Two of the basic properties which help determine the electronic structure of solids are the arrangement of the atoms (or ions) and the equilibrium interatomic distance. Pressure is a variable of prime importance for determining both these parameters. High pressure experimentation is, then, significant because it permits one to test theories where the variation of a property with interatomic distance is critical and because, on occasion, new polymorphic forms appear which then permit the study of the relationship between atomic arrangement and electronic properties.

The range of pressure to be used depends on the type of measurement to be made, the degree of accuracy to which the data (and the pressure) must be known, and the degree of hydrostaticity required. The recent book "Solids Under Pressure" [1] gives a general review of experiments in the field. Techniques are discussed in a review article by Swenson [2] and in the book by Wentorf [3].

In this paper we shall review some exploratory experiments on optical absorption and electrical resistance at relatively high pressures, the optical work to 160 kilobars (one kilobar = 0.986 atmospheres), the electrical measurements to over 500 kilobars.

The pressures, especially in the electrical work, are rather imprecisely known. A complete understanding of the electronic structure would involve a much wider variety of experiments. In particular, accurate knowledge of the interatomic distance as a function of pressure, and of the structure and lattice parameters of the new phases which appear at high pressure would be desirable. Nevertheless these experiments have contributed to the understanding of a variety of problems and have unearthed a large number of new and interesting phenomena. From these