They show that at least at the moderate pressures at which solid helium has so far been used (below 10 kb), this method yields a very good approximation to a truly hydrostatic pressure. In addition Goree and Scott (1966) have made some direct comparisons of various methods of measuring the effect of pressure on electrical resistivity at low temperatures. They used what I have called the "helium gas" technique

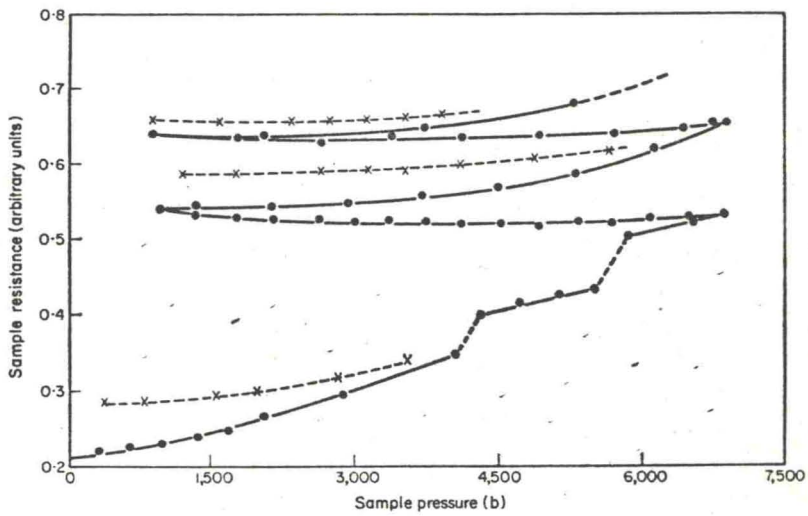

FIG. 2. Typical initial pressure cycles with Ag compressed in piston-cylinder arrangement. Sample resistance is plotted against sample pressure. (From Goree and Scott, 1966.)

(in which the solid helium is formed from the fluid at the same pressure) and the direct-compression method using both hydrogen and solid helium as the pressure medium.

Of the first, the helium gas method, they say (p. 826): "We have never encountered any case of detectable deformation or hysteresis in the resistance measurement when the experiments were carefully performed in this manner."

To test the direct-compression method, they chose a soft metal, silver, and compressed it at 4·2° K using both solid helium and solid hydrogen. They found as they expected that there was significantly less deformation of the sample (as estimated from hysteresis in its resistance values) when solid helium was used rather than hydrogen. Figure 2 shows a typical initial pressure cycle on silver obtained by the piston-cylinder method using solid helium.