

Elementary Classes.

MEMBERS who have joined these classes are requested as far as possible to send their replies to each letter of instructions before the issue of the next, so that the Director may be able to deal with their replies in the latter communication. When it is not possible for members to do this, the replies will be dealt with by the Director in the next letter which issues after their receipt by him. Owing to the large number of members who have joined the classes, it is impossible for him as a rule to write specially regarding the replies in between the issues of the letters.

H. G. TOMKINS,

Director.

Extracts from Publications.

The Spectrum of the Corona.—The interdependence of physics and astrophysics is emphasised by an article appearing in No. 458 of *The Observatory* in which Prof. J. W. Nicholson suggests that the spectrum of the Corona may be given a physical interpretation, based on the assumption that the "Coronium" atom is a simple one, in which the actions of the component electrons may be theoretically determined. The majority of terrestrial atoms are too complicated to be thus analysed, with our present knowledge of mathematics, but among celestial atoms, Prof. Nicholson suggests there may be atoms of sufficiently simple construction to enable the mathematician to determine their structure, and so deduce from first principles the nature of the spectrum emitted by them. In "Nebulium" and "Coronium" he believes such simple atomic structures are to be found.

If, according to theory, the model simple atom consists of a number of negative electrons revolving about a positive nucleus, it can be deduced that the wave-lengths of the radiations emitted can have a series of values of which the cube roots are in arithmetical progression. Such series are found in the spectrum of the Corona, and the theory allows an interpretation of nearly all the lines in the spectrum to be set up.

[*Nature.*

The Temperatures of Stars.—By comparing quantitatively the differences in intensity in various sections of the spectrum, Dr. H. Rosenberg has deduced temperatures for seventy stars, and publishes his results in No. 4628 of the *Astronomische Nachrichten*, where he also describes his methods. The temperatures determined range from more than $400,000^{\circ}$ C. for γ Pegasi to 2150° for α Tauri, but the former is exceptional, the next lower temperature being $50,000^{\circ}$ for γ Cassiopeiæ. The temperature of the sun, the intensity-difference of the spectrum of which forms the basis of the calculations is, on this scale, 4950° . In the lower temperatures Dr. Rosenberg's results agree fairly well with those of Wilsing and Scheiner, but higher up the scale the values are much greater. The general concordance is shown when the intensity differences are plotted on a curve having for its abscissæ the various spectral types of Miss Maury's classification, the highest temperatures being exhibited in both cases for the helium stars and those showing bright hydrogen lines in their spectra.

[*Nature.*

Astronomical Literature.—The President (Col. E. E. Markwick, C.B., F.R.A.S.) remarked that very often the reading of presents was looked upon as a formal matter, and they always returned their thanks to the respective donors, but one could not help thinking what a mine of information was contained in the periodicals they had just received. Many of them were of high professional interest, particularly such as the annals of the Harvard College Observatory—which dealt with so many points of interest, especially variable stars, photometry, etc., and also the proceedings of the Astronomical Society of India, which in form followed the lines of our own publications. With this stream of scientific literature coming in month by month they had a mass of information in their library, and he hoped that members would make what use of it they could. * * * * *

[*Journal of the British Astronomical Association.*

A Cassegrain Reflector with a Corrected Field.—An important memoir by Prof. R. A. Sampson was read before the Royal Society on the 13th February 1913. Its purpose is to discover an appliance which shall correct in a practical manner the faults of the field of a Cassegrain telescope while leaving unimpaired its characteristic features of great focal length, convenient position of the observer and achromatism. It is shown in agreement with Schwarzschild that two mirrors alone cannot correct the field without introducing impracticable curves or sacrificing the general design. A system of lenses

is investigated which shall effect the purpose. Three lenses is the least number which can satisfy the two conditions of achromatism. Achromatism for all colours is preserved completely by making all the lenses of the same glass. The first of these lenses is a meniscus silvered at the back, and besides adjusting the achromatism of the other two serves to reverse the direction of the ray. The other two form a pair of nearly equal but opposite focal length and intercept the outgoing beam. By introducing a proper distribution of curvatures between their faces they introduce correcting aberrations. The resulting field is completely corrected for colour, spherical aberration, coma and curvature of the field.

[*Nature*.

The Vagaries of Encke's Comet.—An interesting article discussing the peculiar variation of the period of Encke's Comet is contributed by Mr. E. V. Heward to the December number of *The Oxford and Cambridge Review*. Mr. Heward recounts the results obtained from the various calculations of Encke which lead him to the idea of a resisting medium in interplanetary space, and briefly discusses the arguments for and against the existence of such a medium. Until the 1867-71 return the acceleration of the Comet's motion was fairly constant, but it then suddenly diminished by nearly one-half, only to return to its earlier value at subsequent revolutions. Mr. Heward points out that the theory promulgated by Dr. Backlund, *viz.*, that the Comet encountered a stream of meteors of varying density when near perihelion, satisfactorily explains the vagaries of period and is not a negation of the resisting medium idea.

[*Nature*,

The Diurnal Variation of the Earth's Magnetic Field.—A paper by Mr. G. W. Walker communicated to the Royal Society at its meeting on the 30th January 1913 deals with a new analytical expression for the representation of the components of the diurnal variation of terrestrial magnetism. Attention is directed to the fact that Fourier analysis of the observed diurnal variation of the components of terrestrial magnetic force does not lead to a concise specification of the data. Thus progress towards a knowledge of the physical causes has been limited. It is suggested that the phenomena are probably purely diurnal, that no physical significance may attach to the twelve-hour, eight-hour, etc., terms, but that the fact may be more suitably expressed by a function that recurs only once in twenty-four hours.

[*Nature*.

The Relative Numbers of Prominences observed on the Eastern and Western Limbs of the Sun.—Mr. E. W. Maunder read before the British Astronomical Association a paper by Mr. J. Evershed on this subject. He said that five years ago Mrs. Maunder brought before the Association a paper in which she showed that the number of sun-spots was greater on the eastern half of the solar disc than on the western half. An average group of spots that passed across the sun from the eastern to the western limb completed the passage in 14 days, so if they divided the apparent disc of the sun into 14 lunes, each lune corresponding to the average apparent movement of a spot in a day, and summed up the spotted area of each lune, they found that the total area for the first lune, viz., that close to the east limb, was 55,980 millionths of the visible hemisphere of the sun, while the total area for the corresponding western lune was only 48,000. And so with the other lunes; in each case the eastern lune showed an excess of area over the corresponding western lune. Taking the totals for the Cycle 1889-1901, the entire area was 1,347,282 millionths for the eastern half of the disc, and 1,310,606 for the western, the eastern excess being 36,676. The preponderance was still more clearly shown in the numbers of spot groups.

Mr. Evershed's paper was a masterly analysis of the very full material supplied by the visual and photographic records of solar prominences obtained at the Kodaikanal Observatory during the years 1904-1912 inclusive and a comparison with the observations at Kenley and Catania. The results obtained were closely analogous to those relating to sun-spots detailed in Mrs. Maunder's paper.

The eastern prominences observed at Kodaikanal numerically exceeded the western for each of the eight years, and the proportion of the eastern excess was nearly constant over this period. The average percentage of eastern prominences, including the first half of 1912, was 52.70. The larger prominences show a much smaller excess than the smaller prominences, the percentage for the period 1905-1911 of eastern prominences being 51.16 for the former and 53.60 for the latter. The mean profile areas of prominences show a small average excess on the eastern side, but this excess is much smaller than that for *prominence numbers*, and in several years the west limb area exceeds that of the east limb.

[*Journal of the British Astronomical Association.*