activated process. Theory shows that the activation energy is one half the energy of the gap. Thus one can obtain a measure of the gap width from the temperature coefficient of the electrical resistance at constant pressure. In a solid of simple band structure one would expect the bands to broaden with increasing pressure, and the gap to narrow accordingly. Thus one would expect a rapid decrease in electrical resistance with increasing pressure, accompanied by a decrease in the temperature coefficient of resistance.

In addition to exciting electrons by thermal fluctuations, it is possible to excite electrons across the energy gap by means of electromagnetic radiation of the appropriate energy. The conductivity obtained thus in the presence of light of the right wavelength is known as photoconductivity. The very intense absorption of light of the energy of the gap is called the absorption edge of the crystal. It provides an independent measure of the size of the gap.

In recent years we have made both optical and electrical measurements as a function of pressure on iodine crystals [7]. Iodine forms a base centered orthorhombic crystal with the I_2 molecules lying in the ac plane. It is quite practical to grow single crystals of usable size from the vapor phase. The measurements we have made include: (1) optical absorption measurements (location of the absorption edge) as a function of pressure to about 90 kilobars, (2) measurements of electrical resistance both parallel and perpendicular to the molecular plane to over 400 kilobars, (3) measurements of the temperature coefficient of resistance between $77^{\circ}K$ and $296^{\circ}K$ from 60 to 400 kilobars.

Figure 4 shows resistance vs pressure measured both perpendicular and parallel to the molecular plane. In our apparatus it is not possible to correct for contact resistance, so that the curves have been placed