

physics, founded upon the lectures of Prof. J. Willard Gibbs by Dr. E. B. Wilson. The volumes can be obtained in London from Mr. Edward Arnold.

THE kinematograph is now so frequently employed to reproduce the characteristics of moving objects and scenes that everyone is familiar with its pictures. But twenty years ago, when Mr. Muybridge projected before an audience at the Royal Institution a series of moving pictures illustrating animal locomotion, the results were regarded as veritable photographic triumphs. Since then photography has been utilised in the analysis of motions of many animate and inanimate objects, but Mr. Muybridge's collection of pictures is still the standard work on the various changes which take place in the disposition of the limbs and body of common animals during motion. A cheap edition (price 20s.) of the plates illustrating "The Human Figure in Motion" has been published by Messrs. Chapman and Hall, and will doubtless be appreciated by artists and students of anatomy who are unable to study the elaborate work in which the pictures originally appeared.

THE "Annuaire" of the French Bureau des Longitudes is a wonderful repertory of statistical and other information requiring frequent revision if it is to represent existing conditions of knowledge. In the volume for 1902, received a few days ago, we notice that all the dates are expressed in mean civil time, reckoned continuously from 0 hour to 24 hours, and beginning at midnight. The catalogue of minor planets has been brought up to October 2, 1901. M. E. Levasseur brings the statistics of the population of Europe up to the end of October last; and the magnetic elements of the chief places in France are given for the epoch January 1, 1902. As in previous years, there are articles on subjects of wide scientific interest. To the present "Annuaire" M. H. Poincaré contributes an article on telegraphy without intervening wires; M. A. Cornu writes on polyphase currents; M. E. Guyou on the application of the decimal division of the quadrant of a circle to navigation; and M. J. Janssen on the establishment and work of the observatory on the summit of Mont Blanc.

THE as yet unanswered question concerning the source and mode of production of the free electricities, which appear on the separation of two heterogeneous bodies which have been in contact, is the subject of an interesting paper by O. Knoblauch in the last number of the *Zeitschrift für physikalische Chemie*. Seventy-five different substances of various characters were brought into contact with plates of platinum, paraffin, sulphur, and glass, and the positive or negative character of the charge received by the plate on separation was in each case determined. By the assumption of an absorbed film of water on the surfaces of these different bodies, the author finds it possible by application of well-known principles of the ionic theory to account for the character of the charge received by the one substance after it has been in contact with a second.

THE additions to the Zoological Society's Gardens during the past fortnight include a Vervet Monkey (*Cercopithecus lalandii*) from South Africa, presented by Captain B. Head; ten Crab-eating Raccoons (*Didelphys cancrivorus*) from South America, a Gangetic Trionyx (*Trionyx gangeticus*) from the Ganges, fifteen Tigrine Frogs (*Rana tigrina*) from India, deposited; a Crimson-breasted Barbet (*Xanthocheilus haematocephalus*) from India, a Variegated Sheldrake (*Tadorna variegata*) from New Zealand, purchased; a Campbell's Monkey (*Cercopithecus campbelli*) from West Africa, presented by Mr. F. R. Paxman; a Green Monkey (*Cercopithecus callitrichus*) from West Africa, presented by Dr. Gray; a Bonnet Monkey (*Macacus sinicus*) from India, presented by Mr. D. Justice.

NO. 1679, VOL. 65]

### OUR ASTRONOMICAL COLUMN.

#### ASTRONOMICAL OCCURRENCES IN JANUARY.

- Jan. 3. Epoch of January meteoric shower (radiant  $23^{\circ} + 53^{\circ}$ ).  
 5. 11h. 28m. Minimum of Algol ( $\beta$  Persei).  
 8. 8h. 17m. Minimum of Algol ( $\beta$  Persei).  
 9. 10h. Saturn in conjunction with the sun.  
 9. 15h. Venus at greatest brilliancy.  
 11. 5h. 5m. Minimum of Algol ( $\beta$  Persei).  
 12. 4h. 17m. to 5h. 27m. Moon occults  $\epsilon'$  Capricorni (mag. 5.2).  
 12. 18h. Venus in conjunction with moon. Venus  $3^{\circ} 8' S$ .  
 13. 6h. 23m. to 7h. 1m. Moon occults  $\kappa$  Aquarii (mag. 5.5).  
 15. Venus. Illuminated portion of disc =  $0.218$ , Mars =  $0.990$ .  
 15. 11h. Jupiter in conjunction with sun.  
 21. 8h. 15m. to 8h. 39m. Moon occults  $\gamma$  Orionis (mag. 5.1).  
 22. 16h. 56m. to 17h. 28m. Moon occults  $\delta$  Geminorum (mag. 5.0).  
 24. 6h. 7m. to 7h. 1m. Moon occults  $\kappa$  Cancri (mag. 5.0).  
 24. 17h. 23m. to 18h. 0m. Moon occults  $\omega$  Leonis (mag. 5.6).  
 26. 18h. 38m. to 19h. 30m. Moon occults  $\rho^{\delta}$  Leonis (mag. 5.5).  
 27. 21h. Juno in conjunction with moon. Juno  $1^{\circ} 11' N$ .  
 28. 9h. 59m. Minimum of Algol ( $\beta$  Persei).  
 31. 6h. 48m. Minimum of Algol ( $\beta$  Persei).

STARS NEAR NOVA PERSEI.—Prof. Ceraski reports in the *Astronomische Nachrichten* (Bd. 157, No. 3755) that on a photograph obtained on the night of 1899 January 30 there is a small star very near the position at present occupied by the Nova. Visual observations with a 15-inch telescope now fail to locate the star, and he asks astronomers with powerful instruments at their disposal to examine this region. The coordinates with respect to the Nova Persei are:—

$$\begin{aligned} \text{R.A.} &= \alpha \text{ Nova} + 08.31. \\ \text{Decl.} &= \delta \text{ Nova} - 7". \end{aligned}$$

As estimated from the photograph, the star would be of about the 12th magnitude.

#### MAGNETIC OBSERVATIONS DURING TOTAL SOLAR ECLIPSE.

—In the *Journal of Terrestrial Magnetism and Atmospheric Electricity* (vol. vi. pp. 123-143) reports are presented showing the details of observations of the magnetic declination, horizontal and vertical forces during the total solar eclipse of May 17-18, 1901. The stations employed for the determinations given in this issue were at Pola, Austria; Val Joyeux, France; Groningen University, Holland; De Bilt Observatory, near Utrecht; Flushing, Holland. Further reports will be published later, and the whole discussed with the object of investigating the perturbations due to extra-terrestrial causes.

THE TOTAL SOLAR ECLIPSE, MAY 18, 1901.—In *Popular Astronomy* for December, 1901, Prof. E. E. Barnard gives a long description of the preparation, equipment and preliminary experiments undertaken in connection with the last eclipse, and although the weather conditions prevented any positive results being obtained, the record of his methods of dealing with apparatus on such great scale—the plates used were  $40 \times 40$  and  $30 \times 30$  inches—will be of considerable interest and value to workers on future occasions.

NATAL OBSERVATORY REPORT FOR 1900.—The report recently issued by the Government Astronomer of Natal contains as a supplement the details of the observations at the various meteorological stations throughout the colony during the year 1900, with summaries. The returns of several stations are unavoidably incomplete in consequence of the unsettled state of the country.

The instruments, with the exception of the 8-inch Grubb equatorial refractor, are in good order. This instrument will, it is hoped, be shortly dismantled and thoroughly overhauled.

The system of time signals is now established over the colony and is working satisfactorily.