where A is the atomic weight and V_A the liquid atomic volume at the melting point, $T_{m.p.}$.

Coupled with the first mentioned H_η vs. melting point relationship, i.e., Fig. 2, the viscosity of any metal with a closely packed crystal structure can be *estimated* without any experimental viscosity measurements by combining ANDRADE's above formula with the new H_η vs. $T_{m.p.}$ relationship.

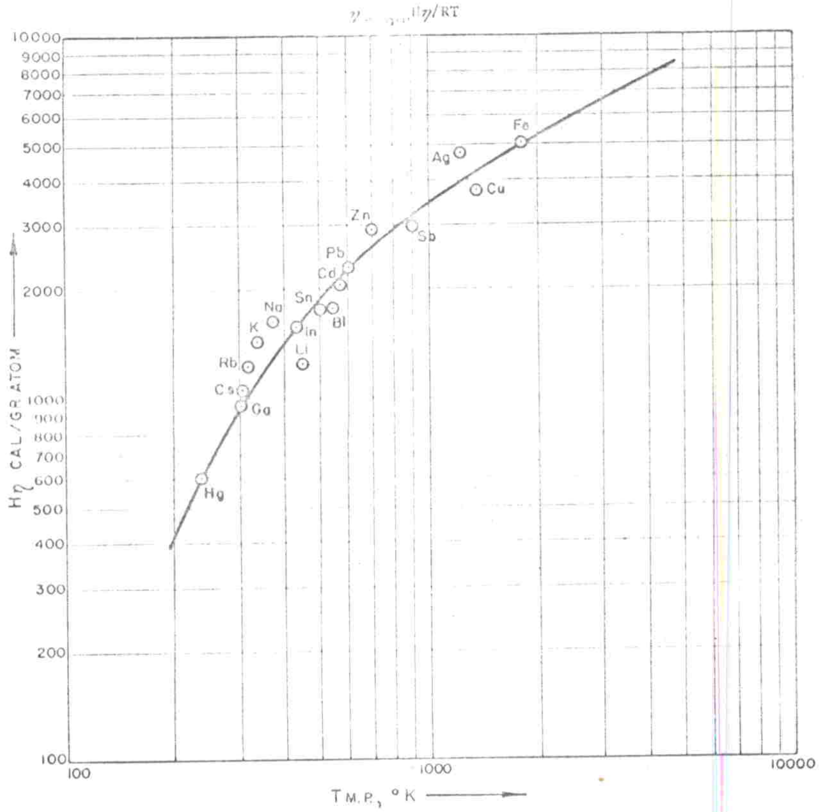

FIG. 2.—H_η, activation energy of viscosity vs. $T_{m.p.}$

The constant a in ANDRADE's simple or first formula (see p. 333) can be expressed in terms of his above $\eta_{m.p.}$ formula.

The constant

$$a = \frac{5{\cdot}7 \times 10^{-4} \,.\, \sqrt{(A \,.\, T_{m.p.})}}{V_A^{2/3} \,.\, \exp\left(H_\eta/RT_{m.p.}\right)},$$

since at the melting point

$$\eta_{m.p.} = a \,.\, \exp\left(H_\eta/R \,.\, T_{m.p.}\right),$$

where the symbols have been defined previously.

To illustrate how these procedures can be used to arrive at an estimated viscosity value we take the specific example of liquid *uranium*, *plutonium* and *thorium*, since no experimental data are available on their viscosities.