in order to illustrate the fits of the various parameters, the curves corresponding to the $\langle 111 \rangle$ orientation are omitted.

5.1. *Resistivity curve*

The fits to the resistivity curves were made by fixing the experimental point at 30 kbar and varying ΔE_0 and S' for a particular value of S. It can be seen from figures 3 and 4 that the height and shape of the maximum depends sensitively on S, and shows that a reasonable value would lie between 3 and 5 (ie 4 ± 1). This is in excellent agreement with Jayaraman and Kosicki (1968). The value of S' corresponding to this value of S can be seen to

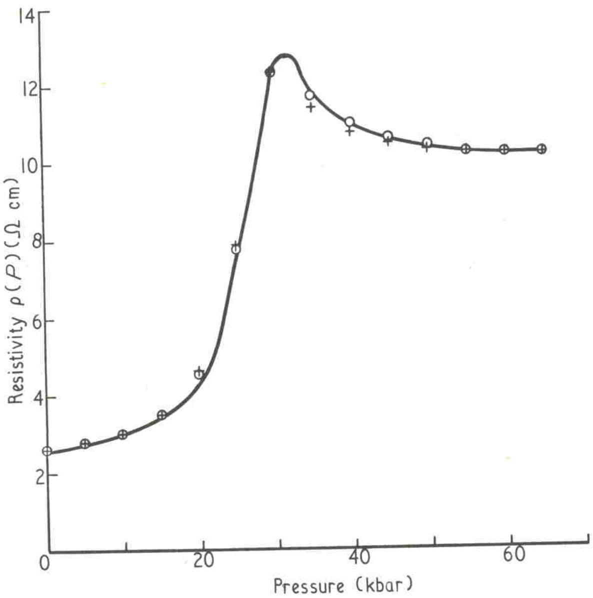

Figure 4. Theoretical fits of high pressure resistivity data in n type Ge for $N_0 = 5{\cdot}5$, $\Delta E_0 = 0{\cdot}186$ eV, and values of S from 3 to 5. Full curve, experimental; ○ $S = 3$, $S' = 0{\cdot}188$; + $S = 5$, $S' = 0{\cdot}099$.

be near 0·1 to 0·2, provided N_0 is greater than 2·7. Jayaraman and Kosicki (1968) obtained S' between 0·1 and 0·36 for $N_0 \sim 2{\cdot}7$. We further find that any increase in N_0 must be accompanied by an increase in ΔE_0 to obtain the best resistivity fit, and for $N_0 = 5{\cdot}5$ we have ΔE_0 is $0{\cdot}186 \pm 0{\cdot}01$ eV.

The resistivity theoretical fits have the same deviations as found by Fawcett and Paige (1971) for their determination of the L_1–Δ_1 nonequivalent intervalley scattering coupling constant, that is a steeper rise in resistivity at a lower pressure than observed experimentally, and more pronounced saturation in the very high pressure region.

5.2. *Hall mobility curve*

These were obtained from R_H/ρ (figures 5 and 6) and proved to be extremely sensitive to the chosen value of S'. It was extremely difficult to obtain a wholly accurate fit taking different values of S and S' in the region just before and at band cross-over. The integrals in this case were solved exactly since the approximate expressions of Nathan *et al.* (1961) produced even worse fits. To obtain reasonable fits for $S = 4$, it is evident that N_0 must be much greater than 2·7 (taking the Cardona and Pollak (1965) Δ_1 effective mass). Figure 5 illustrates how the mobility is particularly sensitive to S' near band cross-over, in the 25–35 kbar range. Figure 6 shows also how an increase in N_0 lowers the points near 25 kbar and

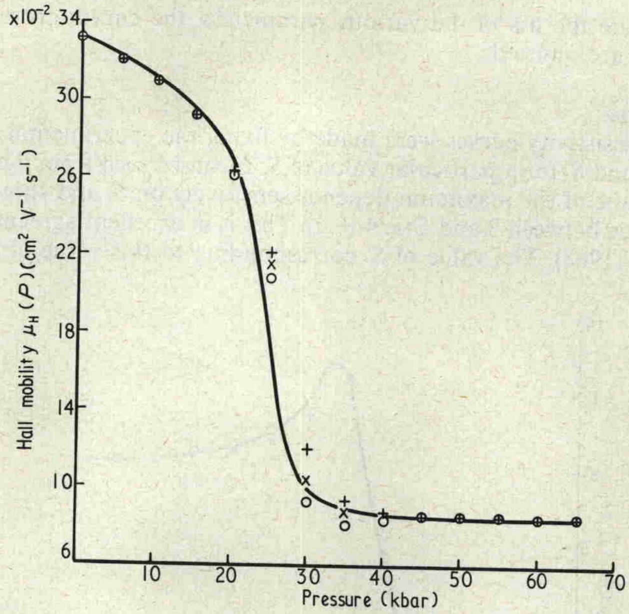

Figure 5. Theoretical fits of high pressure mobility data in n type Ge for $N_0 = 5{\cdot}5$, $S = 5$, and $\Delta E_0 = 0{\cdot}186$ eV for: $+$ $S' = 0$; $\times$ $S' = 0{\cdot}1$; ○ $S' = 0{\cdot}2$. Note that the largest changes occur near band cross-over in the 25–35 kbar range. Full curve, experimental.

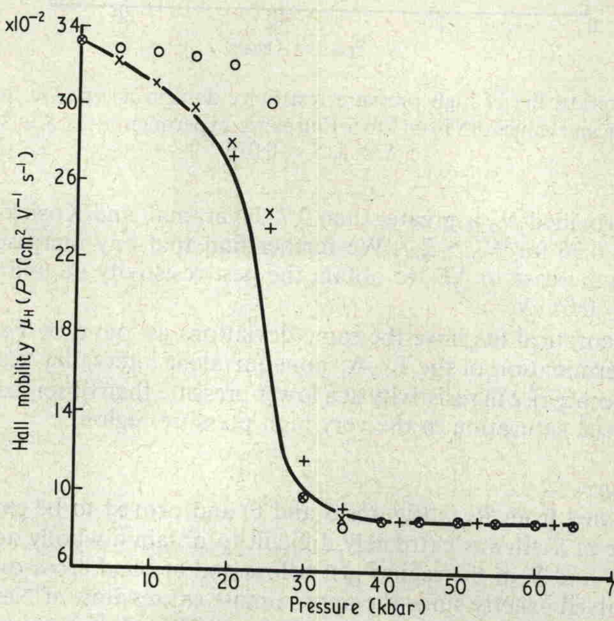

Figure 6. Theoretical fits of high pressure mobility data in n type Ge for constant S $(=4)$ and S' $(=0)$, which illustrates that a high value of N_0 is required ($N_0 = 1{\cdot}55$ is obviously too low). Full curve, experimental; ○ $N_0 = 1{\cdot}55$, $\Delta E_0 = 0{\cdot}177$ eV; $\times$ $N_0 = 2{\cdot}7$, $\Delta E_0 = 0{\cdot}18$ eV; $+$ $N_0 = 4{\cdot}2$, $\Delta E_0 = 0{\cdot}185$ eV.