

just published will make Fellows of the Society proud of their Fellowship, and will arouse a spirit of emulation among chemists in many parts of the world.

STUDENTS of meteorology will be glad to know that three important essays on Australian weather have, by the generosity of the Hon. Ralph Abercromby, been brought together and published in book form. The first essay, on "Moving Anticyclones in the Southern Hemisphere," by Mr. H. C. Russell, F.R.S., was originally read before the Royal Meteorological Society, and published in the Society's *Journal*. The leading fact brought out in this paper is that Australian weather south of lat.  $20^{\circ}$  S. is the product of a series of rapidly moving anticyclones, which follow one another with remarkable regularity, and are the great controlling force in determining local weather. These anticyclones travel eastward at the average rate of four hundred miles per day, and they do so with such regularity that the prospect is held out of weather predictions being made some weeks in advance, or even for longer periods. The second essay in the volume is the one, by Mr. H. A. Hunt, on "Southerly Bursters," which won the prize offered by the Hon. Ralph Abercromby. This essay was noted in NATURE in January 1895 (vol. li. p. 230). The third essay, which is also by Mr. Hunt, has for its subject "Types of Australian Weather." This discussion throws much new light upon the source of the greater part of Australian rain, and at the same time forms an important contribution to the study of weather in the southern hemisphere generally. The volume containing these essays is published by Mr. F. W. White, Sydney.

THE additions to the Zoological Society's Gardens during the past week include four Malabar Squirrels (*Sciurus maximus*) from Southern India, presented by Mr. W. J. Stillman; two Sclater's Curassows (*Crax sclateri*) from Minas Geraes (Brazil), presented by Mr. E. Sumead; a Temminck's Stint (*Tringa temminckii*), British, presented by Mr. E. C. Sprawson; a Golden Eagle (*Aquila chrysaetos*) from Spain, presented by Mr. F. Leathly Holt; three Common Blue-birds (*Sialia wilsonii*) from North America, presented by Mr. A. T. Binny; two Stone Curlews (*Edicnemus scolopax*), British, presented by Mr. W. J. Kidman; two Common Blue-birds (*Sialia wilsonii*) from North America, presented by Mr. Percy Cockshut; three Common Adders (*Vipera berus*), British, presented by Mr. A. Old; three Peruvian Snakes (*Tachymenis peruviana*) from Peru, presented by Mr. A. H. Jamrach; a White-browed Amazon (*Chrysotis albifrons*) from Honduras, purchased; a Wapiti Deer (*Cervus canadensis*, ♀), bred in the Gardens.

#### OUR ASTRONOMICAL COLUMN.

LUNAR PHOTOGRAPHS.—Prof. Weinek, whose artistic skill in the enlargement of lunar photographs cannot but be admired, and who has co-operated with the staff of the Lick Observatory in reproducing from their negatives the more interesting features of the moon, has recently made a further contribution to the Vienna Academy of fifteen enlargements of certain details on the lunar surface, as seen at the third quarter. Also, Aristarchus and Herodotus have been drawn with the shadows thrown on the western side as a companion picture to an earlier enlargement in which the shadows are thrown to the east. Dr. Weinek now takes the opportunity of calling attention to the fact that, in many instances, his drawings, indicating the existence of minute detail, have been confirmed by Dr. Gaudibert from optical examination of the moon itself. This remark refers to drawings from original negatives taken both at the Lick and Paris Observatories. The differences between the photographic reproductions and Schmidt's map are admitted, and according to the description furnished by Dr. Gaudibert, it is a little difficult to explain some of the omissions from this well-known authority.

NO. 1399, VOL. 54]

DISTRIBUTION OF BINARY-STAR ORBITS.—Miss Everett gives in *Monthly Notices*, June 1896, pp. 462-466, the results of an attempt to discover if the planes of the orbits of binary stars have any relation to the plane of the Milky Way. To do this, the most accurate values of the elements of fifty-five orbits were taken, and from these the galactic longitudes and latitudes of the poles of the orbits were calculated and tabulated. Gould's value of the position of the galactic northern pole was assumed, viz. R.A. 12h. 42m. 4s. ( $190^{\circ} 31'$ ), Decl.  $+27^{\circ} 16'$  (Epoch 1890). This gives the obliquity of the central line of the Galaxy as  $62^{\circ} 7'$ , and the position of the ascending node is at R.A. = 18h. 42m. ( $280^{\circ} 31'$ ), from which the galactic longitudes are reckoned. On examining the tables, it appears that equal surface zones contain nearly similar numbers of orbit poles, and it is concluded that there is no decided tendency on the part of the poles of the orbits to favour any special region of the celestial sphere, and hence that the planes of the orbits cannot be regarded as having any definite relation to the mean plane of the Galaxy.

COMET 1890 VII.—The orbit of this comet, which was first seen by Dr. Spitaler of Vienna, while searching for one recently discovered by M. Zona of Palermo, has been submitted to a thorough examination by the original discoverer, with the result that the period of six and half years has been confirmed. Consequently, its return to perihelion may be looked for next spring, and Dr. Spitaler has prepared ephemerides to facilitate its search. The most favourable time for observation will be next month, when the comet will be in opposition, but the theoretical brilliancy will be only about one-fourth that possessed at the time of discovery in 1890. The considerable southern declination of the comet will render its detection in these latitudes still more difficult. The next return in 1903 will be still more unfavourable, and though 1909 may offer good chances for observation, the error of position will be larger. Dr. Spitaler thinks that the ephemeris he has prepared for this return is trustworthy to about five minutes of R.A. and forty minutes of Declination.

PHOTOGRAPHY OF SOLAR CORONA.—Count de la Baume Pluvinel has recently discussed the conditions necessary for successfully obtaining photographs of the corona (*Bulletin de la Soc. Ast. de France*, July 1896). The difficulty of the problem lies in the varying intensity of the several parts of the corona, the delicate details being lost in long exposures on the inner region, while in short exposures the outer corona is almost absent. During the eclipse of April 1893, the author attempted to determine the best value of the "photographic action" necessary for depicting the coronal structure without allowing the light from the surrounding sky to produce any deteriorating effect. The term "photographic action" is defined as being proportional to the product of the intensity of the image and the duration of exposure, and is accepted as being constant within certain limits. For this purpose he employed a compound camera having nine object-glasses, with apertures varying from 5 mm. to 155 mm., and average focal length of 1.5 metres. The time of exposure for all was 230 secs., and consequently the photographic action had values varying from 0.24 to 250. From the various photographs obtained he concluded that, for that particular climate (Joal) a photographic action of about 4 was best. From other photographs taken in Brazil, he recommends a value of 10 to be used in future eclipses, this value to be diminished or augmented as the sky light is greater or less than that in 1893. The above law of photographic action ceases to hold beyond certain limits; as the intensity of the light decreases, the time of exposure must be enormously increased, and this fact has led the author to suggest a method of photographing the corona without an eclipse. It involves the design of a telescope with such a ratio between aperture and focal length that the sky illumination will be too feeble to affect the plate, while the slightly greater intensity of the corona will allow of its being photographed with a long exposure.

#### NANSEN'S POLAR EXPEDITION.

DR. NANSEN arrived at Vardö, Norway, on Thursday, August 13, after an absence of three years. A Reuter telegram says that he left the *Fram* with a companion on March 14, 1895, in lat.  $84^{\circ}$  N., in order to push further north into the Polar Sea than the *Fram* could penetrate. The expedition accomplished its object in traversing the Polar Sea to a point north of the New Siberia islands. The most northerly