region of large $\bar{s}$. The small divergence in $g(\bar{s})$ curves for large $\bar{s}$ may either be due to the fact that the Born approximation deviates from the exact analysis especially for large $\bar{s}$, or may in part be due to the fact that the idea of characteristic density distribution assumed for nucleons may not be strictly applicable in the case of protons. A forward analysis which is under investigation is expected to throw some light on this.

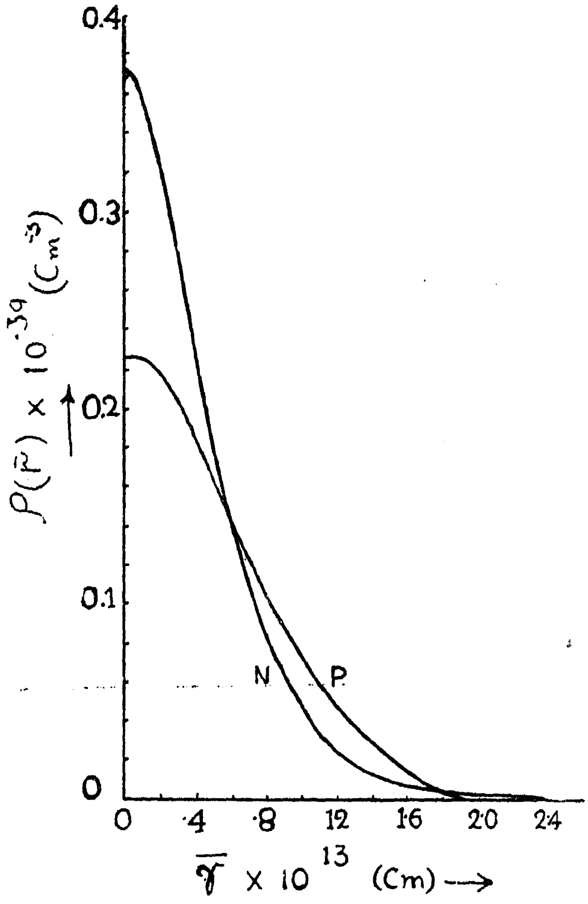

FIG. 2

Curve P represents the proton density distribution for Carbon obtained by present analysis while curve N is the characteristic nucleon density distribution obtained by Shah and Gatha.

Figure 2 shows the variation of $\rho(\bar{r})$ of Carbon as a function of $\bar{r}$ obtained by Fourier inversion of equation (1). Following a similar technique, Gatha *et al.*[4] have analysed the experimental data on the nuclear scattering of protons and obtained the characteristic nucleon density distribution which is also plotted in the same figure for comparison. The actual proton density in terms of $\bar{r}$ can be obtained by multiplying $\rho(\bar{r})$ of the curve P by the normalisation constant Z/A which is ½ for Carbon. The nucleon density given by curve N is already normalised. Since the nucleon density is equal to the sum of the proton density and the neutron density, the neutron density can be found from the curves N and P. The proton density is equal to the neutron density at the points of intersection of the two curves. They are also the points where the densities cross each other. It can be easily seen from the curves that the neutron density exceeds the proton density in the innermost core and also near the periphery of the Carbon nucleus. However, the reverse is true midway between the core and the periphery. This inference is in agreement with the conclusions of other workers[5,6] regarding the densities near the periphery.

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X-RAY METHOD FOR DETERMINING GRAIN-SIZE IN ROCKS

IN recent years, the determination of grain-size in rocks has assumed importance as it has been found[1] that several physical properties of rocks like sound absorption and sound velocity are influenced by the grain-size. The usual method of determining the grain-size is to prepare a thin section of the rock (thickness about 0·03 mm.) and measure the diameter of about 200 grains taken at random, using a polarising microscope provided with a mechanical stage and a vernier. The average of these values is taken as the grain-size. The method, besides being tedious, has the following defects :

1. The measurement represents the size of only a section of the grains in a particular plane and not the over-all grain-size.
2. As the number of grains on which measurements are made cannot be very large, the average value obtained may not be a good approximation to the over-all average. Hence it is attempted, in this investigation, if an X-ray method is suitable for determining the grain-size in rocks.

Several X-ray methods have been used in the past to determine the grain-size in metals.[2] One method[3,4] is to count