independent of this birefringence, most of which is lost when the glass is crushed. It will be noted from the data on anvil runs that very little change appears to have been effected below 20 kb. To confirm the fact that this effect is not due to the uniaxial nature of the pressure, as well as to extend the range to lower pressures, samples of silica glass sealed into gold capsules were placed in hydrostatic environment at 4 and 7 kb under argon pressure. The refractive index of the glass was extremely homogeneous and was raised to approximately 1·461 and 1·464 for 4 and 7 kb respectively at 600° (see Fig. 2). The results for germania and a few other glasses in Fig. 3, show a comparable magnitude of change of refractive index. The densities of most of these glasses have also been measured and the relationship between density, the refractive index being nearly linear. If one calculates the molar refraction of silica glasses from the refractive index and density data and the Lorentz–Lorenz equation, it is found that the refractivity for silica decreased from a value of 7·45 for ordinary silica glass to 7·19 for the very dense silica glass obtained. This latter glass has a refractive index essentially identical with that of quartz and its molar refractivity, it will also be seen, is identical to that of quartz (7·19).

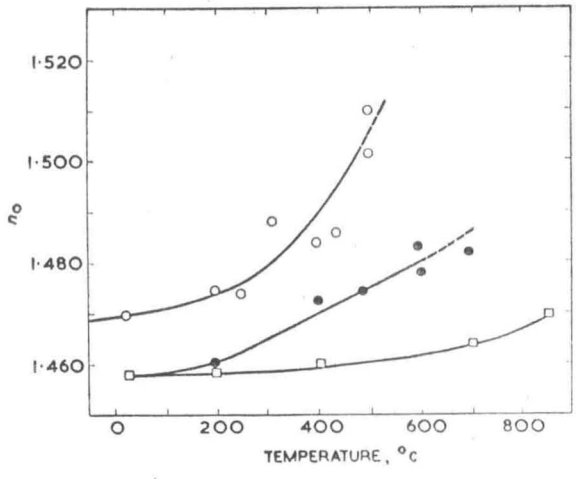

Fig. 2. *Refractive index of silica glass measured at atmospheric pressure and room temperature as function of the temperature of the run*

pressure ○ 40 kb ● 20 kb □ 4 kb
error ± 0·005 ± 0·005 ± 0·001

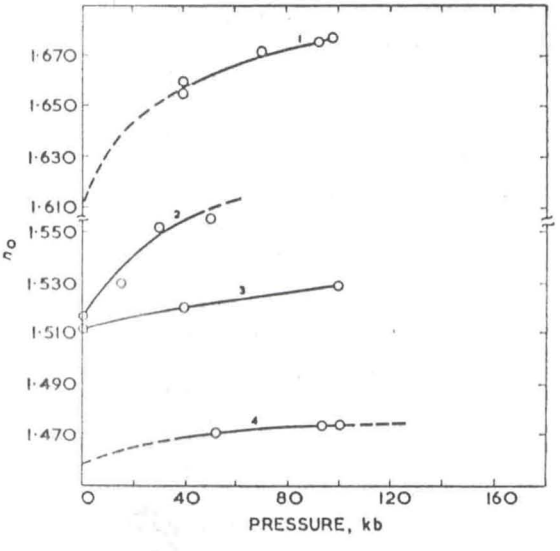

Fig. 3. *Refractive index measured at atmospheric pressure and room temperature of germania* 25—200° (curve 1), *dosimeter-type phosphate* 500° (curve 2), *window* 25° (curve 3) *and boron trioxide* 25° (curve 4), *glasses as function of pressure of the ram*

Before proceeding further, it is necessary to relate the nature of the results being presented to what we believe is actually happening in the relationship. In Fig. 4 is plotted the refractive index of the glass being examined versus the pressure. When the glass is compressed, the density presumably moves along the line AC′C. The slope of this line may be obtained from the compressibility data on silica glass as given by Birch *et al.*[5] and this is the slope actually shown. Thus