

OUR ASTRONOMICAL COLUMN.

ASTRONOMICAL OCCURRENCES IN NOVEMBER:—

- November 6. oh. Conjunction of Saturn with the moon, $\frac{1}{2} 1^{\circ} 1' N$.
- 11. Saturn. Outer minor axis of outer ring = $16'' \cdot 11$.
- 12. 11h. 11m. to 11h. 29m. Occultation of κ Piscium (mag. 5) by the moon.
- 12. 20h. Jupiter in conjunction with the sun.
- 14-16. Expected brilliant return of the Leonid meteoric shower.
- 15. Venus. Illuminated portion of disc = $0 \cdot 966$.
- 15. Mars. Illuminated portion of disc = $0 \cdot 991$.
- 16. 4h. Mercury at greatest eastern elongation ($22^{\circ} 18'$).
- 17. 10h. 21m. to 11h. 29m. Occultation of Λ^1 Tauri (mag. 4.5) by the moon.
- 19. 6h. 10m. to 7h. 1m. Occultation of Neptune by the moon.
- 19. 10h. 32m. Minimum of Algol (β Persei).
- 22. 7h. 21m. Minimum of Algol (β Persei).
- 25. 14h. 11m. to 15h. 21m. Occultation of 55 Leonis (mag. 6) by the moon.

HOLMES' COMET (1899 d).

Ephemeris for 12h. Greenwich Mean Time.

| 1899. | R.A. | | | Decl. |
|------------|------|----|-------|-------------|
| | h. | m. | s. | |
| Nov. 2 ... | 2 | 36 | 36.67 | +49 14 8.0 |
| 3 ... | 35 | 23 | 08 | 12 57.8 |
| 4 ... | 34 | 9 | 70 | 11 24.8 |
| 5 ... | 32 | 56 | 63 | 9 29.5 |
| 6 ... | 31 | 44 | 00 | 7 12.1 |
| 7 ... | 30 | 31 | 92 | 4 33.0 |
| 8 ... | 29 | 20 | 51 | 49 1 32.6 |
| 9 ... | 2 | 28 | 9 89 | +48 58 11.4 |

COMET GIACOBINI (1899 e).—The following ephemeris is given by Herr S. K. Winther, of Copenhagen, in *Astr. Nach.*, Bd. 150, No. 3598:—

Ephemeris for 12h. Berlin Mean Time.

| 1899. | R.A. | | | Decl. | Br. |
|------------|------|----|----|---------|------|
| | h. | m. | s. | | |
| Nov. 2 ... | 17 | 18 | 59 | +4 42.4 | 0.66 |
| 3 ... | 20 | 33 | | 4 58.6 | |
| 4 ... | 22 | 8 | | 5 14.8 | |
| 5 ... | 23 | 43 | | 5 31.0 | 0.63 |
| 6 ... | 25 | 18 | | 5 47.1 | |
| 7 ... | 26 | 53 | | 6 3.3 | |
| 8 ... | 28 | 29 | | 6 19.4 | 0.60 |
| 9 ... | 17 | 30 | 5 | +6 35.6 | |

NEW ALGOL VARIABLE IN CYGNUS.—The following minima will occur at convenient times for observation during November:—

$$D.M. + 45^{\circ} 30' 62'' \left\{ \begin{array}{l} R.A. 20h. 2^m. 4m. \\ Decl. + 45^{\circ} 53' \end{array} \right\} (1855).$$

| | | | |
|------------|----|----|----|
| 1899. Nov. | d. | h. | m. |
| | 6 | 8 | 57 |
| | 15 | 12 | 27 |
| | 29 | 5 | 43 |

NEW VARIABLE STAR.—In the *Astronomical Journal*, No. 470, Mr. R. T. A. Innes, of the Cape Observatory, gives the individual results of his observations leading to the detection of a new variable. Its position is:—

$$C.P.D. - 54^{\circ} 66' 34'' \left\{ \begin{array}{l} R.A. = 15h. 32m. 42s. \\ Decl. = -54^{\circ} 54' 4'' \end{array} \right\} (1875).$$

The star was first suspected of variability by Prof. J. C. Kapteyn, who furnished a list of possible variables to the Cape Observatory in December 1896. Mr. Innes, from a discussion of the fifty-eight observations he records, finds the period to be about 12.68 days, the variation of magnitude being from 8.7 to 9.3. The fall to, and rise from, minimum seem to be very sharp; but notwithstanding this similarity to the Algol type, it is not considered likely to belong to that class. The colour of the star is distinctly red.

GEOGRAPHY AT THE BRITISH ASSOCIATION.

THE Dover meeting was characterised by the unusual quantity of solid work in physical geography and mainly in oceanography, including polar research, which was brought before the Section. Travel papers were less numerous than usual, though certainly of no inferior type, and the use of the lantern to illustrate nearly every communication added both to the interest and the value of the expositions. The hall was ill-situated and not well adapted for the purpose it was called upon to serve, and this unfortunate environment, not any falling off in the quality of the papers, accounted for the remarkably small audiences, which were the subject of general remark.

The address of the President, Sir John Murray, contained a summary of existing knowledge as to the ocean floor, and concluded with indications as to the direction in which advance during the immediate future is to be looked for. In this respect Sir John Murray gave prominence to the improved prospects for Antarctic research, and emphasised the importance of the forthcoming expeditions aiming at scientific completeness in their work. In seconding the vote of thanks for the address, Sir Michael Foster, the President of the Association, spoke of the interest which the Royal Society as well as the Royal Geographical Society felt in Antarctic exploration, and of the determination of both Societies to make the best possible use of the funds which might be placed at their disposal for the complete scientific study of the south polar area.

ARCTIC PAPERS.

The most recent results of Arctic exploration were described by three explorers who had attacked the problem in very different ways. Admiral Makaroff, of the Russian navy, gave an account of the trial trip of the great Russian ice-breaker *Yermak*, a vessel recently constructed at Armstrong's works on the Tyne for service in the Baltic during winter and in the Kara Sea in summer. The vessel is built of steel, the plates being very heavy and the ribs and cross-girders of very great strength arranged to meet the thrust of ice from all sides. She is built with two hulls, one within the other, is minutely subdivided into water-tight compartments, and fitted with an elaborate system of tanks and steam-pumps which enable the trim of the vessel to be altered very rapidly. Thus the vessel may be depressed at bow or stern, or canted to port or starboard by pumping water from one set of tanks to another. The displacement of the vessel fully equipped is 8000 tons, and her engines have power by acting on three propellers at the stern to drive her at the rate of 14 knots. A fourth propeller at the bow, intended to drive away the broken ice by the currents it generates, was found useful only in light ice, but of no value in breaking ice of great thickness. The trial-trip, which Admiral Makaroff described with many illustrations from photographs, demonstrated the power of the ship to break away through ice as much as 14 feet thick, not so much by smashing the ice as by determining the direction of cracks by which the mass is split. A cinematograph picture was obtained of the *Yermak* forcing her way through the thickest of the Arctic pack-ice north of Spitsbergen, but Admiral Makaroff regretted that the film could not be developed in time for exhibition at the meeting. During the trip the ice was not only broken to make way for the ship, but studied minutely. The powerful derricks with which the vessel is fitted made it possible to capsize large blocks of ice so as to study the parts normally under water, and also to hoist on deck masses of many tons weight, to be studied as to temperature by the insertion of thermometers to different depths, and as to chemical composition, melting point, &c. Admiral Makaroff is convinced of the perfect suitability of strong steel ships for polar research; and in reply to an inquiry as to whether he hoped to reach the North Pole in the *Yermak*, said that he only wished he might be allowed to try. There was a long discussion on the paper, in which the value of this new method of mastering the ice was generally recognised.

Mr. W. S. Bruce, who had just returned from a voyage to Spitsbergen in the Prince of Monaco's yacht, *Princess Alice*, gave an account of the physical and biological conditions of the Barents Sea, founded on that cruise and on a voyage last year in Mr. Andrew Coats' yacht *Blencathra*. Only two of the many current floats thrown overboard by the *Blencathra* had as yet been recovered.

Mr. Walter Wellman, in an address on his recent journey to