K has a value very similar to that which
hich can only support longitudinal waves.
motion of a vibrational type in at least

is such that on the average a molecule
er than about a minimum.

odel, the vibration of atom in liquid is
id state structures with nearly the same

rmonicity if we use Lennard-Jones model.
n of liquid is not directly connected to
of other structures (like body-centered
le for the expansion, and the motion of
than would seem first from crude model.
tructures into account. And this will be
entropy of structural change).

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The Equation of State of solid Helium.

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1. - Introduction.

Solid helium (*) has recently been used as a pressure-transmitting medium in experiments to find out how the electrical resistance of metals at low temperatures changes under pressure [1,2]. The method employed was to apply the pressure at such a temperature that the helium was fluid and then to cool the bomb, containing the specimen and the helium, under conditions of constant volume to the desired low temperature. By knowing the equation of state of solid helium the final pressure could be deduced (+). For the pressures so far used (up to 3 000 atmospheres) the equation of state of the solid as determined experimentally by DUGDALE and SIMON [3] is sufficient, but if the pressure range is to be extended, more information on the equation of state is needed. The recent measurements of STEWART [4] provide the basis for obtaining this information. The method used to derive the equation of state and the results obtained will now be briefly described.

2. - The method and assumptions.

The steps in the calculation are as follows:

a) The first step is to use the isotherm measured at 4.2 °K to deduce U_0, the internal energy at absolute zero, as a function of the volume, V.

(*) Unless otherwise stated, the helium referred to is ^{4}He.

(+) It should be possible to invert this procedure and investigate the equation of state of solid ^{3}He by using the electrical resistance of a suitable substance to determine the pressure in the solid as a function of temperature and volume.