the correct density of the liquid metal, $D_{\text{liq.}}$, *up to about* 80 *per cent of the critical temperature*, will be given by the equation:

$$D_{\text{liq.}} = D^{(0)}_{\text{liq.}} - D_{\text{vap.}} = M - K + (n - a)T - bT^2 - cT^3 - \dots$$

The liquid range diagrams of the above metals were constructed using the above data (Table 2) together with the law of rectilinear diameter. They are shown in Fig. 3, where the density (in g/cm^3) of both liquid and saturated vapour, in equilibrium with it, are plotted against temperature.

A study of this figure shows that for all these metals the density vs. temperature is a straight line function, at least up to the normal boiling point of the metal.

Fig. 3 shows strikingly the wide difference in the liquid state of metals (compare, for example, sodium vs. tin and molybdenum).

The *experimental slope* of the $D_{\text{liq.}}$ vs. temperature line, i.e., dD/dT, immediately establishes the rectilinear diameter with an accuracy corresponding to the error of the density measurement at the highest temperature.

The critical density for any metal can be roughly estimated since it equals one-fourth to one-fifth of the density at the normal boiling point—see Table 2. In conjunction with the estimated critical temperature (see Table 1) one can now deduce, approximately, the liquid density of any metal in the temperature range where its $D_{\text{vap.}}$ can be neglected. It follows directly from the rectilinear diameter law that the liquid density at the absolute temperature, T, or

$$D_{\text{T}} = D_{\text{c.p.}} \frac{(D_{\text{m.p.}}/D_{\text{c.p.}} - 2)}{(T_{\text{c.p.}} - T_{\text{m.p.}})} (T_{\text{c.p.}} - T) + 2\ D_{\text{c.p.}}$$

where $T_{\text{c.p.}}$ and $T_{\text{m.p.}}$ are the critical and melting points, respectively in °K, and $D_{\text{c.p.}}$ and $D_{\text{m.p.}}$ the liquid densities at these points.