tude in the lattice vibrations (which has no counterpart in ξ) we are left with the quantity $\partial \ln K/\partial \ln V$. A comparison between this quantity and ξ shows that the two are approximately proportional to each other. This is illustrated in Fig. 22. This figure shows not only the

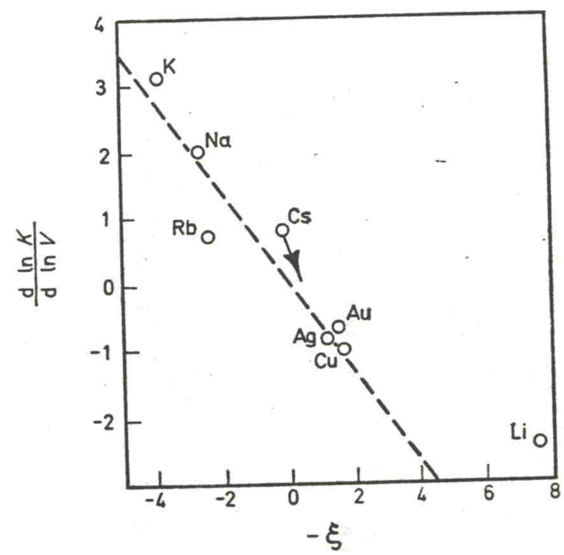

FIG. 22. Relationship between volume coefficient of K and thermoelectric power. Note that $-\xi$ is plotted. (From Dugdale and Mundy, 1961.)

values of $\partial \ln K/\partial \ln V$ and ξ for the metals under *normal pressure*, but, for Cs, it shows values for the compressed metal. The approximate proportionality is still valid (Dugdale and Mundy, 1961).

A possible interpretation of this relationship is as follows. Assume that the electrical conductivity σ is a function only of the Fermi energy, E_F, the Debye temperature of the lattice, θ, and the temperature, T, i.e., we write $\sigma = \sigma(E_F, \theta, T)$; likewise the resistivity $\varrho = 1/\sigma$ depends on the same variables. Then:

$$-\left(\frac{\partial \ln \varrho}{\partial \ln V}\right)_T = \left(\frac{\partial \ln \sigma}{\partial \ln V}\right)_T = \left(\frac{\partial \ln \sigma}{\partial \ln E_F}\right)_{\theta, T} \frac{d\ln E_F}{d\ln V} + \left(\frac{\partial \ln \sigma}{\partial \ln \theta}\right)_{E_F, T} \frac{d\ln \theta}{d\ln V} \tag{45}$$

This equation can be reduced on the basis of the following simplifying assumptions: