

OUR ASTRONOMICAL COLUMN.

ASTRONOMICAL OCCURRENCES IN NOVEMBER :—

- Nov. 2. 13h. 6m. Minimum of Algol (β Persei).
 4. 1h. 0m. Mercury at greatest western elongation ($18^{\circ} 50'$).
 5. 9h. 55m. Minimum of Algol (β Persei).
 6. 5h. 0m. Saturn in conjunction with the moon. Saturn $5^{\circ} 33' S$.
 9. Predicted perihelion passage of Swift's comet (1895 II.).
 14-15. Epoch of Leonid meteoric shower.
 15. Venus. Illuminated portion of disc = 0.998, of Mars = 0.914.
 20. 12h. 6m. to 13h. 7m. Moon occults δ Cancri (mag. 5.7).
 20. 18h. 42m. to 19h. 51m. Moon occults κ Cancri (mag. 5.0).
 23. Epoch of Andromedid meteoric shower.
 23. Perihelion passage of Perrine's comet (1902 δ).
 23. 14h. 14m. to 15h. 0m. Moon occults ν Leonis (mag. 4.5).
 24. 2h. 21m. to 6h. 4m. Transit of Jupiter's Sat. III. (Ganymede).
 25. 11h. 37m. Minimum of Algol (β Persei).
 28. 8h. 26m. Minimum of Algol (β Persei).
 28. 14h. 0m. Venus in superior conjunction with the sun.
 29. 7h. 43m. to 12h. 37m. Transit of Jupiter's Sat. IV. (Callisto).

THE LEONID SHOWER.—Two articles in *Popular Astronomy*, No. 98, by Prof. Pickering and Mr. R. B. Taber respectively, deal with the reports of different observers of the Leonids during the shower of 1901, which, although not seen in this country, appears to have been a brilliant one as seen by the observers in the United States on the morning of November 15.

Prof. Pickering records the following six observations :—

Station.	Latitude.	Longitude.	No. of meteors per hour.
Trinidad, W.I. ...	10° ...	63° ...	290
Steamer <i>Admiral Dewey</i> ...	26° ...	73° ...	420+
Tuape, Sonora, Mex. ...	30° ...	110° ...	countless
Tucson, Arizona ...	32° ...	111° ...	225
Claremont, California ...	34° ...	118° ...	800
Mount Lowe Observatory ...	34° ...	118° ...	300

The position of the radiant point seems unchanged, the Harvard report giving it as R.A. = 10h. 6m., Dec. = $22^{\circ} 16'$. Mr. Upton, of Providence, estimated it to be R.A. = 10h. 2m. 8., Dec. = $21^{\circ} 19'$, whilst M. Eginitis, director of the Athens Observatory, suggests "a sensible displacement in right ascension." Mr. Upton thinks that "the radiant is probably a point, rather than a spot $2''$ or more in diameter."

OBSERVATIONS OF ζ GEMINORUM.—During the period March 10 to May 23 of this year, forty-two observations of the variable star ζ Geminorum were made, by Argelander's method, at the Princetown University Observatory by Mr. F. P. McDermott, junior.

The observations indicate that there is a secondary maximum about 3.0d. before the principal maximum, and that the object attains a brightness of 3.88m.; a secondary minimum, when the object has a magnitude of about 3.93, is also indicated 1.6d. before the principal maximum.

THE FIFTH SATELLITE OF JUPITER.—Writing to *Popular Astronomy* (No. 98) on September 9, Prof. Barnard recalls the fact that it is exactly ten years since Jupiter's fifth satellite was discovered.

From the spring of 1899 until the spring of this year, Prof. Barnard was unable to see this object, but several good elongations have been observed this year; the satellite can, however, only be seen under very good observing conditions and with large instruments.

SEARCH FOR AN INTRA-MERCURIAL PLANET DURING THE TOTAL SOLAR ECLIPSE OF 1901.—In *Bulletin* No. 24 of the Lick Observatory, Prof. Perrine describes the photographic search for the intra-Mercurial planet which, according to Leverrier and others, might be the disturbing influence that

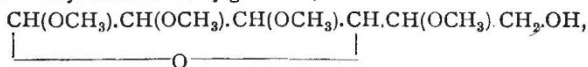
causes the considerable motion observed in the line of apsides of the orbit of Mercury.

Reduction of the negatives obtained during the 1901 eclipse has led to a negative result. There is just a possibility that at the time of the eclipse the hypothetical planet may have been in a direct line with the bright corona, and so have escaped notice; but, as the corona only covered 1/200th of the area photographed, this is not very probable.

A planetary body 34 miles in diameter would have appeared as having a magnitude of $7\frac{3}{4}$ in the existing circumstances, and, as it would need seven hundred thousand such bodies, each having the same density as Mercury, to produce the observed movement in the orbit of the latter, it seems highly improbable that these changes are due to the interference of an intra-Mercurial planet. Prof. Perrine suggests that perhaps the finely divided matter which produces the zodiacal light may, when considered in the aggregate, be sufficient to cause the perturbations in the orbit of Mercury.

CHEMISTRY AT THE BRITISH ASSOCIATION.

IN a paper on experiments to ascertain the amount of carbonic anhydride absorbed from sea water, Prof. E. A. Letts and Mr. W. Caldwell stated that they are experimentally testing the validity of Schloesing's theory that the ocean serves as the regulator of atmospheric carbonic anhydride, with the aid of a specially devised piece of apparatus. Prof. E. A. Letts also read a paper on the corrosion of copper by sea water and on the detection of traces of impurity in the commercial metal, in which it was suggested that rapid corrosion of copper by sea water may be due to electrolytic action between particles of a copper-arsenic alloy embedded in the copper plates and the copper itself. Prof. F. Clowes, in a paper on the action of distilled water upon lead, showed that dissolved oxygen first acts upon the lead, and the oxidation product is subsequently converted into a hydroxy-carbonate by carbonic acid. Dr. C. E. Fawsitt gave a paper on the decomposition of urea, showing that on heating urea in aqueous acid or alkaline solution at 99° , the decomposition does not proceed in accordance with a bi- or tri-molecular reaction as would be expected theoretically, but in accordance with the formula of a monomolecular reaction. The apparent anomaly is explained by the formation of ammonium cyanate as an intermediate product; on heating with water, urea first undergoes isomeric transformation into ammonium cyanate, and this then decomposes into ammonia and carbonic anhydride. In a paper on the telluric distribution of the elements in relation to their atomic weights, Mr. W. Ackroyd employs the purchasing power of a given sum as an indication of the abundance or rarity of the different elements; he shows that in each of the natural groups the rarity of the element increases with the atomic weight. In a paper on the proposed standardisation of methods of chemical analysis, Mr. B. Blount protested against the growing tendency to apply the principle of standardisation to analytical methods for the determination of chemical entities, such, for instance, as the constituents of steel; at the same time, he agreed that arbitrary methods, such as those applied to the examination of waters, oils, milks, &c., should be standardised. Prof. T. Purdie, F.R.S., and Dr. J. C. Irvine, in a paper on the alkylation of sugars, described a method for alkylating hydroxyl groups in methylglucosides. On boiling methylglucoside in methyl alcohol with methyl iodide and dry silver oxide, the trimethyl ether of methylglucoside,



is produced; on further heating with methyl iodide and silver oxide, it is converted into a tetramethyl ether. Under similar treatment, acetonehamnoside yields a dimethyl ether. In dealing with the synthetical action of enzymes, Dr. E. F. Armstrong showed that the enzyme lactase is capable of converting glucose into a disaccharide, to which the name isolactose was given. The same author gave a paper on recent synthetical researches in the glucoside group; the pentacetylglucosides are converted into aceto-halogen-glucosides by anhydrous hydrogen chloride or bromide, the acetyl group attached to the aldehyde group being replaced by halogen. These substances are converted into alkylglucosides by treatment with alcohols. A report of the committee appointed to collect