

Pressure Calibration. A calibration at room temperature was made by placing a bismuth wire in the space ordinarily occupied by the Cu_3Au sample. The I-II transition was found to occur at an indicated pressure (load on the anvils divided by bearing area) of 24.6 ± 1 kbar. This is to be compared with the accepted transition pressure of 25.5 kbar.⁹ A calibration at high temperature was made by observing the pressure dependence of the melting point of lead. Lead wire was substituted for the sample and its resistance observed at constant pressure as the temperature was raised at a rate of 5°C per minute. The onset of melting was indicated by an erratic behavior of the resistance apparently associated with flow of liquid lead along the current and potential leads. That melting had actually occurred at this point was verified by inspection of the sample heated to successively higher temperatures; the flow of the liquid was clearly seen under a low power microscope. The melting temperature at several indicated pressures is shown in Fig. 3. For comparison, the melting curves of lead determined by McDaniel, Babb, and Scott¹⁰ (extrapolated) and by Kennedy and Newton¹¹ are shown.

From the results of these experiments it was concluded that, to within the reproducibility attained with the anvil apparatus, it suffices to take the actual pressure as equal to the indicated pressure.