transitions are very sensitive to molecular configuration and to interatomic or interionic distance, and are thus pressure sensitive. It is quite possible to follow with increasing pressure the change in the character of the transition which may be clearly isolated on a given molecule or molecular ion at low pressure, and gradually become less and less localized until at the higher pressures it is entirely a lattice phenomenon.

The above results illustrate the effect of pressure on electronic structure, as well as the contrast between the effect of pressure and temperature on atomic and ionic interaction. The primary effects of temperature are in the energy of lattice vibrations and on the kinetic energy of electrons, with the expansion a secondary effect, i.e., temperature is primarily a kinetic variable. The primary effect of pressure is to vary the interatomic distance and therefore the interatomic potential. At very high pressures there will be a change of zero point energy, i.e., an increase of the Debye temperature and therefore a redistribution of vibrational frequencies.

It is hoped that this sampling of results will emphasize the importance of optical studies in understanding the effect of pressure on the structure of matter.

REFERENCES

1. R.A. Fitch, T.E. Slykhouse, and H.G. Drickamer, J. Opt. Soc. Amer., 47, 1015 (1957).
2. P.W. Bridgman, Proc. Am. Acad. Arts Sci., 76, 1 (1945).
3. T.E. Slykhouse and H.G. Drickamer, J. Phys. Chem. Solids, 7, 207 (1958).
4. D.L. Dexter, Photoconductivity Conference, J. Wiley and Sons, Inc., New York (1956), pp. 155-183.
5. A.S. Balchan and H.G. Drickamer, Rev. Sci. Instr. (accepted for publication).
6. S.P. Clark, Jr., J. Chem. Phys., 31, 1526 (1959).
7. H.L. Suchan, S. Wiederhorn, and H.G. Drickamer, J. Chem. Phys., 31, 355 (1959).
8. T.E. Slykhouse and H.G. Drickamer, J. Phys. Chem. Solids, 7, 210 (1958).
9. A.L. Edwards, T.E. Slykhouse, and H.G. Drickamer, J. Phys. Chem. Solids, 11, 140 (1959).
10. J.C. Zahner and H.G. Drickamer, J. Phys. Chem. Solids, 11, 92 (1959).
11. H.L. Suchan and H.G. Drickamer, J. Phys. Chem. Solids, 11, 111 (1959).
12. W.G. Maisch and H.G. Drickamer, J. Phys. Chem. Solids, 5, 328 (1958).
13. R.A. Eppler and H.G. Drickamer, J. Chem. Phys. (in press).
14. R.A. Eppler and H.G. Drickamer, J. Phys. Chem. Solids, 6, 180 (1958).