in order within a domain is developed in papers by Rothstein,[2] Dienes,[3] and Nowick and Weisberg.[4] Formulation of the theory in terms of experimentally measurable quantities, as well as comparison with experimental results, is given in a paper by Feder, Mooney, and Nowick.[5] They show that changes in the electrical resistivity of the alloy measured at constant temperature are linearly related to changes in the degree of long range order and that the time dependence of the resistivity change at temperature T_2 is given by the equation

$$\frac{R - R_o}{R_e - R_o} = \left\{ {\coth \atop \tanh} \right\} (\alpha t + \beta) \qquad (1)$$

where the coth function applies if $T_2 < T_1$, the tanh function holds when $T_2 > T_1$, R is the resistance measured at any time t, R_e is the equilibrium resistance at T_2, and R_o is the resistance of the perfectly ordered alloy at $T = T_2$, and α and β are constants independent of t. It is also shown that the dependence of the rate constant α on temperature is

$$\alpha = \alpha_o \exp \left[(U + W/2)/kT \right] \qquad (2)$$

where, as indicated in Fig. 1, U is the energy barrier to be overcome in taking a pair of unlike atoms from correct to incorrect lattice sites (the elementary disordering step) and W is the