

CHAPTER VI

CONCLUSIONS

From the above result, the following conclusions may be made :-

a. the total rate of production of stars from easterly direction is 16.05 ± 0.46 stars/c.c./day, and the total rate of production of stars from the westerly direction is 17.30 ± 0.56 stars/c.c./day. The preponderance is 10%

b. The logarithmic plots of the size distributions against star sizes consist of two straight lines one from the east and one from the west, with the break coming at 5.1 and 7.0 respectively. The results are in agreement with the Le Coureur extension theory. These results can be represented by the following equations;

$$\text{east} \quad \left\{ \begin{array}{l} N(>n) = A \exp. (-1.437 n) ; 2 < n < 6 \\ N(>n) = 0.01013 A \exp. (-0.296 n) ; 6 < n < 14 \end{array} \right.$$

and

$$\text{west} \quad \left\{ \begin{array}{l} N(>n) = A \exp. (-0.943 n) ; 2 < n < 6 \\ N(>n) = 0.015 A \exp. (-0.388 n) ; 6 < n < 14 \end{array} \right.$$

The constant A for the easterly equation is not the same as the constant A for the westerly equation, because the constant (A) depends on the number of observed stars and the

altitude of the experimental station.

e. The results of frequency distributions of stars from the east and from the west show that there are more low energy stars than high energies stars, and the west/east ratio is very close to one at low energies, of incoming particles, becoming larger and larger as incoming particle energies increase. From these results we may conclude that at ground level there are large number of neutrons at low energy.

Low energy neutrons at ground level may be come from two sources:

1. neutrons originating in the atmosphere in the region from the earth's surface up to the point where the density of air equals 150 gm/cm^2 will penetrate this region will outter the ground, and will finally get back into the air again at low energy.

2. neutron originating in the ground from radio-active substances.

Small stars may originate from the back streaming of secondary neutrons (100 - 150 MeV). from starsoriginated underground.