In order to test the logarithmic dependence on T we have made a comparison of (23) with an experiment[10] made on the alloys of iron with gold, in which the resistivity has been measured to very low temperatures. In Fig. 1 the three curves drawn represent the three functions, $0.20-0.0078 \log T$, $0.077-0.004 \times \log T$ and $0.034-0.0016 \log T$, respectively from the above, in units of $\mu\Omega$ cm. The agreement is quite good, particularly the steep rise at the lowest temperature is well represented by a logarithmic function. From (22) both the constant terms and the coefficients of the logarithmic terms must be proportional to concentration. Nominal solute concentration is indicated in the figure. The indicated values, however, are in proportion neither to the constant terms nor to the logarithmic terms. This may be due to inaccurate experimental determination of concentration. We see, however, that the three constant terms are in the ratio of 2.5 : 1 : 0.44, while the logarithmic terms are in the ratio of 2.0 : 1 : 0.40. This again confirms (23). If we assume that the concentration of the alloy with nominal 0.006 at. % iron is as indicated, we find from (23) that $\rho_1 = 67\,\mu\Omega$ cm. Then again with $\rho_M = 500\,\mu\Omega$ cm and $\varepsilon_F = 5.5$ ev, we have $J = -0.25$ ev, which is also of reasonable magnitude.

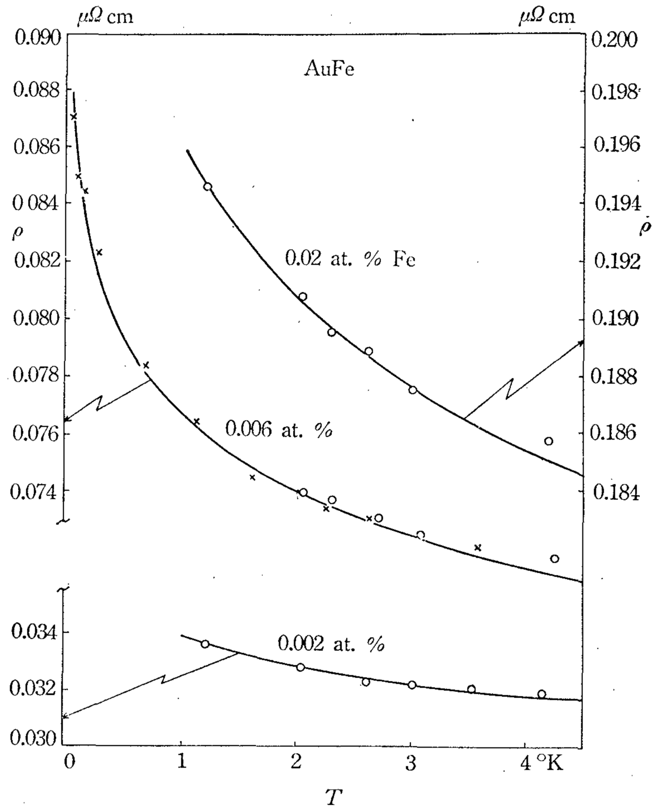

Fig. 1. Comparison of experimental and theoretical ρ–T curves for dilute AuFe alloys.