the single-crystal acoustic data based on the uniform-stress-model may not give the accurate pressure-volume relation for aggregate materials made of crystals whose elastic anisotropy is large.

The Murnaghan form of an equation of state is useful not only in solid state physics but also in studies of shock-waves, problems of underground nuclear detection, and a host of other disciplines. The equation was derived from Murnaghan's "integrated linear theory of finite strain"[1], and it has been observed earlier [2 - 4] that this macroscopic equation of state is superior to other equations obtained thus far from quantum mechanics or lattice theory.

The Murnaghan equation of state can be written in a form [1]

$$p = \frac{B_O}{B_O'} \left(y^{B_O'} - 1\right) \tag{1}$$

where $y = (V_O/V) = (\rho/\rho_o)$ and

$$B_O \equiv \left\{- V_O \left(\frac{\partial p}{\partial V}\right)_T\right\}_{p\,=\,0} \tag{2}$$

and

$$B_O' = \left\{\left(\frac{\partial B^T}{\partial p}\right)_T\right\}_{p\,=\,0} \tag{3}$$