



FIG. 2. The volume change on melting of He<sup>3</sup> and He<sup>4</sup> at low pressures. The large circles represent measurements made with the small, heavy-walled cell, while the small circles represent those made with the large, thin-walled cell.

$dP_m/dT_m$ . Similar properties for He<sup>3</sup> are given in Table II. Maximum errors are estimated to be 0.5 percent for  $\Delta V_m$ , 0.1 percent for  $V_f$ , and 1 percent for  $\Delta S_m$ . In Table III are presented the melting parameters for the solid-solid transition of He<sup>3</sup>. Results of the high-pressure, room-temperature gas-density determinations for He<sup>4</sup> and He<sup>3</sup> are given in Table IV.

As in the case of N<sub>2</sub> (15), the  $\Delta V_m$  data were fitted to the equation

$$\Delta V_m = A - B \log_{10}(P_m + C) \quad (1)$$

by the method of least squares. For He<sup>3</sup> two sets of constants were needed—one for the region below the triple point and the other for the region above. It was not possible to fit the He<sup>4</sup>  $\Delta V_m$  data to Eq. (1) over the full pressure range studied. However, for the purpose of interpolation, a fit was made from 175 to 3555 kg/cm<sup>2</sup>. The constants in Eq. (1) for the various solids are presented in Table V. Listed also are the pressure range and rms deviation in  $\Delta V_m$ .

The melting curve data at low pressure were fitted by the method of least squares to analytical expressions of the form,

$$P = A' + B'T + C'T^2 + D'T^3 + E'T^4. \quad (2)$$