The pressure dependence of T_c in tin was measured in the direct piston displacement apparatus. At 10 kbar the pressure calculated from equation (1) was as much as 45% lower than the pressure calculated from the ratio of load to area, as shown in figure 2. Although the pressure can be calculated satisfactorily from load and area in the piston-

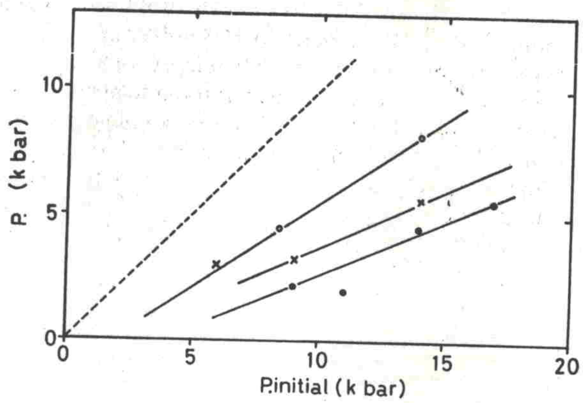

Fig. 2 — Pressure calibration of piston-cylinder apparatus. $P_{initial}$ is the pressure calculated from the load and area. P is the actual pressure at liquid helium temperature as determined from the superconducting temperature of tin (eq. 1). ○, A-type sandwich; × and ●, B-type sandwich. The broken line shows ideal behavior.

cylinder apparatus at room temperature, the actual pressure at low temperature is considerably smaller because the transmitting medium becomes nonhydrostatic and a large friction develops between piston and cylinder.

B — Clamped-cell apparatus

For this apparatus the pressure standards were based on resistance changes associated with phase changes in various metals, for example, Bi I-II (25.50 kbar), Tl I-II (37.7 ± 0.3 kbar), Bi III-V (77 ± 3 kbar), and Sn I-II (100 ± 6 kbar) at room temperature [11]. Using the fixed points of Bi, Tl, and Sn, we obtained a pressure-versus-load calibration curve at room temperature.

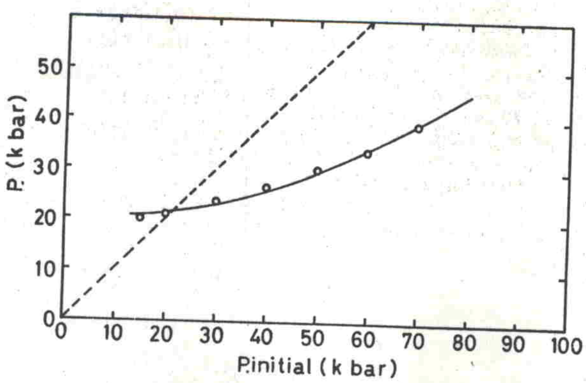

Fig. 3 — Pressure calibration of clamped-cell apparatus. $P_{initial}$ is the pressure applied at room temperature based on standard phase transitions. Pt is the actual pressure at liquid helium temperature as determined from an extrapolation of the superconducting temperature of tin. The broken line shows ideal behavior.