high-temperature modification of the ½-in. bomb, and the phase boundaries determined up to 160 kilobars and 400°C. A small peak on the absorption edge of CuCl was observed up to 50 kilobars, and the shift and change in intensity measured. These results are presented and discussed below.

Reagent grade CuCl from Fisher Scientific Company was repurified, and runs made in the ⅛-in. bomb, the ½-in. bomb, and the high- temperature modification of the ½-in. bomb. Spectra and light intensity changes with pressure and temperature were obtained on the DUR Spectrophotometer, using a tungsten lamp source and a 1P28 photomultiplier detector. The shift of the absorption edge with pressure was measured from an initial value of 25 080 wave numbers at an absorption coefficient of 15 cm^{-1}. The results are shown in Fig. 10. The initial slope of the shift is 0.0007 ev/kilobar, leveling off at about 30 kilobars, and shifting red from 30 to 50 kilobars. A phase transition occurs at about 54 kilobars, accompanied by a change in the location of the absorption edge of −1900 wave numbers. In the new structure, the edge shifts blue with a slope of 0.0010 ev/kilobar, until a second phase change, beginning at 100 kilobars, causes a change in the location of the absorption edge of 1800 wave numbers. The direction of shift could not be obtained in the highest pressure form, because of the over-all loss of light due to the previous transitions. The purer the sample, the lower were the transition pressures. One sample, which had been stored in a light-tight bottle in a desiccator for only a few days after repurification, required pressures up to 100 kilobars to complete the first transition, and did not begin the second transition until 135 kilobars had been reached.

The results of the combined high-temperature high-pressure runs are shown in Fig. 11. The transitions were located by following the changes in light intensity with increasing temperature, with the pressure applied to the ½-in. bomb remaining constant, and also taking spectra at intervals to locate the absorption edge. The samples did not clear up completely after each transition, and the defects seemed to hinder the following transition, so that some transitions were difficult to find. Fig. 11 is probably correct only within about 10% due to inaccuracies inherent in the method.

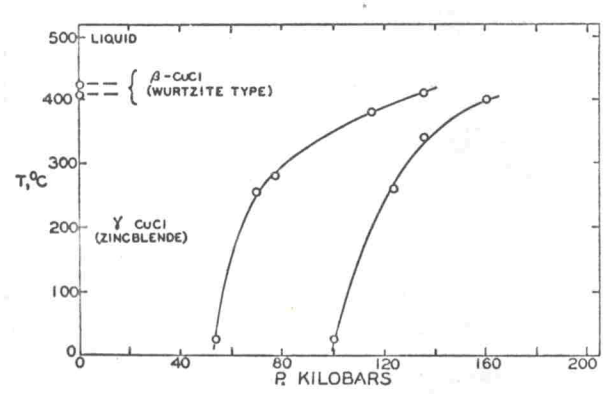

FIG. 11. Phase equilibrium diagram for CuCl.

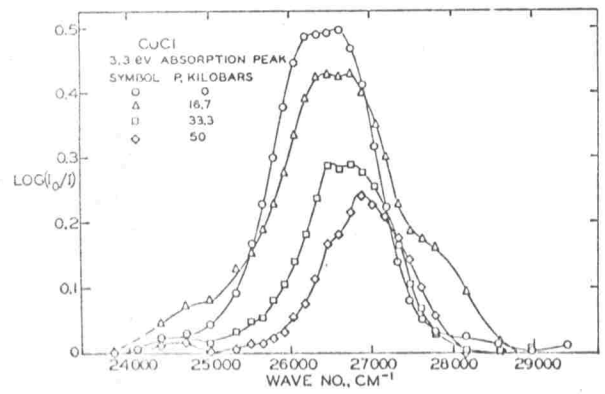

FIG. 12. Pressure effect on the 3.3-ev absorption peak in CuCl.

A small absorption peak on the absorption edge was studied in the ⅛-in. bomb, with a sample 10 mils thick containing 10% CuCl and 90% NaCl. The background absorption was corrected for by subtracting a linear tangent between 23 000 and 29 000 wave numbers, on a plot of $\log(I_0/I)$ vs wave number. The results are shown in Fig. 12. It appears that the peak has at least two components, which change in relative strength with increasing pressure. The peak, as a whole, shifts about 300 cm^{-1} blue, and decreases in strength by about 60–65% at 50 kilobars. Similar results were obtained in a previous run made by T. E. Slykhouse in this Laboratory.

CuBr Regent Grade powder was obtained from Matheson, Coleman, and Bell Company, repurified, and the same types of runs made as for CuCl, using the same equipment. The shift of the absorption edge with pressure was measured from an initial value of 22 740 wave numbers, at an absorption coefficient of 15 cm^{-1}. The results are shown in Fig. 13. The absorption edge shifts slightly blue up to 10 kilobars, then shifts red with a slope of about −0.0010 ev/kilobar up to 50 kilobars. One or more phase changes occur near 50 kilobars. The reverse transition, on reduction of pres-

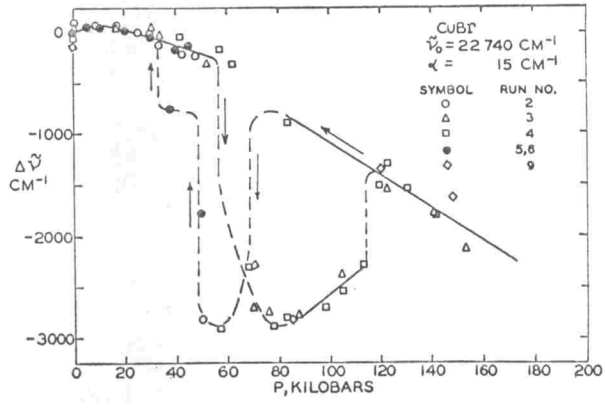

FIG. 13. Shift of CuBr absorption edge with pressure.