# C O N C L U S I O N S

Let us try to review the various points raised in the begining of the chapter III , and try to weigh up to what extent our deliberations are analysed.

From the literature of this particular problem it was observed that very little attention was paid for the phase shift study. Considering the partial wave analysis as the base,it was observed that phase shift was found to be dependent on the cosine of the angle that dipole axis makes with the wave vector. Comparative studies of the phase shift determination by various methods showed that phase shift decreases with increasing $\gamma$ and the phase shift for " S " wave i.e. $\delta_o$ is important for slow electron scattering by molecules. $\delta_o$ for Born approximation and WK B remained same while the value of $\delta_o$ by variation method was found little lesser than other two methods. Further the calculations of $\delta_l$ by variation method were very combersome for higher values of $l$. The effect of phase shift to average momentum transfer cross section averaging over the Maxwellian distribution of velocity, for thermal electron is to increase the cross section An attempt was made for the comparative studies of the various methods to find the phase shift and its contribution to the

cross section.

A variational approach to the scattering amplitude by point dipole showed that momentum transfer cross section increased. The behaviour of cross section calculated by Mittleman et al seem as calculated by the variational method partial wave analysis, variational method and Born approximatio methods comparision showed that first is best except limitation $\alpha < 1.27\ ea_0$. Born approximation though very good, gives smooth variation which is not characteristic of partial wave method. The variation method is intermediate between them. An extension of the Born approximation to a finite dipole gave the value of momentum transfer cross section 0.3 % less than the Altshuler's method. It also exhibited the potential resonance behaviour. The introduction of one centred coulomb short range term also change the cross section by a small amount. Calculations of short range force for different groups of molecule determined the nature of short range attractive or repulsive force. The analysis of the potential by the octupole, quadrupole, spin moments is not made as it creates lots of complications.

The scattering amplitude and the wave function for the final bound state of an electron in Turner's mechanism

were modified. The life time for the temporarily formed negative ion and the capture cross section in the case of electron polar molecule interaction were reported. It was observed that the effect of the modifications was to increase the life time and to decrease the cross section. This favours the existance of long lived parent negative ions. The results of the resonance effect of the finite dipole calculations supported the view that the life time for the negative ion is short. The contrevarsy of the scattering of the slow electron by the polar molecule is yet not fully removed.