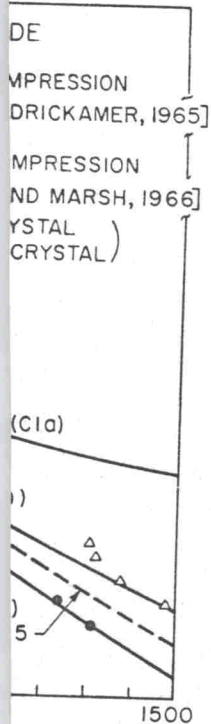


Experimental data permits the choice of C to vary considerably. In the case of aluminum oxide $C = +5$ and $C = -15$ would provide a reasonable fit of the single-crystal and polycrystal shock wave data, respectively. We have chosen $C = -5$ ($K_0'' = -2 \times 10^{-12}$ cm²/dyne) to represent an average fit, but we certainly would not attach any particular significance to this choice of C in view of the available data, which seem to indicate that the single-crystal and polycrystal behave somewhat differently. In this case the calculated curves are based on K_0' determined from the ultrasonic data for polycrystalline material. For α -quartz $C = 10$ ($K_0'' = 27 \times 10^{-12}$ cm²/dyne) provides a reasonable fit of the shock wave data, whereas the high-pressure isothermal data suggest a smaller

value of C for a fit. For magnesium, Figure 4, $C = \pm 2$ ($K_0'' = \pm 5.8 \times 10^{-12}$ cm²/dyne) accommodates the scatter between the high pressure isothermal compression data.

The calculated curve for potassium (Figure 5) shows good agreement with experimental data by picking $C = -0.6$ ($K_0'' = -17.8 \times 10^{-12}$ cm²/dyne). Strangely, a positive value of C was required to fit the experimental data of the other alkali metal, sodium. In Figure 6 the calculated curve for sodium with $C = 1.5$ ($K_0'' = 24.3 \times 10^{-12}$ cm²/dyne) provides a very good fit of the experimental data to high pressures.

In Figure 7 the agreement between calculated and experimental data for lead is quite good over the entire pressure range for a value of



values of volume ratio v/v_0 for sodium, and lead; the values are given in the text.

1. For equation 9, $m = 5$ if $C < 0$, whereas for $C > 0$ the value of K_0'' was chosen to provide reasonable agreement with experimental compression data. The values are cited in the figures. This will clearly affect the apparent K_0' determined for a good fit. For the purpose of having a reliable value of K_0' , confidence can be placed in the values. For example, a relatively small difference in K_0' may very well account for the difference (in sign of K_0'') between sodium. Similarly, taking account of the difference in K_0' between single and polycrystalline aluminum is likely to affect the conclusions.

For lead, α -quartz, and magnesium the disparity between the ex-

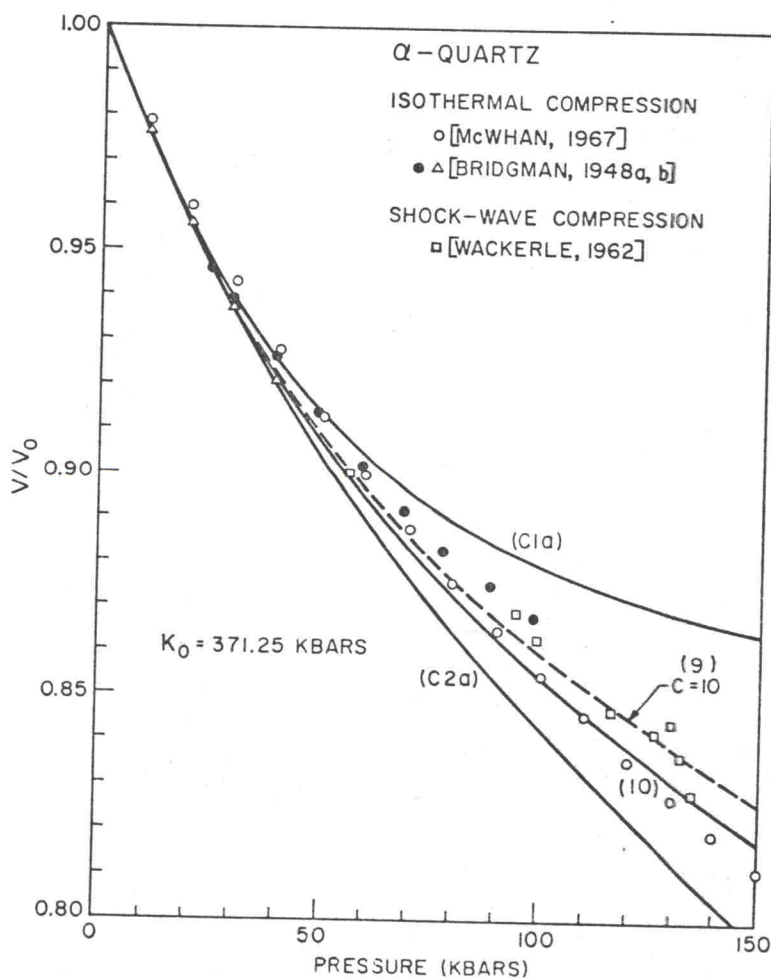


Fig. 3.