

Dwina, of the shells of species still extant in northern seas; of a Jurassic formation in large zones and fields between the Volga and the Timan Hills, at the western base of the Urals, and in the north-east part of the Caspian lowland; and of two quite distinct coal beds in Central Russia. The writer considers that the work of our countryman has been imperfectly followed up these twenty-five years. He speaks in warm terms of Sir Roderick's friendship for the Russians.—In a note by M. Jacobi, it is suggested to apply galvanoplastic art to the production of standards of length, on the principle that electrodes having the same dimensions and position, baths the same composition and temperature, currents the same intensity, the deposits produced in such circumstances ought to be very nearly equal. Details of such a method are fully given.—A lengthy article by Dr. Hildebrand gives an outline of some 600 historical documents among the archives of the town of Revel, which throw considerable light on the commercial relations of Russia and Livonia in the fifteenth and sixteenth centuries.—The number contains, in addition, two short notes on Faye's comet and the Fossil Cetacea of Europe.

### SOCIETIES AND ACADEMIES

LONDON

Entomological Society, Jan. 6.—Prof. Westwood, president, in the chair.—Mr. McLachlan exhibited a collection of coloured figures of the transformations of twenty-one species of Japanese *Sphingide*, beautifully executed by a native artist employed by Mr. George Lewis, long resident in Japan. Prof. Westwood exhibited the net-work cocoon of a small moth from New Granada, attached to a leaf on which was also placed the body of a butterfly (one of the *Hesperide*), strongly affected by fungoid growths. Mr. E. Saunders exhibited two species of *Buprestidæ* from the Pelew and Caroline Islands respectively, apparently belonging to a new genus, yet resembling, in external characters, two species of *Chrysoidea* from the E. India Islands.—Mr. Champion exhibited two species of *Coleoptera* new to Britain.—Mr. Miller called attention to a recently printed Government report respecting the ravages of the vine-scurge (*Phylloxera vastatrix*). An interesting discussion took place, in the course of which Prof. Westwood stated that, to the best of his belief, the first notice of its occurrence in Europe was made by himself in a paper read before the Ashmolean Society of Oxford regarding its ravages in this country.—Dr. Sharp communicated a paper on the water-beetles of Japan, in which he mentioned that, although there were many European species occurring in the Japanese Islands, yet there was also a considerable admixture of Asiatic forms.—Mr. Wollaston followed by a paper on the *Cossonide* of the same islands. He stated that the ordinary European types of that family do not prevail in Japan, but are replaced by kindred or representative forms. Mr. Pascoe thought that the fauna of Japan, like that of Madagascar or New Zealand, might be termed a satellite fauna, which, while having many endemic forms, had yet a great deal in common with the neighbouring continent. Mr. Bates asked that judgment upon the question be suspended; although many Western European species were also found in Japan, the collective faunas of the two regions were totally different, and if they found only one fauna in common, the majority of the genera ought to be the same, which was apparently not the case.

PHILADELPHIA

Academy of Natural Sciences, June 11, 1872.—Professor Cope offered some remarks on the discoveries recently made by Professor Marsh as to the structure and characters of the *Pythonomorpha*, based especially on material recently obtained by him in Kansas. As the writer had recently passed in review much similar material, he was much interested in Prof. Marsh's conclusions. These, he said, were of importance. In the first place, he had ascertained that what was formerly supposed to be the inner side of the quadrate bone was the outer side, a conclusion Prof. Cope thought entirely consistent with the other known relations of the parts. Secondly, he had discovered the stapes, and had entirely confirmed the opinion of the speaker, which Prof. Marsh had apparently overlooked. This was stated as follows: "is quadrated 'is characterised by the presence of an oval pit. . . . Its use is uncertain, but there is some probability that it received the extremity of an osseous

cartilaginous styloid stapes. A groove on the under side of the suspensorium would accommodate such a rod, and in a position nearly similar to that which it occupies in many of the Ophidia." It is in precisely this position that Prof. Marsh is so fortunate as to have discovered it. Thirdly, Prof. Marsh believes that he has found the columella. I have supposed it to be wanting, from the absence of its usual points of attachment on the parietal and pterygoid bones. It remains to compare the bone found by Prof. Marsh with all-and-orbito-sphenoid and ethmoid ossifications found in many saurians. Fourthly, Prof. Marsh has observed the parieto-quadrate arch described by the speaker, and makes the interesting observation that it is formed of three elements, the median connecting the parietal with the opisthotic. This piece, he says, is "apparently the squamosal;" as the latter bone completes the zygomatic arch, it cannot occupy a position in the parieto-squamosal, unless it sends a branch in that direction. Fifthly, he discovers the malar arch, proving it to be incomplete and supported by the postfrontal bone. Prof. Marsh also observes an ossification in the glenoid cavity of the opisthotic, which he regards as the pterotic (of "Huxley," which should be Parker), an identification which cannot probably be maintained. The connections of the pterotic, where present, are very different. The bone in question is present in *Edestosaurus tortor* Cope. Sixthly, Prof. Marsh completes almost entirely our knowledge of the anterior limbs. The previous descriptions of these members in *Clidastes propython* Cope, *Holcodus ictericus* Cope, and other species, had left the number of phalanges and their relative positions, as well as those of the carpals, uncertain; these points are now happily supplied by Prof. Marsh's important researches. Seventhly, he has done much for the pelvic arch and hind limbs. He was the first to announce the existence of both, and actually described the pelvis of *Edestosaurus dispar*; the speaker, however, first described the hind limb in *Liodon crassartus* and *L. dyspeior* Cope. Prof. Marsh is in error when he says the "absence of these extremities in the *Pythonomorpha* was considered satisfactorily established." I had never stated that they were certainly absent, and the last time I wrote observed that this order "possessed an anterior pair only, or with the posterior pair so reduced as to have been insignificant."\* They appear, according to Marsh, to have been relatively small in some of the genera. In *Liodon dyspeior* Cope, the anterior are the smaller. Prof. Marsh lays stress upon especial obligation for his determinations of the pelvic elements and the excellent figures of all the parts connected with the support of the hind limb. His figure of the fore limb is also highly important, as it will be difficult soon to duplicate his beautifully complete specimen. In subsequent pages there are six additional species described, bringing up the number from the Kansas Cretaceous to twenty-three. Two new genera are proposed, viz., *Lestosaurus* for those previously referred by myself to *Holcodus* Gibbes, and *Rhinosaurus* for species allied or belonging to *Liodon*. As to the former, it is no doubt a well-marked genus, and I am willing to believe Prof. Marsh's opinion, that it will not include Gibbes' *Holcodus acutidens*, will turn out to be well-founded; but there is, on the other hand, insufficient evidence to show that it is not *Platycarpus* Cope. If *Liodon curvirostris* be referred to it, it will very probably prove to be *Platycarpus*, as that species presents palatine teeth, much as in *P. tympanicus*, and the pleurodont character is not wanting in some of the other species. *Rhinosaurus* includes such species as *Liodon proriger* Cope. As the name has been used two or three times before, it may be altered to *Rhamphosaurus*, but I have always had doubts that the conic projecting snout would distinguish the species generically from the true *Liodon*, with which it agrees in dentition. The type of *Liodon*, *L. anceps* ord., is, however, very little known.

PARIS

Academy of Sciences, Dec. 23, 1872.—M. Faye, president, in the chair. M. Mathieu presented the *Connaissance des Temps* for 1874 from the Bureau des Longitudes; Lieutenant Fleuriat's determinations of the meridians of Shang-hai and Poedicherry are adopted in this number. The president then read a paper on the true position of the Bureau des Longitudes. It has been proposed in the National Assembly to suppress the Bureau in order to save its cost to the nation, the president's paper was an eloquent defence of and appeal for the threatened institution.—M. Becquerel read a paper on the use of electro-chemical and electro-capillary force for the formation of amalgams and crys-

\* Trans. Amer. Philos. Soc. 1869, p. 180.

\* Hayden, Geol. Survey of Wyoming, etc., 1870 p. 385.

talline bodies of definite composition.—M. Phillips read a paper on the flow of liquids from reservoirs, maintained at a constant level, through a large orifice in a thin side.—A report on M. Arn. Thenard's researches on the effect of electric discharges on gases and vapours was next read. The author worked with a modification of Houzeau's ozonising tube; he found that a gentle discharge acting on a slow stream of carbonic anhydride decomposed 26.5 per cent. into carbonic oxide and oxygen. De Saussure, working with sparks, never succeeded in decomposing more than 7.5 per cent. A long-continued discharge acts on the glass tube and covers it with powder, and when in this state the decomposition resembles that produced by sparks, the removal of the deposit restores the original power.—M. Janssen read the first part of a report on the eclipse of December 12, 1871.—An essay on the interdependence of meteorological phenomena by Father Solaro was sent to the Physical section.—A letter from M. Denis on certain deductions tending to simplify the principles of natural philosophy was referred to a special commission.—M. Rouget's note on a theorem which extends to imaginary roots the method given by Sturm for real roots, was referred to M. O. Bonnet.—M. Yvon Villarceau presented an account of the discovery and observations of Planetoid 128 at Ann Arbor by Mr. James Watson, and also some observations of 128 made at Marseilles, by M. Borrelly.—M. F. Perrier read a note on the Astronomica station of Dar-Baida near Oran.—M. Laussedat read some observations on the prolongation of the French Meridian into Spain and Algeria.—Colonel H. Levret followed with some observations on M. Laussedat's paper, and a letter to Colonel Levret on the same subject from General Blondel followed.—Next came a note on celestial mechanics by M. Newcombe.—M. de Pambour read a note on the calculus of effects by the method of coefficients applied to water wheels.—M. Wurtz presented a note by M. Gariel on the distribution of magnetism in magnets, which was followed by a new note on the action of conductors placed symmetrically about an electroscope by M. Ch. V. Zenger.—M. Balard presented a note on a new application of silver salts for the production of designs, by M. Renault. The author describes a new method of printing from engravings, &c.—A note from M. Schutzenberger on the action of Iodine on certain of the Aromatic Hydrocarbons was then read. A certain quantity of hydriodic acid is formed and acts as a hydrogenating agent.—M. Cahours presented a note by M. Jungfleisch on the Reciprocal Transformation of Inactive Tartaric and Racemic Acids and on the preparation of the former. Inactive tartaric acid is prepared by heating dextrotartaric acid and water to 160° for two days, removing the racemic acid (only a small quantity is formed) by crystallisation, saturating half the liquid with potassic hydrate, adding the other half and separating the very soluble potassium salt by repeated crystallisations.—A note by M. Defresne on the Biliary and Pancreatic Secretions of Omnivorous Animals followed. Next came a paper on Normal Torsion of the Humerus in the Vertebrata, by M. J. Durand.—M. Milne Edwards presented a note on the Structure of the Beak of the *Platalea*, by M. Jobert; and also a note on certain passages from an Arab author of the tenth century, relative to the gigantic birds of South-East Africa, by M. Devic.—A note on the Meteors of November 27, observed at Palermo, by Father Tacchini, was read.

## DIARY

## THURSDAY, JANUARY 9.

ROYAL SOCIETY, at 8.30.—Further Researches on the Sense of Sight in Birds: Dr. R. J. Lee.—Confirmation of the Existence of an Intra-Mercurial Planet by means of the Behaviour of Sun-spots: W. De La Rue, F. Stewart, and B. Loewy.—On the Union of Ammonia-Nitrate with Ammonia: Dr. E. Divers.—On a New Method of Viewing the Chromosphere: J. N. Lockyer and G. M. Seabroke  
SOCIETY OF ANTIQUARIES, at 8.30.—Further Particulars Respecting the Early Discovery of Australia: R. H. Major.  
ROYAL SOCIETY CLUB, at 6.  
MATHEMATICAL SOCIETY, at 8.—On Parallel Surfaces: S. Roberts.—Summation of certain Series: Prof. Wolstenholme.  
ROYAL INSTITUTION, at 3.—Juvenile Lectures—On Air and Gas: Prof. Odling.

## FRIDAY, JANUARY 10.

QUEKETT CLUB, at 8.  
ASTRONOMICAL SOCIETY, at 8.

## SATURDAY, JANUARY 11.

ROYAL BOTANIC SOCIETY, at 3.45.

## SUNDAY, JANUARY 12.

SUNDAY LECTURE SOCIETY, at 4.—The Musalmans of India and Central Asia: Dr. F. J. Mouat.

## MONDAY, JANUARY 13.

ROYAL GEOGRAPHICAL SOCIETY, at 8.30.  
MEDICAL SOCIETY, at 8.  
LONDON INSTITUTION, at 4.—(Holiday Course, 11)—On Air, Earth, Fire, and Water: Prof. Armstrong.

## TUESDAY, JANUARY 14.

ROYAL MEDICAL AND CHIRURGICAL SOCIETY, at 8.30.  
PHOTOGRAPHIC SOCIETY, at 8.—On the Photographic Operations of the Royal Observatory at Greenwich with Astronomical and Meteorological Records: J. Glaisher.—The Fading of Albumenised Pictures: E. J. Gayer.  
SOCIETY OF CIVIL ENGINEERS, at 8.  
ROYAL INSTITUTION, at 8.—On the Forces and Motions of the Body: Prof. Rutherford.

## WEDNESDAY, JANUARY 15.

LONDON INSTITUTION, at 7.—Ancient Science: G. F. Rodwell.  
METEOROLOGICAL SOCIETY, at 7.—On Solar Radiation: Rev. F. W. Stow.—On Temperature in Sun and Shade; an Account of Experiments made at Harpenden, Herts: Rev. F. W. Stow.—Remarks on the Pocky Cloud, observed July 27, 1872: J. S. Harding.—Account of Hurricane in Western Australia: R. J. Sholl.  
SOCIETY OF ARTS, at 8.—On the Sulphur Deposits of Krisuvik, [Iceland]: Charles W. Vincent.

## THURSDAY, JANUARY 16.

ROYAL INSTITUTION, at 8.—On Oxidation: Dr. Debus.  
ZOOLOGICAL SOCIETY, at 4.  
ROYAL SOCIETY, at 8.30.  
SOCIETY OF ANTIQUARIES, at 8.30.  
LINNEAN SOCIETY, at 8.—On the Recent Synonyms of Brazilian Ferns: J. G. Baker  
CHEMICAL SOCIETY, at 8.—On Ethylamyl: Mr. Grimshaw.—On the Hepatanes from Petroleum: C. Schorlemmer.—On the Vanadates of Thallium: T. Carnelley.—On the Formation of Sulphide of Sodium by the Action of Sulphuretted Hydrogen upon Sodium Chloride: C. T. Kingzett.  
NUMISMATIC SOCIETY, at 7.  
ROYAL SOCIETY CLUB, at 6.

## BOOKS RECEIVED

ENGLISH.—The Gospel of the World's Divine Order: D. Campbell (Trübaer).

## PAMPHLETS RECEIVED

ENGLISH.—Natural History Transactions of Northumberland and Durham, Part 2, Vol. iv. (Williams & Norgate).—Workman's Magazine, No. 1: (Kent)—Transactions of the Institute of Engineers and Shipbuilders in Scotland.—Popular Science Monthly, No. 9.—Little Hodge: Author of "Ginx's Baby" (King)—Astronomical Register, No. 111.—Journal of Botany, No. 121.—Society of Telegraph Engineers; Annual Report.—Evidence for the Ice Sheet in North Lancashire and adjacent parts of Yorkshire and Westmoreland: R. H. Tiddeman.—Note on an Experiment to predict the Annual Rainfall: W. Pengelly.—Rainfall on the St. Mary Church Road, Torquay, during the Eight Years ending Dec. 31, 1871: W. Pengelly.—Literature of the Oreston Caverns near Plymouth: W. Pengelly.—Is it a Fact? W. Pengelly.—Signs of Hotels, Taverns, Inns, &c., in Devonshire: W. Pengelly.—On the Kombé Arrow Poison (*Strophanthus Hispidus*, D.C.) of Africa: Thos. R. Fraser, M.D.—Messenger of Mathematics, No. 20.

AMERICAN.—American Naturalist, vol. vi. No. 12.—American Journal of Insanity, vol. xxix. No. 2.—Penn Monthly, Nos. 29—33.

FOREIGN.—Journal de Physique, No. 12.—Nuovo Giornale Botanico, vol. iv. No. 4.—Bulletin de l'Académie Royale des Sciences de Belgique, No. 11.—Bulletins de la Société d'Anthropologie de Paris, Nos. 1-4.—V. der K. K. Geologischer Reichsanstalt, No. 16.—Poggendorff's Annalen der Physik und Chemie, Nos. 12 and 13.

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