

WE have received the tenth volume of the third series of the Memoirs, and the first volume of the fourth series of the Memoirs and Proceedings, of the Manchester Literary and Philosophical Society.

THE University College of Liverpool, and the University College of Wales, Aberystwith, have each issued a calendar for the session 1888-89.

MESSRS. LONGMANS AND CO. have in the press the following works:—"A Hand-book of Cryptogamic Botany," by A. W. Bennett and George R. Milne Murray; "A Text-book of Elementary Biology," by R. J. Harvey Gibson; "Force and Energy; a Theory of Dynamics," by Grant Allen; and Part I of "Graphics; or, the Art of Calculation by Drawing Lines, applied to Mathematics, Theoretical Mechanics and Engineering, including the Kinetics and Dynamics of Machinery, and the Statics of Machines, Bridges, Roofs, and other Engineering Structures," by Prof. Robert H. Smith.

MESSRS. CHAPMAN AND HALL will shortly publish "Thirty Thousand Years of the Earth's Past History," by Major-General A. W. Drayson; and "Marine Engines and Boilers," by Mr. George C. V. Holmes.

AMONG the works announced by Messrs. Sampson Low and Co. are the following:—"Metallic Alloys; a Practical Guide for the Manufacture of all kinds of Alloys, Amalgams, and Solders used by Metal-workers, especially by Bell-founders, Bronze-workers, Tinsmiths, Gold and Silver Workers, Dentists, &c., &c., as well as their Chemical and Physical Properties," edited chiefly from the German of A. Krapp and Andreas Wildberger, with many additions by William T. Brannt; "The American Steam Engineer: Theoretical and Practical, with Examples of the latest and most approved American Practice in the Design and Construction of Steam-Engines and Boilers," for the use of engineers, machinists, boiler-makers, and engineering students, fully illustrated by E. Edwards, C.E.; "Science and Geology in Relation to the Universal Deluge," by W. B. Galloway, M.A., Vicar of St. Mark's, Regent's Park; "Technology of Textile Design: being a Practical Treatise on the Construction and Application of Weaves for all Textile Fabrics, with minute Reference to the latest Inventions for Weaving," containing also an appendix showing the analysis and giving the calculations necessary for the manufacture of the various textile fabrics, by E. A. Posselt, Head Master, Textile Department, Pennsylvania Museum and School of Industrial Art, Philadelphia, Pa.

DR. BIRKBECK HILL, the editor of Boswell's "Johnson," has nearly ready for publication through the Clarendon Press a collection of letters from David Hume to William Strahan, hitherto unpublished. In the preface he recounts the circumstances under which Lord Rosebery purchased the originals when the authorities of the Bodleian and of the British Museum had declined them. A "Life of Hume" has been prefixed, and the letters have been fully annotated.

WE have received a copy of a pamphlet entitled "The Technical Education of Engineers," a course of technical study recommended by the Manchester Association of Engineers to youths engaged in engineering workshops and other mechanical trades. There are practical hints as to the course to be pursued in each subject, and the names of books recommended by the Association are given. The little work, which only costs two-pence, should be in the hands of all those for whose aid it was compiled.

THE Botanical Exchange Club of the British Isles has issued its Report for 1887. Mr. Arthur Bennett indicates the new county records in the plants contributed.

MR. SAVILLE-KENT, at present engaged in officially investigating and reporting upon the fish and fisheries of various

of the Australian colonies, has accepted an invitation from Captain the Hon. F. C. Vereker and other officers of H.M.S. *Myrmidon*, to join that ship at Port Darwin and to take part in the marine natural history exploration of the northern and north-western Australian coast in association with the survey work now being conducted. Mr. Saville-Kent proceeds *via* Brisbane and Thursday Island, taking with him trawls, dredges, and other apparatus suited for the projected work.

THE Committee of the Sunday Lecture Society have decided that during the winter a course of twenty-one lectures shall be given in St. George's Hall, London, on Sunday afternoons, at 4 p.m., as in former years, beginning on October 21.

THE next ordinary general meeting of the Institution of Mechanical Engineers will be held on Wednesday, October 24, and Thursday, October 25, at 25 Great George Street, Westminster. The chair will be taken at 7.30 p.m., on each evening, by Charles Cochrane, Esq., Vice-President, in the absence of the President, Edward H. Carbutt, Esq., who is travelling in America. The discussions will be resumed on the following papers read at the last two meetings in May and August: description of Emery's testing machine, by Mr. Henry R. Towns, of Stamford, Connecticut, U.S.A.; description of the compound steam turbine and turbo-electric generator, by the Hon. Charles A. Parsons, of Gateshead. The following papers will be read and discussed, as far as time permits: description of the Rathmines and Rathgar township water-works, by Mr. Arthur W. N. Tyrell, of London; supplementary paper on the use of petroleum refuse as fuel in locomotive engines, by Mr. Thomas Urquhart, Locomotive Superintendent, Grazi and Tsaritsin Railway, South-East Russia.

THE additions to the Zoological Society's Gardens during the past week include a Rhesus Monkey (*Macacus rhesus* ♂) from India, presented by Miss Kate Marion Pope; a Brush-tailed Kangaroo (*Petrogale penicillata* ♂), a Laughing Kingfisher (*Dacelo gigantea*) from New South Wales, presented by Captain Philp; a Gazelle (*Gazella dorcas* ♀) from North Africa, presented by Mrs. Eugenio Arbib; a Brazilian Hangnest (*Icterus jamaicai*) from Brazil, presented by Mr. T. R. Tufnell; five — Francolines (*Francolinus* — 2 ♂ 3 ♀) from South Africa, presented by Captain Larmer; a Laughing Kingfisher (*Dacelo gigantea*) from Australia, presented by Mr. H. Butler; two Slowworms (*Anguis fragilis*), British, presented by Mr. Cecil L. Nicholson; two Alpacas (*Lama pacos*) from Peru, two Upland Geese (*Bernicla magellanica* ♂ ♀) from the Falkland Islands, three Crested Pelicans (*Pelecanus crispus*), South European, deposited; four Esquimaux Dogs (*Canis familiaris*, var.), a Bennett's Wallaby (*Halmaturus bennetti* ♀), a Vulpine Phalanger (*Phalangista vulpina*), born in the Gardens.

OUR ASTRONOMICAL COLUMN.

THE SOLAR PARALLAX FROM PHOTOGRAPHS OF THE LAST TRANSIT OF VENUS.—A preliminary value of the solar parallax, as obtained from the measurement of the photographs of the sun taken at the different American stations during the transit of Venus, of December 1882, has been recently published. This value is based upon the measured distances of the centres of the sun and of Venus on 1475 photographs, taken at ten stations, six in the United States, two in South America, and the remaining two at Wellington, South Africa, and Auckland, New Zealand. It compares as follows with the values deduced from the American and French photographs respectively of the transit of 1874:—

| | | | | |
|---------------|-----|-----|-----|-------------------------|
| American 1882 | ... | ... | ... | $\pi = 8.847 \pm 0.012$ |
| American 1874 | ... | ... | ... | $\pi = 8.883 \pm 0.034$ |
| French 1874 | ... | ... | ... | $\pi = 8.80$ |

The value now found, though probably a close approximation to that which will be afforded by the complete discussion of all

the photographs, cannot be regarded as final, since, amongst other reasons, the reduction of the position-angles of Venus is yet unfinished.

THE MARKINGS ON MARS.—Observations of Mars more recently published tend to throw doubt upon the "inundation of Libya," which M. Perrotin reported some four or five months ago. Not only were Prof. Schiaparelli and Dr. Terby unable to confirm his statement, but M. Niesten at Brussels, and Prof. Holden at the Lick Observatory, failed to remark this change. The observations of Prof. Holden and his assistants did not begin until July 16, and were continued until August 10. The planet was therefore very unfavourably situated when they were made, since the diameter of the planet was always less than 9", and its zenith distance about 60°. Several of the more important canals were seen, but they were not seen double, but appeared rather "as broad bands covering the spaces on M. Schiaparelli's map which are occupied by pairs of canals, and by the space separating the members of each pair." M. Niesten also seems to have failed to see the gemination of the canals, but, in common with other observers, was much struck by the whiteness and brilliancy of some portions of the planet, particularly of *Elysium* or *Fontana Land*, as it is called by Mr. Green. The brightness of Fontana Land has been commented on both by M. Perrotin and Prof. Schiaparelli, and the former observer has recently delineated an intricate network of canals between that district and the north pole, and another yet more complicated on the *Madler Continent*. Prof. Schiaparelli has had to chronicle still stranger changes in this last-named district, which he observed on May 20 under specially favourable circumstances, having been able to distinguish the two banks of some of the canals, the one from the other, and to detect very small undulations in them. He speaks also of the ordinary markings, of gulfs, canals, &c., as disappearing at a given moment, for their places to be taken by grotesque polygons and geminations "which evidently approximately represent the earlier state; but it is a gross, and, I should say, an almost ridiculous mask."

ASTRONOMICAL PHENOMENA FOR THE WEEK 1888 OCTOBER 21-27.

(FOR the reckoning of time the civil day, commencing at Greenwich mean midnight, counting the hours on to 24, is here employed.)

At Greenwich on October 21

Sun rises, 6h. 37m.; souths, 11h. 44m. 35'2s.; sets, 16h. 52m.; right asc. on meridian, 13h. 46'0m.; decl. 10° 57' S. Sidereal Time at Sunset, 18h. 54m.
Moon (Full on October 19, 21h.) rises, 17h. 43m.*; souths, oh. 40m.; sets, 7h. 50m.; right asc. on meridian, 2h. 39'3m.; decl. 10° 28' N.

| Planet. | Rises. | | | Sets. | | | Right asc. and declination on meridian. | |
|-------------|--------|---------|-------|---------|---------|-------|---|--|
| | h. m. | Souths. | h. m. | h. m. | Souths. | h. m. | Decl. | |
| Mercury.. | 8 41 | 12 56 | 17 11 | 14 57.7 | 19 59 | S. | | |
| Venus ... | 9 13 | 13 30 | 17 47 | 15 31.9 | 19 38 | S. | | |
| Mars ... | 12 11 | 15 52 | 19 33 | 17 54.1 | 25 2 | S. | | |
| Jupiter ... | 10 10 | 14 19 | 18 28 | 16 20.4 | 20 58 | S. | | |
| Saturn ... | 23 58* | 7 26 | 14 54 | 9 26.3 | 18 58 | N. | | |
| Uranus... | 5 37 | 11 7 | 16 37 | 13 8.5 | 6 37 | S. | | |
| Neptune.. | 18 14* | 2 0 | 9 46 | 4 0.1 | 18 50 | N. | | |

* Indicates that the rising is that of the preceding evening.

Occultations of Stars by the Moon (visible at Greenwich).

| Oct. | Star. | Mag. | Disap. | Reap. | Corresponding angles from vertex to right for inverted image. | |
|--------|----------------------------|------|--------|-------|---|-------|
| | | | | | h. m. | h. m. |
| 23 ... | δ ² Tauri ... | 6 | 2 53 | 3 59 | 156 | 274 |
| 24 ... | χ ¹ Orionis ... | 4½ | 21 | 21 56 | 39 | 264 |
| 27 ... | B.A.C. 2854 ... | 6 | 21 59 | 22 51 | 46 | 239 |

Meteor-Showers.

| | R.A. | Decl. | |
|----------------------|------|-------|-----------------------|
| Near ν Orionis ... | 90 | 15 N. | The <i>Orionids</i> . |
| From Canis Minor ... | 105 | 12 N. | Swift; streaks. |
| „ Cancer ... | 133 | 21 N. | Very swift. |

| Star. | R.A. | | Decl. | | Oct. | h. m. |
|--------------------|---------|----|-------|-----|------|---------|
| | h. m. | ° | h. m. | ° | | |
| U Cephei ... | 05 24 | 81 | 16 N. | ... | 21, | 2 51 m |
| Algol ... | 3 09 | 40 | 31 N. | ... | 25, | 2 51 m |
| S Aurigæ ... | 5 19.7 | 34 | 3 N. | ... | 27, | 23 40 m |
| R Canis Majoris... | 7 14.5 | 16 | 12 S. | ... | 24, | M |
| S Hydræ ... | 8 47.7 | 3 | 30 N. | ... | 23, | 1 59 m |
| U Ophiuchi... | 17 10.9 | 1 | 20 N. | ... | 23, | M |
| R Scuti ... | 18 41.5 | 5 | 50 S. | ... | 21, | 20 32 m |
| η Aquilæ ... | 19 46.8 | 0 | 43 N. | ... | 26, | 21 19 m |
| S Sagittæ ... | 19 50.9 | 16 | 20 N. | ... | 25, | m |
| S Delphini ... | 20 37.9 | 16 | 41 N. | ... | 24, | 9 0 m |
| T Vulpeculæ ... | 20 46.7 | 27 | 50 N. | ... | 23, | 1 0 m |
| Y Cygni ... | 20 47.6 | 34 | 14 N. | ... | 26, | 1 0 M |
| R Vulpeculæ ... | 20 59.4 | 23 | 23 N. | ... | 26, | M |
| T Cephei ... | 21 8.1 | 68 | 2 N. | ... | 23, | 0 0 m |
| δ Cephei ... | 22 25.0 | 57 | 51 N. | ... | 23, | 3 0 m |

M signifies maximum; m minimum.

GEOGRAPHICAL NOTES.

To the October number of *Petermann's Mitteilungen*, Dr. J. Hann contributes an important paper, containing a *résumé* of data on the temperature and rainfall of the Japanese islands, and Dr. F. Boas a paper of a similar character on the ice conditions of the south-west of Baffin's Bay.

CAPTAIN WIGGINS has failed to accomplish the voyage to the Yenissei along the north coast of Europe and Asia—mainly, it would seem, on account of the delay caused by his having to wait for another vessel from Europe. Dr. Torell, the well-known Swedish Arctic explorer, who is well acquainted with these seas, maintains that there should be no difficulty in establishing a regular communication between Europe and Siberia along the north-east passage, though he admits that it would be liable to interruption about once in five years. But in order to insure success he states that vessels should be built specially for the work, and that they should go out early in summer and take up their post on the west side of Matotshkin Scharr, in Novaya Zemlya, to be ready to enter the Kara Sea as soon as ever it begins to clear of ice. A railway across Siberia, however, should serve to render any such hazardous trade-route unnecessary, and such a railway is sure to be constructed soon.

A CENSUS of the illiterates in the various countries of the world recently published in the *Statistische Monatschrift*, places the three Slavonic States of Roumania, Servia, and Russia, at the head of the list, with about 80 per cent. of the population unable to read and write. Of the Latin-speaking races, Spain heads the list with 63 per cent., followed by Italy with 48 per cent., France and Belgium having about 15 per cent. The illiterates in Hungary number 43 per cent., in Austria 39, and in Ireland 21. In England we find 13 per cent., Holland 10 per cent., United States (white population) 8 per cent., and Scotland 7 per cent. unable to read and write. When we come to the purely Teutonic States, we find a marked reduction in the percentage of illiterates. The highest is in Switzerland, 2.5; in the whole German Empire it is 1 per cent.; in Sweden, Denmark, Bavaria, Baden, and Württemberg, there is practically no one who cannot read and write.

IN the October number of the Proceedings of the Royal Geographical Society, the Shah of Persia appears as a geographer. In a paper, annotated by General Houtum-Schindler, His Majesty describes simply, but clearly, the results of his own observations on a new lake, between Kom and Teheran, or rather the reappearance of an old lake, which is said to have dried up in 1357. Whatever may be the history of the lake, there seems little doubt that at one time a large part of Central Persia was covered with water. Mr. H. H. Johnston contributes a short study, from his own observations, of what he calls the Bantu Borderland in West Africa, which is accompanied by a map showing the boundaries of the Bantu and Semi-Bantu races, and also the courses of migration of the two. Another important paper, accompanied by a map, is a translation, by Miss Hay, of Tashkent, of a description of the destructive earthquakes of May and June 1887, in the Vernoe district of Russian Turkestan. Captain Wharton's paper on Christmas Island is given at length.