

## SOCIETIES AND ACADEMIES

LONDON

Linnean Society, February 15.—Mr. G. Bentham, F.R.S., president, in the chair.—Prof. Wyville Thomson, F.R.S., Prof. Allman, F.R.S., and Prof. W. T. Thiselton-Dyer were elected Fellows.—“On the Habits, Structure, and Relations of the Three-banded Armadillo,” by Dr. J. Murie. This animal is distinguished from the other members of the order Edentata by its habit of rolling itself into a ball like a hedgehog. The three bands act as hinges, by means of which this rolling-up is effected. It is also peculiar in walking on the points of its toes, instead of, like other armadillos, on the whole foot. It may be considered as a connecting link from the armadillo to the extinct glyptodon, and thence to the megatherium, and so on to the pachyderms.—“On a Chinese Artichoke-Gall,” by A. Müller.—“Comparative Geographical Distribution of Butterflies and Birds,” by W. F. Kirby. The total number of species of birds is stated by Dr. Sclater as 7,500, and that of butterflies is about 7,700, showing a remarkable closeness. If the surface of the globe is marked off into the divisions proposed by Dr. Sclater, we find in the Palearctic region (Northern Europe and Asia), including about 14,000,000 square miles, 630 species of butterflies and 630 of birds; in the Indian region, including Asia south of the Himalayas, about 1,200 butterflies and 1,500 birds; in the Australian region 725 butterflies and 1,000 birds; in the Nearctic or North American region, 480 butterflies and 660 birds; in the Neotropical or South American region, 4,200 butterflies and 2,250 birds; thus, in five divisions there is a preponderance of birds, which is balanced by a very large excess of butterflies in the sixth region.—An interesting discussion followed, in which Mr. A. R. Wallace, Mr. Sharpe, Mr. Stainton, and others took part, and it was shown that if Dr. Gray's estimate of the number of species of birds is taken, viz., 10,000, which is no doubt more correct than Dr. Sclater's, the apparent parallelism vanishes; that in limited districts, as the British Isles, there is no resemblance between the number of butterflies and of birds; that in Mr. Kirby's paper no reference is made to the number of birds in each region that are migratory, a most important consideration; and that the conditions of the natural features of the country, as the prevalence of forests, may be favourable to the abundance of insects, and unfavourable to that of birds.

Chemical Society, February 15.—Dr. Frankland, F.R.S., president, in the chair.—Prof. Roscoe, F.R.S., gave an account of some of his recent researches on the element tungsten, under the title “On the study of some tungsten compounds.” The author, after giving a short *resumé* of the labours of other chemists on those compounds of tungsten which he had been investigating, proceeded to describe their properties, and the methods of preparation he had employed to obtain them. As the result of his labours he has definitely settled that the metal tungsten is a monad element with the atomic weight 184, and has also showed the cause of the error of the French chemist Perroz, who assigned 153 as the atomic weight. A collection of very fine specimens of tungsten compounds was exhibited by the Professor.

Royal Geographical Society, February 12.—Sir H. C. Rawlinson, K.C.B., president, in the chair. The President announced that the expedition for the search and relief of Dr. Livingstone left England on Friday last, and was at that moment probably crossing the Bay of Biscay *en route* for Zanzibar. The subscriptions from all sources, including the balance of the Government grant lying at Zanzibar, amounted to nearly 5,000*l.* Of this sum about 2,800*l.* will have been expended by the time the expedition leaves Zanzibar for the interior; the remainder would be held in reserve for contingencies very likely to occur. He read also to the meeting a letter from Earl Granville to the Sultan of Zanzibar, stating the great interest the Government and people of England took in Dr. Livingstone, and recommending the expedition organised by the Royal Geographical Society of England to his Highness's good offices; and another to Dr. Kirk, Acting Consul at Zanzibar, authorising him to apply 654*l.* the balance of the Treasury grant of 1870, to the purposes of the expedition. So far everything connected with the expedition had been most satisfactorily and expeditiously carried out; and a message ordering the preparation of escort and porters at Zanzibar, sent as far as Aden by telegraph, would reach Zanzibar in the unprecedentedly quick space of fourteen days. Letters had been received from Dr. Kirk of so recent a date as Dec. 16, and

they informed us that no news whatever had been received since September from the interior, but that the war between the Arabs and the people of Unyamwezi would be continued. This would necessitate the adoption of an entirely new route by the expedition now on its way.—Letters were then read concerning Sir Samuel Baker's expedition. The President stated that he had received from the Prince of Wales the original letters of Sir Samuel, copies of which his Royal Highness had sent to the *Times*. A letter, three days later in date, contained the news that a fertile portion of the Bari territory beyond Gondokoro had been acquired, and that Lieut. Baker would have charge of the steamer for the navigation of Lake Albert Nyanza.—A paper was then read by Sir Harry Parkes (British Minister at Japan), entitled “Captain Blakiston's Journey round the Island of Yezo.” Sir Harry explained that his office with regard to the paper was that of reducing into readable bulk the voluminous journals which Captain Blakiston had communicated through him to the Society, and of adding some necessary explanations. Yezo was the northernmost island of Japan, larger by 3,000 square miles than Ireland, and rising in importance from its position and its great fertility and mineral wealth. Captain Blakiston, the well-known explorer of the Yang-tsze-Kiang, since resident in Hakodadi in the south of Yezo, had enjoyed the peculiar advantage of travelling with the privileges of a Japanese official. He went by sea to Akis Bay, on the south-east coast, and thence by land almost entirely along the sea coast (the interior being without roads or Japanese settlements) round the island to Hakodadi. The native inhabitants are the singular isolated people called Hairy-men, or “Ainos,” a robust race, apparently of Aryan extraction, and nearest allied to certain sections of Slavonians, distinguished by the thick growth of hair on the body, as well as head and beard.

Photographic Society, February 13.—The officers and council for the ensuing year were elected, and the accounts of the society explained by the treasurer, who reported the society free from debt and with a satisfactory balance in hand. The report of the council was read and adopted.—Dr. Anthony read a paper “On various modes of Plate-cleaning.” He stated that his experience went to show that the employment of cyanide of potassium was better than any other agent for the purpose, the plates being treated for a very brief period in the cyanide solution and then washed in water. He found mechanical methods generally rendered the bath unclean, and for this reason also deprecated the application to the glass plate of an albumen substratum. The specimens of Niepce de St. Victor were exhibited.

## EDINBURGH

Royal Society, February 19.—Sir Alexander Grant, Bart., vice-president, in the chair.—1. “Remarks on Contact-Electricity,” by Sir William Thomson. 2. “On the Curves of the Genital Passage as regulating the movements of the Fœtus under the influence of the Resultant of the Forces of Parturition,” by Dr. J. Matthews Duncan. 3. “On a Method of Measuring the Explosive Power of Gaseous Combinations,” by James Dewar. 4. “Note on Modification of Sprengel's Mercurial Air-Pump,” by James Dewar. 5. Prof. Alexander Dickson exhibited a series of Abnormal Fir Cones, with remarks.

## PARIS

Academy of Sciences, February 12.—MM. Delaunay and Serret protested against the insertion in the *Comptes Rendus* of a note by M. Renou relating to asserted inaccuracies in the publications of the Paris Observatory.—The controversy on fermentation and heterogeny was continued by M. Pasteur reading a reply to M. Fremy, and M. Chevreul a communication on the history of ferments after Van Helmont. M. Engel also presented a morphological investigation of the various kinds of alcoholic ferments, which he describes as forming two genera, *Saccharomyces* (Meyen) with seven species, and *Carpozyma* (*gen. nov.*) with one species. The characters of these forms were illustrated with outline figures.—M. Bertrand presented the solution of an arithmetical question by M. Bougaev; M. Serret a note by M. E. Combesure on some points in the inverse differential calculus; and a note by M. A. Mannheim on the determination of the geometrical connection which exists between the elements of the curvature of the surface of the principal centres of curvature of a given surface.—M. de Saint-Venant presented an elaborate report upon a memoir by M. Kleitz, entitled, “Researches upon the molecular forces in liquids in motion, and their application to hydrodynamics.”—M. de Pambour read a note on the theory of hydraulic

wheels, relating to the reaction-wheel.—M. Saint-Venant communicated a note by M. Boussinesq on the equation of the partial derivatives of the velocities in a homogeneous and ductile solid undergoing deformation parallel to a plane.—M. Serret presented a note by M. de Tastes in reply to a recent note by M. Ciotti on the employment of vibrating elastic plates as a means of propulsion. M. de Tastes stated that the elastic plate propeller is his invention, communicated by him to M. E. Ciotti.—M. E. Dubois presented a reply to M. Ledieu's objections to the employment of the marine gyroscope.—M. Delaunay presented a note by M. C. Wolf on the reflecting power of mirrors of silvered glass, and their application to astronomical purposes.—A note by M. D. Genez on the absorption-bands produced in the spectrum by solutions of hyponitrous, hypochlorous, and chlorous acids, was communicated by M. H. Sainte-Claire Deville.—A note by M. Baudrimont on the recent experiments of M. Poëy with regard to the influence of violet light upon vegetation was read, in which the author stated that he had arrived at totally different results, having found that violet light was fatal to vegetation.—A great number of communications from all parts of France, and also from Belgium, Switzerland, and Algeria, relating to the aurora of February 4, were laid before the Academy; they included notices of magnetic disturbances observed in the telegraphic lines.—M. Delaunay presented a paper by M. E. Stephan containing a list of nebulae discovered and observed at the Observatory of Marseilles.—M. E. Vicair read a reply to Father Secchi's observations on the temperature of the solar surface.—Some remarks were read by M. Harting on the saccharine matter observed by M. Boussingault on lime trees, which he ascribed to the action of aphides in accordance with the commonly received opinion. He stated that the saccharine secretion produced by those insects consists in great part of cane sugar. M. Boussingault in reply said that in the case observed by him the saccharine exudation appeared before the aphides, and that it contained cane-sugar, grape-sugar, and dextrine.—M. Le Verrier also read an extract of a letter from M. Follie on this subject.—M. Bussy presented a report upon a memoir by M. Louvel, describing a process for preserving grain *in vacuo*. The author suggested storing grain in air-tight granaries, in which a partial vacuum may be produced by a powerful air pump; he described the construction of the apparatus, and stated that a granary such as he proposed of the capacity of ten cubic metres (about 370 cubic feet) and containing 100 hectolitres of wheat would cost 750 francs. He stated that by this process the ravages of insects are effectually stopped.

The Indian Antiquary, No. 1: Edited by Jas. Burgess.—Monthly Notices of the Meteorological Society of Mauritius.—The School Laboratory of Physical Science, Nos. 3 and 4: G. Hinrichs.

FOREIGN.—La Belgique Horticole, Dec. 1871-Feb. 1872.—Bulletin de l'Académie Royale des Sciences de Belgique, No. 12, 1871.—Verhandlungen der k. k. geologischen Reichsanstalt zu Wien, No. 16, and No. 1, 1872.—Anzeigen der k. Akademie der Wiss. math.-naturforsch. Classe, 1871, No. 1-29.—Bulletin de la Société d'Anthropologie de Paris, June and July, 1870.—Sitzungsberichte Isis in Dresden, July-Sept. 1871.—Die geographischen Verbreitung der Coniferen u. Gnetaceen: R. Brown.—Zeitschrift für Ethnologie, Heft 2.—Journal général de l'imprimerie.—Notice sur Sir J. F. W. Herschel: Ad. Quetelet.—Jahrbuch der k. k. geologischen Reichsanstalt zu Wien.—Memoire della Societa dei spectroscopisti Italiani, No. 1.—Un expérience relative à la question de vapeur vésiculaire: F. Plateau.—Recherches expérimentales sur la position du centre de gravité chez les insectes: F. Plateau.—Annali di Chimica, No. 1, 1872.

DIARY

THURSDAY, FEBRUARY 22.

ROYAL SOCIETY, at 8.30.—On a New Hygrometer: W. Whitehouse.—On the Contact of Surfaces: W. Spottiswoode.  
SOCIETY OF ANTIQUARIES, at 8.30.—The Roman Villa at Holcombe: Capt. Swann, F.S.A.—The Kirkham Chantry, Paignton, Devon: Sir W. Tait.  
LONDON INSTITUTION, at 7.30.—On South Africa and its Diamond Fields: Prof. T. R. Jones, F.G.S.

FRIDAY, FEBRUARY 23.

ROYAL INSTITUTION, at 9.—On Social Influence of Music: Mr. H. Leslie.  
QUEKETT MICROSCOPICAL CLUB, at 8.

SATURDAY, FEBRUARY 24.

ROYAL INSTITUTION, at 3.—On the Theatre in Shakespeare's Time: Wm. B. Dams.

SUNDAY, FEBRUARY 25.

SUNDAY LECTURE SOCIETY, at 4.—On the Education of Women: Mrs. Fawcett.

MONDAY, FEBRUARY 26.

GEOGRAPHICAL SOCIETY, at 8.30.  
LONDON INSTITUTION, at 4.—Elementary Chemistry: Prof. Odling, F.R.S.

TUESDAY, FEBRUARY 27.

ROYAL INSTITUTION, at 3.—On the Circulatory and Nervous Systems: Dr. Rutherford.

WEDNESDAY, FEBRUARY 28.

SOCIETY OF ARTS, at 8.30.

THURSDAY, FEBRUARY 29.

ROYAL SOCIETY, at 8.30.  
SOCIETY OF ANTIQUARIES, at 8.30.  
ROYAL INSTITUTION, at 3.—On the Chemistry of Alkalies and Alkali Manufacture: Prof. Odling, F.R.S.

BOOKS RECEIVED

ENGLISH.—The Origin of Species, 6th edition: C. Darwin (Murray).—Transactions of the Society of Biblical Archaeology, Vol. i. Part 1. (Longmans).—Index of Spectra: W. M. Watts (H. Gillman).—Recollections of Past Life: Sir H. Holland (Longmans).—New Theory of the Figure of the Earth: W. Uglby (Longmans).

PAMPHLETS RECEIVED

ENGLISH.—Eighth Annual Report of the Belfast Naturalists' Field Club for 1871.—Italy in England.—Five Speeches on the Liquor Traffic: G. O. Trevelyan.—Description of a new Anemometer: J. E. H. Gordon.—Psychic Force and Modern Spiritualism: W. Crookes.—On the Mechanism of Accommodation for Near and Distant Vision: Dr. R. E. Dudgeon.—Address of Thos. Hawkesley on his Election as President of the Institution of Civil Engineers.—The Reflecting Media of the Atmosphere a Natural Law: J. Shaw.—Preliminary Report of the Scientific Exploration of the Deep Sea in H.M. surveying vessel *Porcupine*.—Report of the Ladies' National Association for the Repeal of the Contagious Diseases Act.—Contributions to the Flora of Berkshire: Jas. Britten.—A Grave Question for Englishwomen.—What is the Shape of the Earth: Scævola.—On the Elevation of Mountains by Lateral Pressure: Rev. O. Fisher.—Meteorology of West Cornwall and Scilly, 1871.—Journal of the Iron and Steel Institute, Jan. 1872.—On Teaching Universities and Examining Boards.—Child's Public Ledger Almanac, 1872.—Every Saturday, No. 1.—Pauperism and Crime: Robert Hill.—The Mining Magazine and Review, No. 2.—The Quarterly Journal of Education, Jan. 1872.—Righthandedness: D. Wilson.—Address at the Anniversary Meeting of the Entomological Society: A. R. Wallace.—Proceedings of the Geologist's Association, Oct. 1871.—The National Church, No. 1.—The Scottish Naturalist, No. 5.

AMERICAN AND COLONIAL.—Lippincott's Magazine for Jan. 1872.—Australian Vertebrata, Fossil and Recent Mammals: G. Krefft.—Catalogue of the Meteoric Collection of C. U. Shepard.—Proceedings of the Asiatic Society of Bengal, 1871, Nos. 10, 11.—Appleton's Journal, No. 143.—Proceedings of the Academy of Natural Sciences of Philadelphia, April-Sept. 1871.—A Letter concerning the Deep-Sea Dredging, addressed to Prof. B. Peirce by L. Agassiz.—Annual Report of the Secretary of the Interior for the year ending Oct. 1871.—Report on the Geological Structure of Prince Edward's Island: Prof. Dawson.—Nitro-Glycerine, as used in the Construction of the Hoosac Tunnel: G. Mowbray.—Cruise of the School-ship *Mercury* in the tropical Atlantic Ocean.—Correspondence relative to Deep-Sea Dredging.—

CONTENTS

	PAGE
THE ROCK THERMOMETERS AT THE ROYAL OBSERVATORY, EDINBURGH. By Prof. C. PIAZZI SMYTH, F.R.S. . . . .	317
DARWIN'S ORIGIN OF SPECIES. By ALFRED W. BENNETT, F.L.S. . . . .	318
MAXWELL ON HEAT. By Prof. B. STEWART, F.R.S. . . . .	319
OUR BOOK SHELF . . . . .	320
LETTERS TO THE EDITOR:—	
A Zoological Station at Torquay.—W. PENGELLY, F.R.S. . . . .	320
The Chicago University.—EDWIN DUNKIN, F.R.A.S. . . . .	320
Composition of Vibrations.—SEDDLEY TAYLOR . . . . .	321
Eclipse Photography.—H. DAVIS . . . . .	321
Tidal Friction according to Thomson and Tait. ( <i>With Diagram</i> ). . . . .	321
Circumpolar Lands.—G. HAMILTON . . . . .	321
The Spheroidal State of Water.—W. H. PREECE . . . . .	321
The American Eclipse Expedition.—Prof. H. MORTON . . . . .	322
Mr. Spencer and the Dissipation of Energy.—W. SMYTH . . . . .	322
THE AURORA OF FEBRUARY 4. By J. P. EARWAKER . . . . .	322
REFERENCE SPECTRUM FOR THE CHIEF AURORA LINE. By Prof. C. PIAZZI SMYTH, F.R.S. . . . .	324
AMERICAN DEEP-SEA SOUNDINGS . . . . .	324
THE RECENT AURORA, AND A NEW FORM OF DECLINOMETER. By J. T. BOTTOMLEY. ( <i>With Diagrams</i> ). . . . .	326
THEORETICAL PRINTING METEOROGRAPH. ( <i>With Illustration</i> ). By J. J. HALL . . . . .	327
ON SLEEP. By Prof. HUMPHRY, F.R.S. . . . .	323
NOTICE OF THE ADDRESS OF Prof. T. STERRY HUNT BEFORE THE AMERICAN ASSOCIATION AT INDIANAPOLIS. By Prof. J. D. DANA . . . . .	329
NOTES . . . . .	331
AERIAL NAVIGATION IN FRANCE . . . . .	334
SOCIETIES AND ACADEMIES . . . . .	335
BOOKS AND PAMPHLETS RECEIVED. . . . .	336
DIARY . . . . .	336

NOTICE

We have received a letter signed "M.," which we hold over till informed (in confidence) of the name and address of the writer. Anonymous communications can in no case receive attention.