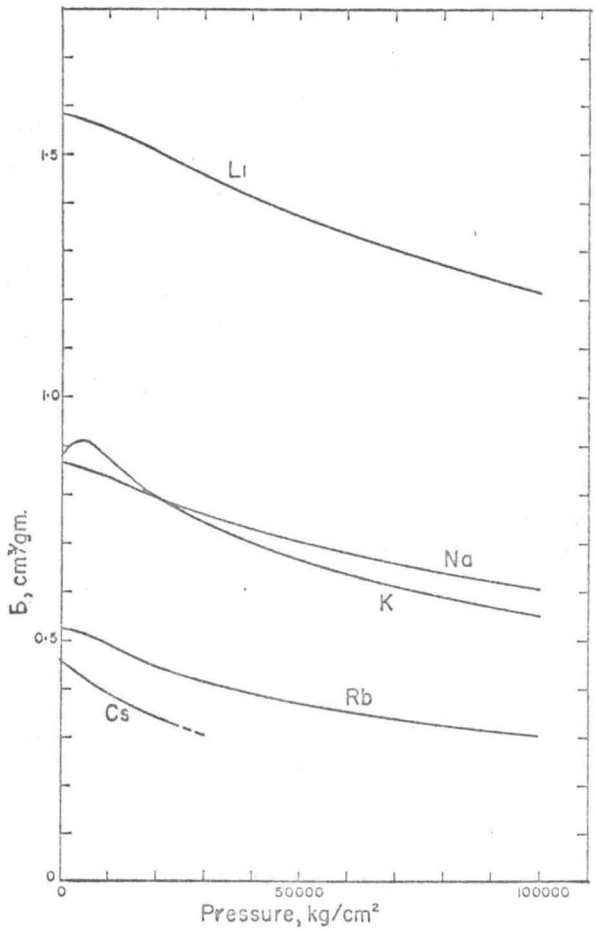

FIG. 4. Pressure vs. excluded volume, Б, for the alkali metals. See text for discussion of potassium curve.

The corresponding formula for a f.c.c. configuration is

$$r = \left(\frac{БM^0}{4\sqrt{(2N_0)}}\right)^{1/3} \tag{17}$$

while for a simple cubic array it is

$$r = \left(\frac{БM^0}{8N_0}\right)^{1/3} \tag{18}$$

We now assume that the associated particles in the solid are large enough so that the end effects are negligible. Using our value of A calculated at the minimum point, we calculate Б at 1 atm. using equation (4). Thus we arrive at the values given in Table 3. As can readily be seen these values are as good as the SLATER[8] or the BRAGG[9] values which are derived from X-ray measurements.

In Fig. 4 is shown a graph of the excluded volume, Б, as a function of the pressure. Whether the maximum in the potassium curve is real, is questionable. However we have already discussed the fact that the potassium values are not good. The excluded volume decreases because as the particles decrease in size the internal volume is released and becomes part of the defect volume. As the pressure increases the defect volume also decreases. This means that the decrease in volume with increase in pressure is generally due to a squeezing out of defect volume. In Table 4 it can be seen that the