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only a small part of the light quanta stored in them. The rest remain, for several weeks if necessary, until released by infrared radiation.

This paper describes some experiments performed to find out how quickly the phosphors can respond to the infrared. In one type of phosphor maximum brightness was reached in less than one ten-thousandth second. In another type the time to reach maximum brightness became larger as the infrared intensity became smaller. For very weak infrared intensities the second type gets steadily brighter for a minute or more and then maintains an essentially constant brightness.

There is a close connection between these effects and those observed in photoconductivity. Further work on these phosphors should increase our knowledge of the band theory of solids, which can be used to interpret both effects.

R.T.E.

Inertia Effects in Infrared Sensitive Phosphors. By F. R. Scott, R. H. Thompson, and Raymond T. Ellickson. *J. Opt. Soc. Am.* 39: 63, January, 1949.

Crystal Spectra

The infrared spectrum of a gas, interpreted, reveals details of molecular configuration, of motions in an isolated molecule, and of magnitudes for interatomic forces. When the same molecules enter a crystal the spectrum changes, reflecting in addition their arrangement in the crystal lattice and their motions therein, and promising quantitative information about intermolecular forces.

The study of crystal spectra is still in an exploratory stage, our understanding of their grosser features notwithstanding. Keller and Halford describe a novel exploration, sequel to others by Halford and collaborators. They compare spectra for the different forms of ammonium nitrate, whose two kinds of molecules (ammonium ions and nitrate ions) can occur in five different lattice arrangements. These spectra are contrasted further with spectra for three forms of thallous nitrate.

Interpretation of even the gross features cannot be attempted for all these spectra until information pertaining to certain crystal structures becomes available. It appears likely, however, that difficulty may attend interpretation of one band, attributable to nitrate ions, peculiarly absent from spectra for two arrangements of ammonium nitrate.

This investigation, concerned with disoriented aggregates of crystals, is being extended now to include single crystals in polarized light, under greater resolving power; refinements promising more detailed information about the dynamics and arrangements of these crystals. R.S.H.

Motions of Molecules in Condensed Systems. IV. The Infrared Spectra for Ammonium Nitrate and Thallous Nitrate. By William E. Keller and Ralph S. Halford. *J. Chem. Phys.* 17: 26, January, 1949.

Sound Dispersion

Alternate rings of noise and silence surround a big explosion. Nearby observers hear the bang at a time predictable from ground-level temperature, but beyond the first zone of silence, extending from about thirty to