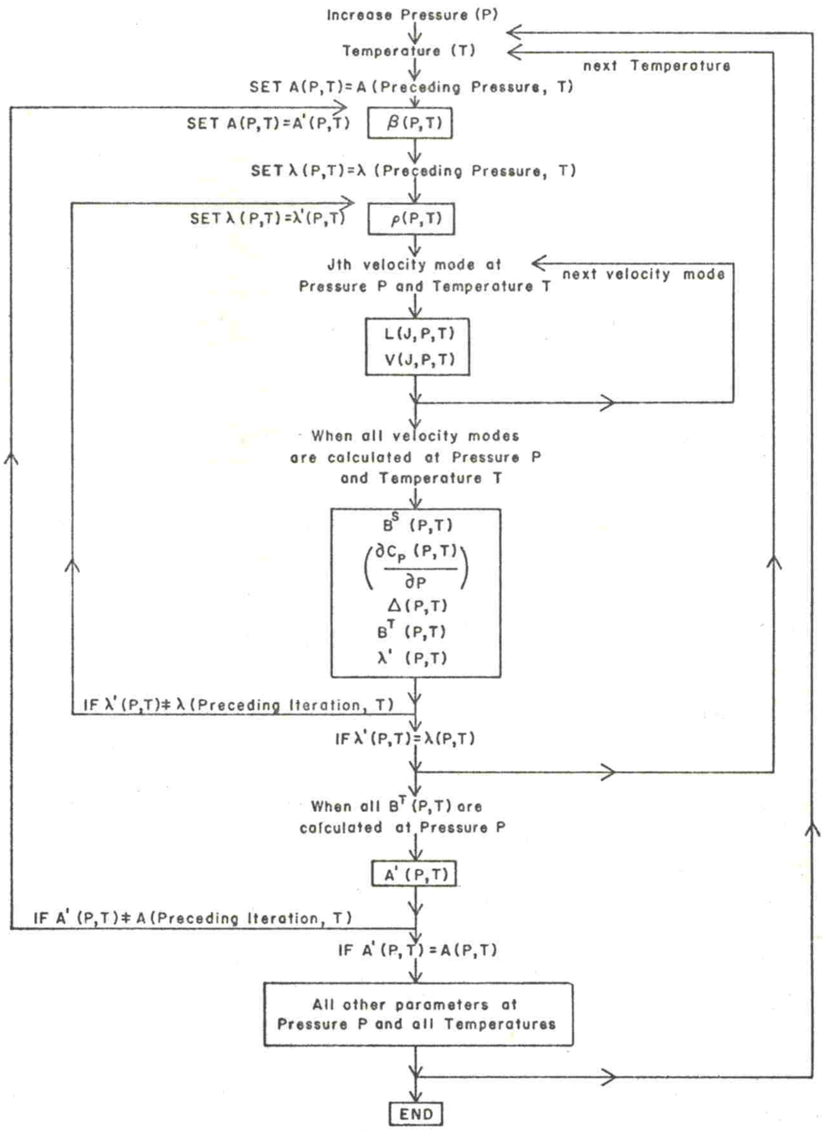

FIG. 2. A flow chart of the iterative procedure to estimate the variation in the elastic constants of a cubic solid with pressure when the travel-time measurements are made as a function of pressure at more than one temperature. $A(P,T)=[\partial\chi(P,T)/\partial T]_P$.

the estimates of $B^S(P)$ and $B^T(P)$ are correct. If this value of $\lambda(P)$ does not agree with the previously assigned value these $B^S(P)$ and $B^T(P)$ are corrected by means of setting $\lambda(P)$ equal to the value of $\lambda(P)$ obtained last and iterating all over again. This is repeated till two consecutive estimates of $\lambda(P)$ are the same. Once this is known all other elastic constant parameters may be obtained. This iterative procedure is sketched diagramatically in Fig. 1.

Table I displays the estimates of the pressure derivatives of the adiabatic and isothermal bulk moduli of NaCl and KCl at 295° and 195°K obtained from the above mentioned iterative procedure. The required travel time data as a function of pressure for this computation were reconstructed from the pressure derivatives of the travel-time for the various elastic wave velocities given in the paper of Bartels and Schuele.[8] All other ancillary data used were also taken from Ref. 8. It may be seen that the estimates of the pressure derivatives of the bulk moduli of NaCl and KCl as obtained in the present work for pressures ranging up to 1.7 kbar differ slightly from those obtained by Bartels and Schuele. However, such differences may become significant at higher pressures. It should be noted further that the iterative procedure outlined in the present work may be easily applied to determine the variation in the elastic constants of an isotropic solid.

Figure 2 is the schematic representation of the iteration procedure when the travel-time measurements are made as a function of pressure at more than one temperature.

We are in the process of developing a variant of this iterative procedure designed to estimate the elastic constants of a noncubic solid as a function of pressure.