with the presence of a bound vacancy, adjoining the divalent impurity (it has been shown that such vacancies are usually completely bound to the impurity atoms(14)).

It can be seen that the initial frequency shift versus pressure for these crystals follows quite a different pattern from the thallium data discussed above. In the first place, the shift is strongly dependent upon the nature of the nearest neighbor halide ions; a dependence, moreover, which is consistent throughout the four cation systems studied. On the other hand, there is no significant difference between those crystals in the cesium chloride structure (the cesium halides) and those in the sodium chloride structure (the others). This is consistent with the complex ion model, but inconsistent with the Seitz model. This is also in agreement with the findings of FREDERICKS and SCOTT(15) that the mobile lead-containing center in transference measurements on these crystals is negatively charged, and must therefore be a complex containing halide ions.

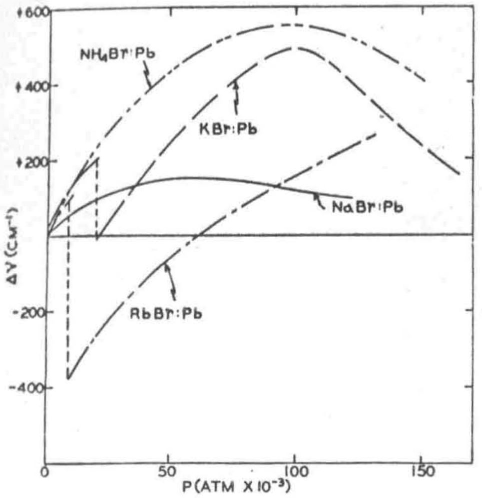

FIG. 7. "*A*" peak frequency vs. pressure—four alkali bromides activated by Pb^{++}.

It should be noted here that a shift to lower energy occurs for all alkali halide phosphors, regardless of impurity or of crystal structure, given sufficiently high pressure. At these very high pressures, the system is compressed to the point where the repulsive energy is probably the dominant contribution to the crystal energy in the ground state. This repulsive energy is very sensitive to changes in the lattice constant. The excited state probably has a flatter curve of energy vs. lattice constant than the ground state. Thus the energy

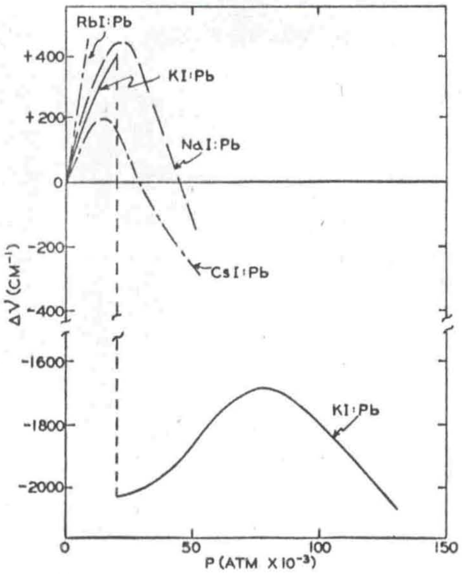

FIG. 8. "*A*" peak frequency vs. pressure—four alkali iodides activated by Pb^{++}.

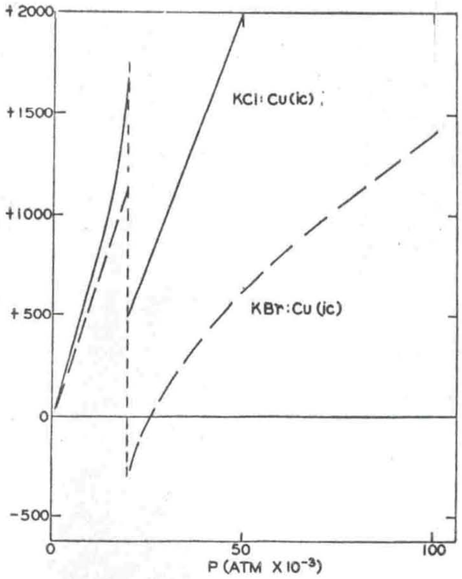

FIG. 9. "2500 Å" peak frequency vs. pressure KC1:Cu(ic) and KBr:Cu(ic).