

TABLE 1. THE TEMPERATURE AND PRESSURE COEFFICIENTS OF THREE SAMPLES OF COPPER

$T (^{\circ}\text{K})$	$R (\Omega)$	$\frac{1}{R} \frac{dR}{dp_{\text{obs.}}}$ (%/1000 atm)	$\frac{1}{\rho_i} \frac{d\rho_i}{dp}$ (%/1000 atm)	$\frac{dR}{dT_{\text{obs.}}}$ ($\Omega^{\circ}\text{C}^{-1}$)	$\frac{T d\rho_i}{\rho_i dT}$
sample I					
298.6	11.0826	-0.214	-0.240 ± 0.005	43.1×10^{-3}	1.17
83.5	1.6086	-0.35	-0.396 ± 0.01	42.6	2.35
61.5	0.75778	-0.46	-0.554 ± 0.02	32.1	2.97
25.1	0.11462	-0.09	-0.80 ± 0.04	3.73	4.42
9.75	0.093727	+0.065	—	0.123	4.3
4.2	0.093447	+0.067	$+0.045 \pm 0.01^{\dagger}$	0.0	—
sample II					
293.5	2.7249	-0.170	-0.195 ± 0.005	10.9×10^{-3}	1.18
78.2	0.34336	-0.333	-0.374 ± 0.005	10.2×10^{-3}	2.45
4.2	0.017490	+0.05	$+0.03^{\dagger} \pm 0.01$	—	—
4.2§	0.017550	+0.03	$+0.01^{\dagger} \pm 0.01$	—	—
sample III					
291.1	0.060500	-0.189 ± 0.004	—	19.4×10^{-5}	—
80.0	0.019641	-0.080 ± 0.01	—	17.7	—
78.0§	0.019468	-0.068 ± 0.004	—	—	—
26.5	0.013256	$+0.041 \pm 0.005$	—	0.0	—
4.5	0.014808	$+0.03 \pm 0.03$	—	-12.5	—
4.2§	0.015048	$+0.056 \pm 0.015$	—	—	—

[†] The error in these values is about 1 % except at the lowest temperature where it rises to about 2 %.

[‡] Pressure coefficient of residual resistivity.

[§] In liquid baths.

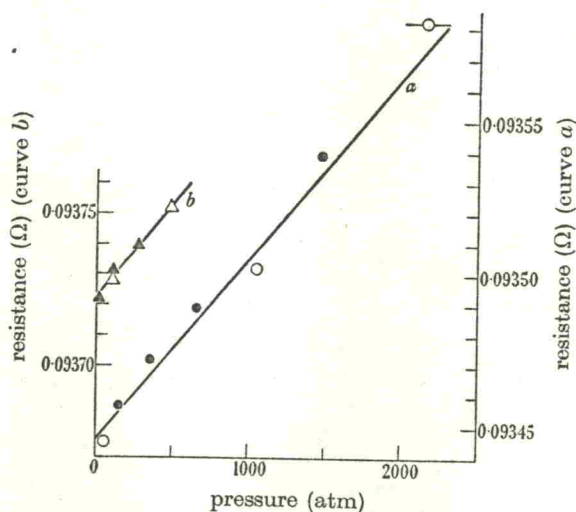


FIGURE 1. The pressure dependence of the resistance of copper (sample I). (a) shows measurements of the residual resistance using solid helium as the pressure-transmitting medium, and (b) shows measurements of residual resistance at 9.75° K under truly hydrostatic pressure (see text). The open points represent measurements made with increasing pressure and the solid points those with decreasing pressure.

Press

The behavior of the resistance of copper as a function of pressure. On the first, the

resistance (Ω)

FIGURE 2. The behavior of the resistance of copper as a function of pressure. On the first, the

FIGURE 3. The behavior of the resistance of copper as a function of pressure. On the first, the

we had expected the resistance to decrease as the pressure increased. We decided to measure the resistance in the liquid helium at 4.2° K at 2000 atm at 4.2° K. The resistance