SUMMARY OF THE CHAPTERS :

Chapter I. :

In this chapter we found out very simply the angular distribution of the emergent radiation for Rayleigh's phase function by appealing to the 'Principles of Invariance' and using the law of diffuse reflection. These solutions have then be applied to find laws of darkening for Rayleigh's phase function. The values of the laws of darkening for the phase function have been calculated for $\mu = .1 (.1) 1$.

Chapter II.

We considered two approximate forms for H-function, which Karanjai had developed for isotropic scattering , and three different phase functions for anisotropic scattering.

The approximate forms for H-function with anisotropic scattering are :

$$\text{I.} \quad H(\mu, \omega) = 1 + a\mu + b\mu^2$$

and

$$\text{II.} \quad H(\mu, \omega) = 1 + \frac{a\mu + b\mu^2}{A + 2\mu}$$

where $$A = \left[1 - 2\int_0^1 \psi(\mu)\, d\mu \right]^{\frac{1}{2}}$$

and the phase functions are :

A. Rayleigh's phase function

B. $\omega (1 + x \cos\Theta)$

C. $1 + \omega_1 P_1 (\cos\Theta) + \omega_2 P_2 (\cos\Theta)$

The values of H-functions calculated by both the approximate forms showed a good agreement with the exact values given by S. Chandrasekhar in 'Radiative Transfer' for the phase functions, mentioned above.

In the second portion our calculated values of H-functions have been applied to find diffuse reflection in accordance with the said three phase functions.

To find diffuse reflection we considered the values of H-functions of the first form only.

Chapter III. :

Here, with the aid of the extension of the method of 'Discrete Ordinates' we treated the exact solution for the problem of line formation in the M - E model by interlocked multiplet lines without redistribution. Finally, we applied the solution of the equation of multiplets deduced to find laws of darkening for the multiplet lines.