

and of its temperature variation in accordance with the statistics of Fermi and Dirac.

K. S. KRISHNAN.

Indian Association for the  
Cultivation of Science,  
Calcutta.  
Oct. 21.

<sup>1</sup> *Z. Phys.*, **64**, 629 (1930).

<sup>2</sup> The theoretical curve was plotted with the help of the tables for the Fermi-Dirac integrals given by Stoner, *Proc. Leeds Phil. Soc.*, **3**, 403 (1938). The experimental values are from the measurements by Krishnan and Ganguli, *Z. Krist.*, **A**, **100**, 530 (1939), and some unpublished measurements by Ganguli.

## Total Solar Eclipse of October 1, 1940

THE Joint Permanent Eclipse Committee of the Royal Society and the Royal Astronomical Society has for some years plans prepared for a number of expeditions to observe, what should be a very good eclipse for study, the total eclipse of October 1, 1940. Prof. J. A. Carroll was to have gone from Aberdeen to Brazil with an objective interferometer and an echelon spectrograph for a study of coronal and chromospheric line contours and wave-lengths. The Royal Observatory, Greenwich, and the Cape Observatory were to have gone to Calvinia for a study of the Einstein displacement of

stellar images, for a spectrographic study of the chromosphere with a moving-plate camera and for other work. Prof. H. Dingle was to have gone to a station near the edge of the belt of totality for work on wave-lengths and intensities of chromospheric lines near the cusp. The Solar Physics Observatory and the Radcliffe Observatory, Pretoria, were to have joined forces at Nelspoort for a programme including work on the extreme ultra-violet spectrum of the chromosphere and corona, a study of chromospheric line intensities at different heights with a camera having a plate moving intermittently, and polarization studies of the corona and of the sky close to the eclipsed sun.

The outbreak of the War has caused the abandonment of all the expeditions from Great Britain, and the Committee has decided to concentrate on one expedition from the Cape and Radcliffe Observatories to Calvinia. This will carry out as much as proves practicable of the programmes of the various expeditions originally planned. Just how much that will amount to remains to be settled, but every effort will be made to secure as wide a programme of observations as possible.

F. J. M. STRATTON.  
(Secretary).

Joint Permanent Eclipse Committee of the  
Royal Society and the Royal Astronomical Society,  
Gonville and Caius College,  
Cambridge.

## Points from Foregoing Letters

A. I. Virtanen and M. Torniainen suggest that the discrepancies in their results and those of others experimenting on the excretion of nitrogen compounds from leguminous roots may be ascribed to the quality of the containers, and especially to their porosity. Observations show that the pots giving best results should be large and very porous.

The effects of alkaline reagents on wool have been reviewed by M. R. Freney and M. Lipson. They find that the sulphur and nitrogen contents of merino wool are scarcely altered by immersion in 52 per cent sodium hydroxide up to 30 minutes; that the surface structure of the fibre is unaltered by similar treatment up to 5-10 minutes; that wool treated with concentrated sodium hydroxide absorbs acid dyes evenly; and that a woven fabric treated with 52 per cent sodium hydroxide solution shows a decrease in shrinkage on washing. These studies were extended to treatment of wools with alkalis dissolved in certain organic solvents.

H. Blaschko describes experiments on the inhibition of amine oxidase by derivatives of  $\beta$ -phenylisopropylamine; it is shown that there exists a parallelism between the awakening action of these drugs and their inhibitory effects on the enzyme.

A. Polson describes and illustrates an apparatus for studying the mobility of animal viruses and their neutralizing antibodies in an electric field. It is a simplified and less complicated modification of the Tiselius moving boundary method.

Ellen Thomsen finds that maturation of the ovaries in adult female flies is controlled by a hormone produced by the corpus allatum, since extirpation of the corpus allatum of young *Calliphora* and *Lucilia* females causes the ovaries to stop development at an early stage, whereas operated controls have fully developed ovaries. The ovaries on the other hand influence the corpus allatum, for removal of the ovaries of young *Calliphora* causes a considerable enlargement of the corpus allatum.

Lord Rayleigh has been able to detect by an interference method a slight permanent set of a strip of glass exposed for many months to a powerful bending moment.

W. Heitler points out that a number of difficulties (diverging magnetic moment of proton, large scattering cross-section for mesons) are due to an inadequate treatment of the spin and charge. It is suggested that 'higher proton states' with charge  $2e$ ,  $-e$ , and those with spin  $3/2$  might exist with a rest mass of 25-50 electron masses higher than that of the proton. The cross-section for the scattering of mesons is then of the right order of magnitude and the magnetic moment of the proton diverges only logarithmically.

According to K. S. Krishnan, the abnormal diamagnetism of graphite along its hexagonal axis is the same as the Landau diamagnetism of the Fermi electron gas containing one electron per carbon atom and having a degeneracy temperature of about 520° K.