

The shapes of the curves have been analyzed by constructing difference tables, as described in appendix A. If we express the resistance as a power series function of the pressure $R = R_0(1 + Ap + Bp^2 + Cp^3 \dots)$, the coefficients A, B, C may be obtained from the difference tables. Only these three coefficients are needed to express our experimental results; they are included in table 4.

TABLE 3. A COMPARISON OF RESULTS FOR THE IDEAL RESISTIVITY OF POTASSIUM AT ZERO PRESSURE

| T ($^{\circ}\text{K}$) | ρ_i/T^* ($10^{-8} \Omega \text{ cm deg K}^{-1}$) | | | |
|----------------------------|---|--------------------|--------------------|------------------|
| | (1)† | (2)† | (3) | (4) |
| 273.15 | 2.360 ₁ | 2.360 ₁ | 2.360 ₁ | 1.000 |
| 170.9 ₄ | 2.133 ₇ | — | 2.061 | 1.035 |
| 108.7 ₉ | 1.979 ₆ | — | 1.872 | 1.058 |
| 90.5 ₆ | 1.919 ₁ | — | 1.793 | 1.070 |
| 90.2 ₁ | 1.906 ₄ | — | 1.791 | 1.064 |
| 87.8 ₁ | — | 1.836 ₂ | 1.780 | 1.031 |
| 77.6 ₀ | — | 1.774 ₀ | 1.721 | 1.031 |
| 72.9 ₆ | 1.816 ₂ | — | 1.689 | 1.075 |
| 72.2 ₀ | 1.798 ₃ | — | 1.685 | 1.067 |
| 56.8 ₄ | 1.649 ₅ | — | 1.538 | 1.073 |
| 56.4 ₁ | 1.662 ₁ | — | 1.532 | 1.085 |
| 20.62 | 0.633 ₀ | — | 0.565 | 1.122 |
| 20.42 | 0.638 ₆ | 0.619 ₀ | 0.556 | { 1.150 1.113 |
| 18.47 | 0.533 ₈ | — | 0.471 | 1.144 |
| 17.19 | 0.471 ₂ | — | 0.414 | 1.138 |
| 16.39 | 0.432 ₆ | — | 0.379 | 1.141 |
| 14.27 | 0.336 ₄ | — | 0.288 | 1.168 |

* Normalized to $2.3601 \times 10^{-8} \Omega \text{ cm deg K}^{-1}$ at 273.15 $^{\circ}\text{K}$.

† Specimens in glass capillary tubes.

(1) Results from Woltjer & Kamerlingh Onnes (1924).

(2) Results from Moissner & Voigt (1930).

(3) This work.

(4) ρ_i (capillary specimen)/ ρ_i (bare wire).

3.1.3. The correction to constant density conditions

This correction is made in the way described in appendix A. The results of the calculations are given in tables 2 and 4 and they are also illustrated in figures 1 and 2. The systematic error given in table 2 arises from uncertainties in the equation of state of potassium; the error limits we have quoted are based on the supposition that at room temperature the error in the value of p' , the pressure required to increase the density of potassium to its value at 0 $^{\circ}\text{K}$ under zero pressure, is 3%.

3.2. Sodium

The results for sodium are similar in general form to those for potassium. Below about 40 $^{\circ}\text{K}$ there is, however, the extra complication of the martensitic transformation (cf. Dugdale & Gugan 1960). Details of the specimens studied are given in table 5.