4	279.7	—	—	—	—
17.0	238.0	238.1	239.7	—	—	—	—

 Units:  $T$  ( $^{\circ}\text{K}$ );  $V$  ( $\text{cm}^3/\text{mole}$ );  $p$  ( $\text{Kg}/\text{cm}^2$ ).

 TABLE 8. COMPRESSIBILITY OF SOLID  $^4\text{He}$  and  $^3\text{He}$  AT  $0^{\circ}\text{K}$ 

$V$ ( $\text{cm}^3/\text{mole}$ )	$10^5\beta$ ( $\text{cm}^2/\text{Kg}$ )	
	$^4\text{He}$	$^3\text{He}$
12.0	15.9	—
12.5	20.0	18.3
13.0	24.8	21.8
13.5	30.0	26.0
14.0	36.0	30.8
14.5	43.1	36.4
15.0	51.2	43.0
15.5	59.9	51.0
16.0	70.1	60.0
16.5	—	69.4
17.0	—	79.6

 TABLE 9. VOLUMETRIC THERMAL EXPANSION COEFFICIENT OF SOLID  $^4\text{He}$  AND  $^3\text{He}$ 

$V$	$T = 2$	$10^3\alpha$ ( $\text{deg}^{-1}$ )					
		4	6	8	10	12	14
		$^4\text{He}$					
12	0.004	0.037	0.151	0.39	0.78	1.35	2.20
13	0.009	0.101	0.40	0.98	2.02	—	—
14	0.030	0.260	0.94	2.54	—	—	—
15	0.070	0.60	2.32	—	—	—	—
16	0.156	1.38	—	—	—	—	—
		$^3\text{He}$					
13	0.009	0.049	0.198	0.54	1.10	1.94	—
14	0.018	0.127	0.49	1.27	—	—	—
15	0.037	0.285	1.17	—	—	—	—
16	0.082	0.63	2.67	—	—	—	—
17	0.149	1.56	—	—	—	—	—

 Units:  $T$  ( $^{\circ}\text{K}$ );  $V$  ( $\text{cm}^3/\text{mole}$ ).

### 3.6.4. The internal energy at $0^{\circ}\text{K}$

In all subsequent discussion, the zero of energy will be taken as that of the infinitely separated atoms with zero kinetic energy (i.e. at  $0^{\circ}\text{K}$ ). With this zero of energy the experimental value of the internal energy at  $0^{\circ}\text{K}$  and volume  $V$  can be obtained from the relation

$$U_0 = -L_0 - \int_{V_1}^{V_2} p dV + p_m \Delta V_m - \int_{V_3}^V p dV. \quad (11)$$