

dridium, *Dictyophyllum* and *Protopteris*, the last being doubtfully represented by a portion of a tree-like stem.

THE second part of, Tome xx. of the *Mémoires de la Société de Physique et d'Histoire Naturelle de Genève* (1870) contains an exceedingly important zoological paper, namely, a supplement to Prof. Claparède's descriptive account of the Chaetopod Annelides of the Gulf of Naples. This not only includes descriptions of many new forms discovered by M. Claparède during the winter of 1868-69, but furnishes him with an opportunity of effecting a combination between his own observations and those of Prof. Ehlers, whose valuable work on the Chaetophorous Annelides appeared almost simultaneously with Prof. Claparède's former publication. The memoir is illustrated with fourteen beautiful plates. This part also contains descriptions by Dr. J. E. Duby of some minor little-known exotic mosses, accompanied by four plates.

THE first and second numbers of the *Bollettino del R. Comitato Geologico d'Italia*, published together for the months of January and February of the present year, contain some interesting papers, among which, perhaps, the most important is that on the temperature of the rocks in the Mont Cenis tunnel, communicated by the engineer, M. F. Giordano. The highest temperature observed was 29°50' C. (=85°10' F.) at a distance of 6,450 metres (about 21,000 feet) from the southern opening, at the same time that the temperature of the rock at 400 metres (about 1,300 feet) from the opening was only 11° C. (=38°2' F.). M. Giordano also publishes notes on the geological constitution of the Roman Campagna, illustrated with three long sections. These numbers also contain a translation into Italian of G. von Rath's memoir on the environs of the lake of Bolsena, an extract from a paper by Prof. T. Taramelli on the Eocene formation of Feiuli, and some short bibliographical notices.

THE editor of the *Geological Magazine*, in his April number (No. 82), has resumed his series of notices of eminent living geologists with a sketch of the scientific life of Mr. Thomas Davidson, illustrated with a good portrait. That Mr. Davidson's labours on the Brachiopoda fully entitle him to such an honour no one will be inclined to deny, but one is somewhat startled at learning what is the real result of his activity, chiefly in this field of research, and being told that his published writings occupy about 2,220 pages, and are illustrated with 244 plates, all or nearly of them drawn by his own hand! Mr. H. B. Woodward describes a curious example of the inversion of strata belonging to the carboniferous series at Vobster, in Somersetshire, to the north of the Mendip Hills, where coal is worked beneath mountain limestone. This phenomenon has been ascribed to a folding over of the main ridge of the Mendips, but the author adduces what seem to be good reasons in opposition to this view, and endeavours to account for it by local disturbance associated with faults. He illustrates his views by means of a diagram section.—Mr. G. H. Kinahan communicates a paper on Æolian drift or blowing sands in Ireland, in which he explains these peculiar deposits as being the products of the action of glaciers during the glacial period.—M. De Rance describes the pre-glacial geography of north Cheshire. The number also contains a reprint of Mr. David Forbes' lecture on the nature of the earth's interior, and the usual reviews and short communications.

THE *Transactions of the Linnean Society*, vol. xxvii. part 3, has just been issued, containing three papers, each illustrated with 4to. plates:—Observations on the Lichens collected by Dr. Robert Brown in West Greenland in 1867, by Dr. W. Lauder Lindsay; On the Vertebrate Skeleton, by Mr. St. George Mivart; and Descriptions of some British Spiders new to science, by the Rev. O. P. Cambridge. Mr. Mivart's article is devoted to a discussion of the following questions:—1. What is the best way to seek *a priori* a general view of the axial skeleton? 2. What is the essential nature of ribs, transverse processes, and sternum? 3. What is the essential nature of branchial arches, and in what relation do they stand to the ribs? 4. What is the essential nature, as compared with branchial arches, of the hyoid arch, mandible, and more anterior structures? 5. What relations exist between the "chevron" bones and other parts of the vertebrate skeleton? The appendicular skeleton, as distinct from the axial skeleton, consisting of the anterior and posterior limbs, is also discussed.

THE *Proceedings of the Natural History Society of Dublin* for the sessions 1867-68, 1868-69, vol. v. parts iii. and iv., was published on May 3, 1871. Among the more important papers

we notice:—Prof. W. King "On some Palliobranchiate Shells from the Irish Atlantic;" Prof. Macalister "On the Myology of the Otter," "On the pyloric appendages of the common Trout," "On the Flora of Kiuross-shire," and "On the arrangement of Pronator Muscles in the limbs of Vertebrate Animals.—Dr. D. Moore "On the Botanical Congress of Paris of 1867," and "On Addenda to British and Irish Muscology." Dr. A. W. Foot "On some points observed in the dissection of an Aylesbury Duck." Rev. E. O'Meara "On some new Arran Diatomaceæ" (Plate 13). W. Archer "On a peculiar cyst-like structure enclosing examples of *Staurastrum cuspidatum*," &c., and "On some Freshwater Rhizopoda" (Plates 8, 9, 10). Prof. E. P. Wright "On *Tubipora musica*" (Plate 11). Notes of a tour in the spring and summer of 1868 to Sicily and Portugal (Plate 12). These Parts conclude vol. v., and have title page, index, and appendices.

SOCIETIES AND ACADEMIES

LONDON

Royal Institution of Great Britain, May 8.—Sir Henry Holland, Bart., M.D., president, in the chair.—The following Vice-presidents were nominated for the ensuing year:—Duke of Northumberland, Lord Lindsay, W. Spottiswoode, the Treasurer, Sir Frederick Pollock. William S. Burton, Arthur Samuel Hobson, Richard Liebreich, Abraham De Mattos Mocatta, and Edward Stanhope Pearson, were elected members. John Tyndall, F.R.S., was re-elected Professor of Natural Philosophy.

Zoological Society, April 29 (Anniversary Meeting).—Viscount Walden, president, in the chair. After some preliminary business, the report of the Council was read by Mr. P. L. Sclater, F.R.S., the secretary. It stated that the number of Fellows of the Society on the 1st of January last was 3,021, showing a net addition of fifty-five ordinary members to the roll during the year 1870. Twelve new corresponding members had likewise been elected during the year 1870. The total income of the society during the year 1870 was stated to have been 23,257*l.*, being 488*l.* more than that of the preceding year. The total ordinary expenditure had been 21,364*l.*, in which sum had been included every item necessary to keep the society's establishment in its present state of efficiency. Besides this the sum of 3,043*l.* had been devoted to extraordinary expenditure, in the shape of new buildings and works in the gardens. Of these works the most important was the new elephant-house, on completing which the sum of 2,324*l.* had been expended. This, when added to the sums spent upon the same building in former years, had raised the total cost of that building to 6,356*l.*, in which, however, the yards, ponds, fences, terrace walk in front, and the necessary arrangement of the adjoining grounds were included. Other works carried on in the society's gardens during the past year had been the completion of the new first-class refreshment-room, and the extension of the system of heating the buildings by hot-water apparatus. The total number of visitors to the society's gardens during the year 1870 had been 573,004, showing an increase of 156 over the corresponding number in 1869. The greatest daily number of admissions in 1870 (28,457) was on Whit Monday, the 5th of June; the least number (28) on the 3rd of March; the average daily number of admissions throughout the year had been 1,570. The number of animals contained in the society's menagerie on the 31st of December, 1870, was stated to have been 2,118, showing an increase of 105 when compared with the corresponding number at the same date in the previous year. Among the additions made to the collection during the year 1870 had been a considerable number of special interest, either on account of their scientific novelty or from not having been previously brought to England in a living state. Full particulars concerning these were given, as also a list of the species that had bred in the society's gardens during the year. The report then proceeded to give a long list of donors and their several donations to the menagerie, after which, in conclusion, the council contrasted the present state of the society's affairs with that which had existed ten years ago. In 1860, they observed, the total number of Fellows was 1,716; it was now 3,021; in 1860 the number of visitors to the society's gardens had been 394,906; in 1870 it had been 573,004. The total income of the society in 1860 was 16,864*l.*; in 1870 it had amounted to 23,257*l.* In 1860 the reserve fund was 3,000*l.* Reduced Three per Cents.; it had now been augmented to 7,000*l.* of the same stock. Moreover, during the past ten years, sums amounting altogether to upwards

of 46,000*l.* had been devoted to the permanent improvement of the society's garden establishment, the expenditure of which had enabled the council to renew nearly the whole of the more important buildings on an improved and enlarged scale. These facts, it was believed, could not be otherwise than gratifying to the Fellows of the society. The society then proceeded to ballot for the council and officers for the ensuing year, when Lord Calthorpe, Mr. Francis Galton, F.R.S., Captain the Count Gleichen, R.N., Mr. John Gould, F.R.S., and Dr. Hamilton were elected into the council, in the place of Professor Huxley, F.R.S., Mr. J. Travers Smith, Lord Walsingham, Mr. G. R. Waterhouse, and the Bishop of Winchester, who retired therefrom, and Viscount Walden was re-elected president; Mr. Robert Drummond, treasurer; and Mr. P. L. Sclater, F.R.S., secretary.

Zoological Society, May 2.—Viscount Walden, President, in the chair. A letter was read from W. H. Hudson, addressed to the secretary, containing observations on the habits of the various swallows met with in and around Buenos Ayres.—Mr. P. L. Sclater exhibited and made remarks on the shell of a river-tortoise of the genus *Pelomedusa*, obtained by Mr. Chapman on the Upper Zambesi.—Prof. Flower exhibited and made remarks on the mounted skeleton of the young hippopotamus, recently born in the Society's Gardens.—The Viscount Walden read a paper on the Birds of the island of Celebes, in which the materials hitherto available for the elaboration of its avi-fauna were brought together and discussed. Out of the generic forms met with in Celebes, thirty-eight appeared to be Indian, and twenty-three Australian in character. To these were added a strong element of individuality, shown by the presence of sixty-five species, and nine genera unknown elsewhere. The avi-fauna of Celebes, so far as was certainly known, was composed of 193 species; but the author observed that a considerable portion of the centre of the island remained unexplored, which gave a prospect of future discoveries.—A communication was read from Mr. W. Harper Pease, of Honolulu, Sandwich Islands, containing a catalogue of all the known land-shells inhabiting Polynesia, together with remarks on their synonymy, distribution, and variation, and descriptions of some new genera and species.—A communication was read from Dr. John Anderson, Curator of the Indian Museum, Calcutta, containing the description of a new generic form of newt from Western Yunan, proposed to be called *Tulototriton verrucosus*.—A second communication from Dr. J. Anderson contained some drawings of and notes on the original specimens of *Testudo phayrei*, Blyth, in the Indian Museum. Having examined the skull in the British Museum upon which *Scaphia falconeri*, Gray, had been based, and re-examined the smaller example of *Testudo phayrei* at Calcutta, Dr. Anderson had come to the conclusion that Mr. Theobald's account of its history was strictly accurate.—A communication was read from Dr. J. E. Gray, F.R.S., entitled Notes on the species of *Brady-pide* in the British Museum.

Geological Society, April 26.—Prof. Morris, vice-president, in the chair.—Mr. Robert Russell, of the Geological Survey of England and Wales, was elected a Fellow of the Society. The following communications were read:—1. "On a new species of Coral from the Red Crag of Waldringfield," by Prof. P. Martin Duncan, F.R.S. Prof. Duncan described, under the name of *Solenastrea Prestuchii*, a small compound coral obtained by Mr. A. Bell from Waldringfield, and stated that it was particularly interesting as belonging to a reef-forming type of corals which has persisted at least from the Eocene period to the present day. The single specimen consisted of several small crowded corallites, having calices from $\frac{1}{16}$ to $\frac{1}{8}$ inch in diameter, united by a cellular epithelial coenenchyma. It was much rolled and worn before its deposition in the Red Crag, and hence the author regarded it as a derivative fossil in that formation, and he stated that it probably belonged to the rich reef-building coral-fauna which succeeded that of the Nummulitic period. Mr. Etheridge remarked that the origin of this interesting fossil seemed uncertain. It appeared, however, to be derived from some other source, and not to have originally belonged to the Red Crag. In England the genus was hitherto unknown in beds newer than those of Brockenhurst. The presence of this single specimen showed how much we had still to learn with regard to the crag formation. It was to be hoped that the coral might eventually be found attached to some organism from which its age might be determined. Prof. T. Rupert Jones remarked that he would be glad to hear of more corals being discovered in the so-called Coralline Crag. He inquired whether coenenchymatous corals

were necessarily reef-corals, observing that this coral was referred to the Miocene on account of its presumed reef-forming character. He added that some of the Foraminifera of the White Crag had the aspect of existing Western Mediterranean forms, and thus supported some of Prof. Duncan's remarks. Mr. Gwyn Jeffreys observed that the distinction between the Coralline and Red Crag seemed to be every day diminishing. The appearance of the fossil seemed to betoken its derivative character. Like other speakers, he complimented Mr. Alfred Bell on his great intelligence in the collection of crag fossils. Prof. Duncan, in reply, maintained that the differences between deep-sea and reef-building corals were well established, and around modern reefs in the deeper sea the forms were quite distinct, and the deep-sea corals never presented the coenenchyma distinctive of the reef-building form. This, he suggested, might be connected with the difference in the amount of sea-water with which it was brought in contact, which in the surf was much greater than in the almost motionless depths of the sea.—2. "Notes on the Minerals of Strontian, Argyleshire," by Robert H. Scott, M.A., F.R.S. The paper stated that the existing lists of minerals to be found at Strontian were incorrect. The discovery of apophyllite, talc, and zircon seemed to be hardly sufficiently confirmed. On the other hand, Mr. Scott named several species which he had himself observed *in situ*, and which are not noticed in any of the books, viz., two feldspars, orthoclase, and an anorthic feldspar in the granite; two varieties of pyroxenic minerals in the granite and syenites, neither of which have as yet been analysed; natrolite in the trap-dykes, muscovite or margarodite in very large plates, lepidomelane and schorl. Specimens of these minerals and of the others found at the mines were exhibited; but it was stated that, owing to the fact that the old workings at the mines in Glen Strontian had been allowed to fall in, it was now no longer possible to ascertain much about the association of the species. The one is galena, containing very little silver. The gangue is remarkable for the absence of fluor and the comparative rarity of blende and heavy spar. Harmotome is found principally at a mine called Bell's Grove, both in the opaque variety and in the clear one called morvenite. Brewsterite occurs at the mine called Middle Shap, and at the mine Whitesmith strontianite is found with brewsterite, but without harmotome. Calcite is also very common. Within the last few years a new mine has been opened called Corrantee, which is in the gneiss, whereas the other mines lie on the junction of the granite and gneiss. At this mine several fine specimens of calcite have occurred, many of them coated with twin crystals of harmotome, similar to those from Andreasberg, whereas the crystals found at the old mine are not so clearly macled. Associated with these were found a number of small hexagonal prisms, perfectly clear, and exhibiting a very obtuse dihedral termination. They gave the blowpipe reaction of harmotome; and on analysis by Dr. J. E. Reynolds, proved to be that mineral. Descloiseau has already described a quadrifacial termination to harmotome, with an angle of $178^{\circ} 20'$. Mr. Scott submitted that possibly the crystals which he exhibited might bear faces which had a close relation to those described by Descloiseau. He concluded by stating that Strontian promised as rich a harvest to the mineralogist as any locality is these islands. Mr. W. W. Smyth mentioned the wonderful collection of minerals from Strontian which had been brought to the Great Exhibition of 1861, which gave a most striking idea of the mineral riches of the locality. The occurrence of such a series of different substances in one locality in the granite was almost unparalleled, though in the Andreasberg mines, in clay state, they were to some extent rivalled. The features, however, differed in the two places, more silver and a greater number of zeolites being present in the Hartz mines. Mr. D. Forbes observed that harmotome occurred also at the Kongsberg silver-mines in Norway, at a distance from granite. He thought it remarkable that these crystals of peculiar form occurred in the same spot and in connection with crystals of the same substance, but of the ordinary form. Mr. Davis remarked that celestine was also to be placed on the list of the minerals from Strontian. Harmotome had been found in the same form of double crystals at Bodenwies in Bavaria. Mr. Scott stated, in reply to a question from the chairman, that the mineral had not been as yet optically examined, but that if he could procure more of it he should be happy to place it at the disposal of any gentleman who would examine it. As regarded the idea that harmotome usually occurred near the surface, he could give no information about the old mines, as they had been allowed to fall in; but most certainly the new specimens from Corrantee came from surface-workings. He was very glad to learn from Mr. Davis that celestine had

been found at the locality; and he felt sure that careful search would double or treble the number of species known to occur there. With reference to what had fallen from Prof. Smyth, he could fully corroborate his observations as to the difference between the forms of calcite associated with harmotome at Andreasberg, in the Hartz, and at Strontian. It was remarkable that the general facies of the crystals of calcite occurring at Corantee, where the lode was entirely in the gneiss, differed from that usually observed in the old mines in Glen Strontian, which were partly in the granite and partly in the gneiss. 3. "On the probable origin of Deposits of 'Loess' in North China and Eastern Asia." By Mr. T. W. Kingsmill, of Shanghai. Communicated by Prof. Huxley, F.R.S., V.P.G.S. The author stated that the Baron von Richthofen had lately applied the term "Loess" to a light clay deposit covering immense tracts in the north of China. The author regarded this formation as in great measure corresponding to the Kunkur of India, and thought that it probably extended far into the elevated plains of Central Asia. Richthofen considered that this deposit had been produced by subaerial action upon a surface of dry land; the author argued that it is of marine origin, having been deposited when the region which it covers was depressed at least 6,000 feet, a depression the occurrence of which since the commencement of the Tertiary period he considered to be proved by the mode of deposition of the Upper Nanking sandstones and conglomerates, the bold escarpments of the hills on either side of the Yangtze, and other peculiarities of the country. Prof. Ramsay remarked that the author had not proved that the loess he described was really stratified. He could not agree with his views of the inland escarpments he mentioned having been old coast lines. It was only accidentally that sea cliffs had any connection with the line of strike of the strata, whereas inland cliffs always followed the strike. He thought the phenomena were rather in accordance with a long exposure of the land to subaerial influences than with the loess, having been of marine origin. Even in England, in those parts which had long been free from marine action, beds of brick earth had been formed. He also instanced the plains of Picardy as exhibiting a vast extent of such subaerial beds. Prof. T. Rupert Jones said that though the area treated of by Mr. Kingsmill was too large to have its geology explained merely by reference to rain-wash and valley deposits, whatever his low-level loess might be, the higher accumulations of loamy deposits, stated to be 1,000 feet thick at an elevation of 3,000 feet, and regarded by Mr. Kingsmill as the quiet water sediments of a great gulf with the miocene conglomerates and sandstones of Nanking and elsewhere for its marginal equivalents, appeared to require different explanation. All loess need not be of sea origin; in oscillations of land marine deposits must be carried up to great heights: and, referring to Mr. H. M. Jenkins's determination of the marine origin of the loess of Belgium, Prof. Jones thought it highly probable that some at least of that in China may have been similarly formed. Mr. Hughes said that the author appeared to have grouped together all the superficial deposits of a vast area without explaining very clearly the grounds upon which he identified those deposits at distant points. He did not prove that what he called the shore deposit was marine, or that it was of the same age as the loam which he described, and which Mr. Hughes thought, from the description, was far more likely to be subaerial. Mr. Evans and Mr. Etheridge suggested the probability of much of the so-called loess might be derived from higher loamy beds, possibly derived from the decomposition of limestone rocks containing sand and clay, and redeposited by the action of rain. The following specimens were exhibited:—Minerals from Strontian; exhibited by Mr. Scott, in illustration of his paper. Corals; exhibited by Prof. Duncan, in illustration of his paper.

Royal Geographical Society, April 25.—Major-General Sir Henry C. Rawlinson, K.C.B., vice-president, in the chair. The following new Fellows were elected:—Mr. G. E. Bell; Staff-Commander Charles Burney, R.N.; Messrs. Walter J. Ellis; J. C. W. P. Graham; Simon Little; Henry Syme. A letter was read from Mr. R. B. Shaw to Sir Roderick Murchison, on that portion of his recent journey to Yarkand (with Mr. Forsyth) in which, detached from the rest of the party, he explored the rugged country between the western extremity of the Thibetan Plateau and the Valley of the Upper Shayok. He described the plateau (17,000 feet high) as ending abruptly on the west in a great limestone range, which, like the masonry *revêtement* of an embankment, has protected the level table-land from the wearing influence of the rains from clouds sweeping up the

Shayok Valley. Standing on the edge of the plateau, the whole country westward appeared as an irregular mass of snowy peaks and narrow precipitous valleys. In attempting to descend one of the valleys towards the Karakoram road, the party suffered fearfully in struggling for three days through the broken ice of a torrent at the bottom of a stupendous chasm, from which, in some places, the light of day was nearly excluded.—A second communication was read "On the Journey of the Mirza across the Pamir Steppe to Yarkand and Kashgar," by Major Montgomerie. This was a detailed report of the journey of an Afghan gentleman, instructed by the officers of the Trigonometrical Survey to traverse the Mahomedan countries across the Hindoo Koosh and Pamir Steppe, eastward to the plains of Eastern Turkestan. The journey was successful in its main object; and we have now, for the first time, a scientific account of those little-known regions, with the means of fixing the geographical position of all the important places. The Mirza proceeded from Fyzabad eastward, along one of the head-waters of the Oxus, arising in Lake Pamir-Kul (13,300 feet), and thence to Tash Kurgan, Yanghissar and Kashgar. Crossing the elevated region of the Pamir, he suffered fearfully from the cold, although well clad, even to the lining of his boots, in warm woollen clothing. Sir Henry Rawlinson explained to the meeting that the Mirza's route was the same as that followed by Marco Polo and Benedict Goetz, and in later times by Mahomed Amin. He also stated that the vexed problem of the longitude of Yarkand (placed by the Schlagintweits about 200 miles too far to the west) had been solved by the recent lunar observations of Mr. Shaw, the computation of which had been completed that day, at the Geographical Society, by Mr. W. Ellis of the Greenwich Observatory. These observations placed Yarkand in E. long. $77^{\circ} 14' 45''$. Colonel Walker, of the Great Trigonometrical Survey of India, and Sir A. Scott Waugh also addressed the meeting, chiefly on the subject of the employment of native observers in the geographical exploration of the regions beyond the British boundaries.

Chemical Society, May 4.—Dr. Warren De La Rue, F.R.S., vice-president, in the chair. The following gentlemen were elected Fellows:—Messrs. R. S. Best, C. S. Cross, W. H. Darling, G. H. Ogston, I. Schweitzer, and W. A. Smith. Dr. Völcker delivered a lecture "On the Productive Powers of Soils in Relation to the Loss of Plant Food by Drainage." The lecturer began by showing the futility of the belief that a soil-analysis could reveal whether a land was productive or not. To those who only imperfectly know the teachings of modern agricultural science, it appears very simple to remedy a deficient soil by finding out through analysis the wanting constituents, and then to supply them. But this is not so. Not only is it difficult exactly to analyse a soil, but many other conditions besides the composition of a land have to be observed. The state of combination in which the mineral constituents of a land are found, the physical condition of the soil, the presence or absence of some matter injurious to the growth of plants, all these are so many important points upon which soil-analysis throws no light whatever. The lecturer equally opposes the views of those who advocate that in a system of rational farming there should be kept up a debtor and creditor account as regards the constituents which are removed from the soil in the crops grown upon it, and the quantity of fertilising matter restored to it in the shape of manure. The fertility of the soil cannot be maintained, much less increased, if only as much fertilising constituents would be applied to the land as one removes from it in the crops. Dr. Völcker then discussed the relative values of various mineral salts as manures, quoting in support of his views the results of the classical field experiments of Lawes and Gilbert; and this then led the lecturer to speak of the examination of land-drainage waters. Lawes and Gilbert, throughout a long series of experiments on the growth of wheat, have experienced a great loss of nitrogen; the amount of nitrogen supplied in the manures was greater than that recovered in the increased produce. It appeared to Dr. Völcker that the nitrogen lost might have passed into the drains. Careful collection of such drainage waters, and their analysis, proved Dr. Völcker's supposition to be correct. It became clear that, in whatever form the nitrogen is applied to the soil, a large proportion of it is carried off chiefly in the form of nitrates. At all times of the year, but especially during the active period of growth of the crops, nitrates are found in the watery liquid which circulates in the land, whereas ammonia salts are never met with in any appreciably large quantities. It may therefore be assumed that

it is chiefly, if not solely, from the nitrates that the crops build up their nitrogenous organic constituents. Dr. Völcker's analyses of drainage waters further showed that potash and phosphoric acid, which certainly are the most important mineral constituents for the plant, are almost entirely retained in the soil, whilst the less important, as lime or magnesia, or sulphuric acid, pass with greater readiness out of the land.

Entomological Society, May 1.—Prof. Westwood, M.A., F.L.S., in the chair. Mr. Higgins exhibited fine collections of exotic Lepidoptera, Coleoptera, &c., from Natal and Borneo, and a number of photographic coloured figures of larvæ from Natal.—Mr. Meek exhibited *Nyssia lapponaria*, Duponchel, captured in Perthshire by Mr. Warrington, and new to Britain.—Mr. Champion exhibited *Scydmanus rufus*, captured by him in Richmond Park, a beetle new to Britain.—The Rev. R. P. Murray exhibited a collection of Swiss insects, including a singular variety of *Lycena Eurypice*.—Mr. Bicknell exhibited an extraordinary specimen of *Conepteryx rhamni*, captured by Mr. Cowan at Beckenham in March 1870; this individual had the central margin of both fore wings, and of the right hind wing, broadly suffused with deep crimson; it was considered that the colour was accidental, and probably owing to the wings having come in contact with some chemical substance. Mr. Bicknell exhibited varieties of other British Lepidoptera.—Mr. Stainton exhibited drawings of Micro-Lepidoptera from New Grenada collected by Baron von Noloken.—Mr. McLachlan exhibited the tusk of a female Indian elephant lent to him by Dr. Sclater. The root of this tusk was much eroded and blackened, and on the diseased part were long rows of eggs, apparently those of some insect. The elephant had been shot in Malabar by Mr. G. S. Roden, of the 1st Royal, and both its tusks were in the same condition. Furthermore, it appeared from the notes of a writer in the *Field* that this circumstance was not uncommon, but always occurred in the female elephant. None of the members could give any information respecting the parasite, but it was generally considered that the parasite had not caused the decay, but rather that it had taken advantage of a previously morbid condition.—Mr. Lewis exhibited an earthen jar, like an ordinary tobacco jar, of Chinese manufacture. It had an enormously thick porous bottom, and it was stated that the inhabitants of Pekin use these jars for the purpose of confining large beetles, which they keep for fighting. The beetles are allowed no food but water, and become extremely ferocious. Prof. Westwood reminded the meeting that the Chinese were already known to keep mantides for fighting purposes.—M. Müller read notes on a gall on the common brake (*Pteris aquilina*) found by Mr. Rothway, and he remarked that Schenck had noticed the same gall in Germany, and referred it to *Diatrophus rubi*.—Prof. Westwood read descriptions of new species of *Lucanidæ*.—Mr. Bates read a description of a remarkable longicorn beetle from Matabili land, in the interior of South Africa, sent to him by Mr. T. Baines. This insect he proposed to call *Bolbotritus Bainesii*. It was especially remarkable for the enormously swollen third joint of the antennæ, the other joints being much shortened. Mr. Bates also read a description of a new species of *Mallaspis* from Chiriqui, which he named *M. praxellens*.—Mr. Kirby communicated synonymic notes on European Lepidoptera.—Attention was called to paragraphs going the round of the London daily papers respecting a so-called storm of insects said to have occurred on two occasions recently at Bath. These records were characterised by the usual newspaper inaccuracy and vagueness on scientific matters. Prof. Westwood thought they probably referred to *Branchypus stagnalis*, a large fresh-water entomostacon.

Linnean Society, May 4.—Mr. G. Bentham, president, in the chair. Dr. Oswald Heer, of Zurich, was elected a foreign member in the place of the late Prof. Unger. The following papers were read:—"The phenomena of Protective Mimicry, and its bearing on the theory of Natural Selection, as illustrated by the Lepidoptera of the British Islands," by Raphael Meldola, F.C.S. "On the Ascalaphidæ," by R. McLachlan.

Society of Biblical Archæology, May 2.—Dr. S. Birch, F.S.A., president, in the chair. The following new members were balloted for, and duly elected:—Louis Blacker, Rev. D. S. Heath, M.A., F.R.S.L., and Mrs. L. Blacker. The President read a paper "On a Hieroglyphic Tablet of Alexander II. (Ægus) son of Alexander the Great, recently discovered at Cairo." This tablet was dedicated to the goddess

Buto, and is dated in the seventh year of Alexander (311 B.C.). It records the restoration to the priests of Buto of the district formerly given to them by Khabash, an Egyptian monarch, contemporaneous with the later years of Darius and Xerxes, which last monarch is mentioned in disparaging terms, probably to flatter Ptolemy, the Macedonian ruler of Egypt, who is styled on it, "The Satrap of Alexander." Dr. Birch also contributed a second paper, based upon communications received from Lieut. Prideaux, containing the interpretation by himself and the Baron de Moltzan, of three bronze tablets, with inscriptions in the Himyaritic character, recording adorations by Hanbaz, an Himyaritic monarch, to the deities Ath-tor and Wud on the conquest of the town of Kuderamelek.—A third paper was further read by Prof. Goldschmidt (of Copenhagen) on the derivation of the name *Δίγυπτος*, from Ukh-hap-t, *i.e.*, "the land of the good stream-sending spirit." Some discussion followed the reading of these papers, Messrs. W. R. A. Boyle, S. M. Drach, Rev. T. Gorman, Rev. I. Mills, Sir Charles Nicholson, &c., took part.

CAMBRIDGE

Philosophical Society, May 1.—Mr. G. Hale, M.A., and Mr. C. Smith, B.A., Sidney College, and Mr. A. G. Greenhill, B.A., St. John's College, were elected Fellows. The following paper was read:—"On the Measurement of an arc of the Meridian in Lapland," by Mr. I. Todhunter, F.R.S. The object of this memoir was to draw attention to the numerous errors which have been made, even by distinguished astronomers, in their accounts of the two measurements of an arc of the meridian in Lapland. A comparison of the original authorities on the subject at once detects these errors, and supplies the necessary corrections.

EDINBURGH

Royal Physical Society, April 26.—Mr. C. W. Peach president, in the chair. After the appointment of committees for carrying on special investigations during the summer, Dr. M'Bain communicated a paper by Dr. John Kennedy Elis, "Remarks on a Japanese Skull."—Dr. Robert Brown read "Notes on the Breeding Places and Food of some Scottish Sea Birds," by Captain M'Donald, Fishery Cruiser *Vigilant*.—Mr. Peach exhibited a fine mass of gulf weed covered with small cirripedes, which he received on Monday last from Captain N. Leslie, of the ship *Lady Milton*, now lying at West Hartlepool, picked up on the homeward voyage; and then read the following extract from the captain's letter:—"I picked up a lot of gulf weed in 32 N. and 70 W., on the 9th of March. I send a sample; it looked very beautiful when fresh, so many little barnacles, and all full of life when in a bucket of water. I am now sorry that none of it was bottled, if only for curiosity; it might lead you to something of a knowledge of seasons, as I never saw so many barnacles on a voyage as I have this time, either on seaweed or wreck, and, strange to say, there are none on the ship's bottom. Last year we saw none on the seaweeds, &c., when the quarters of the ship were nearly covered with them, and this although we had not so much fine weather as this."—Mr. Peach stated that the cirripede most abundant in the parcel thus sent was covered with bars and spines, much like *Oxynaselis celata* of Darwin's monograph, but it differed in so many respects that it might prove to be a new species.—Mr. Andrew Taylor read "Notes on the Geology of Inchkeith."

NEW ZEALAND

Wellington Philosophical Society, January 28.—Hon. W. B. D. Mantell, F.G.S., president, in the chair. From the report of the Council it appears that out of fifty-nine communications made to the Society during the past year forty-four will appear in the forthcoming volume of the Transactions. The number of members has increased from 85 to 103, and the accounts show a balance in hand of 60*l.* 10*s.* 7*d.* The chief item of expenditure has been a grant of 50*l.* in aid of the Botanic Gardens, for the purpose of having the collection of native plants completed by the addition of those found in other parts of the colony, and also in providing labels for the principal trees and shrubs along the paths, giving the scientific and native names. The office bearers chosen for the ensuing year are W. T. L. Travers, F.L.S., President; J. C. Crawford, F.G.S., and W. L. Buller, F.L.S., Vice-Presidents, with J. Hector, M.D., F.R.S., and Messrs. J. Keblell, W. Lyon, F.G.S., R. Hart, and W. Skey, as members of the Council. F. M. Ollivier, Esq., Hon. Secretary and Treasurer. Messrs. J. Prendergast, G. Allan, W. Colenso, F.Z.S., and Dr. Knox, were elected new

members.—Dr. Hector called attention to a live katipo or poisonous native spider, with nest and young ones, on the table, and read a short notice by Mr. Duigan, of Wanganui, of an extraordinary flight of beetles that passed over that district in December last.—A paper was then read by Mr. Travers from Mr. Shand, of the Chatham Islands, describing the different kinds of Mokihi or flax stalk canoes that the natives used in former times, a model of one of which is in the Museum.—Dr. Hector gave an interesting account of the reports he had received from more than thirty stations respecting the magnificent meteor that passed over New Zealand on the 1st instant, at 8.30 P.M., which, he stated, had a general course from about a point west of north through the zenith of Picton, over which place it passed at less than thirty miles altitude above the surface of the earth, travelling with an apparent velocity of 12 miles per second. Its form was that of a ball intensely luminous, of a reddish hue, with a long very brilliant tapering tail, the light of which resembled burning magnesium wire, but giving off red sparks. It completely eclipsed the light of the moon which was shining brightly. The area over which it had been seen has a length of 700 miles, and width of 300, from lat. 36° S., long. 122° E., to lat. 46° S., long. 175° E. The apparent diameter of the head was 10', and the length of the tail tapering about 1°. Some of the observations appear to indicate that its course must have descended towards the earth's surface, but this depends on mere estimates of angular altitude, which cannot be depended on. The prolonged detonation which followed the passage of the meteor does not appear to have been heard at all the stations, but chiefly at those in the vicinity of Cook Strait, where the path of the meteor intersected New Zealand, all the observers in the North Island having seen it to the west, and those in the South Island to the east. When nearest to Wellington it must have been at a distance in a direct line of fifty-five miles, which agrees with the time, five minutes, which elapsed before the report was heard. This shows that the report did not proceed from the final bursting of the meteor, but proceeded from it at the time it was nearest to the observer. Indeed, from the length of the path in which the meteor was seen, its sudden disappearance, as if by bursting, must have been an optical illusion in the case of all the northerly observers. Mr. Marchant stated that he had witnessed another meteor, almost equal in brilliancy to the above, on the previous evening (27th inst.), passing from east to west. Mr. Floyd of the Telegraph Department, stated that this meteor was reported at several stations in the North Island, and appeared to have passed over Napier on the east, to Patea on the west coast. Its colour was blue.—After some further discussion two important papers on the electromotive and conductive power of mineral sulphides, were read by Mr. Skey, in which he claims to have made some discoveries.

PARIS

Academie des Sciences, April 21.—Eighteen members present. The sitting was not devoid of interest, although the communications were far from numerous. M. Egger, professor of Greek at the Sorbonne and member of the Academie des Belles Lettres, availed himself of the privilege granted to the members of different academies. He read a very long dissertation on a papyrus found in 1866, which gave a great deal of information on the state of ancient Egyptian civilisation. It related chiefly to the prices of different articles used in those times. The bursting of the shells and the thunder of French artillery was distinctly heard. It was an impressive scene to see these learned men discussing a civilisation which was swept from the earth so many centuries ago at a time when their own country was threatened by ruin not less awful and perhaps more disgraceful. The *Comptes Rendus* of the 7th April had gone through the press as usual. Its most important article was a communication from Prof. Simon Newcomb on the new method invented by him for discussing the inequalities of the moon's motion. The extract, four pages in length, is an abstract from the original communication, which was left by the American astronomer in the hands of the Committee instructed to report upon it. These *Comptes Rendus* are printed by Gauthier-Villars, printer to the Academy, at a great expense, and with the greatest difficulty. The continuation of the publication is highly creditable to that firm, of which the head, M. Gauthier-Villars, is a former pupil of the Polytechnic School. To show how difficult the business must be to manage, we must say, moreover, that the publisher of the *Connaissance des Temps* for 1872 is stopped merely because it is impossible to find working men for the printing of the last four

sheets, which are ready to go through the press. If things continue for some time, French navigators sailing for distant Pacific Ocean expeditions will be obliged to resort to the Nautical Almanack.

DIARY

THURSDAY, MAY 11.

ROYAL SOCIETY, at 8.30.—An Experimental Inquiry into the Constitution of Blood, and the Nutrition of Muscular Tissue: Dr. Marcet, F.R.S.—On Non-Spontaneous Generation. On the Influence of Heat on Protoplasmic Life. On the Preparation of Nitrogen: Prof. Crace-Calvert, F.R.S.
SOCIETY OF ANTIQUARIES, at 8.30.—Sepulchral Remains at Rouen: The Abbé Cochet, Hon. F.S.A.—Letter to Mr. John Stanhope, from Sir Geo. Buck: Earl Stanhope, President S.A.—Sir James Tyrrell cleared (A.D. 1483): Rev. W. H. Sewell.
MATHEMATICAL SOCIETY, at 8.—On the Singularities of the Envelope of a non-Unicursal Series of Curves: Prof. Hencic.—On the Resultant of a large number of Vibrations of Irregular Phase, as applied to the Explanation of the Coronas: Hon. J. W. Strutt.—A Question in the Mathematical Theory of Vibrating Strings: W. Spottiswoode, F.R.S.—On the Problem of Finding the Circle which cuts Three given Circles at given angles (communicated by Prof. Cayley, F.R.S.): J. Griffiths, M.A.
ROYAL INSTITUTION, at 3.—On Sound: Prof. Tyndall.
LONDON INSTITUTION, at 7.30.—On Economic Botany: Prof. Bentley.

FRIDAY, MAY 12.

ASTRONOMICAL SOCIETY, at 8.
QUEKETT MICROSCOPICAL CLUB, at 8.
ROYAL INSTITUTION, at 9.—On the Defence of the United Kingdom: Col. Jervo's, R.E.

SATURDAY, MAY 13.

ROYAL SCHOOL OF MINES, at 8.—Geology: Dr. Cobbold.
ROYAL INSTITUTION, at 3.—On the Instruments Used in Modern Astronomy: J. N. Lockyer, F.R.S.

MONDAY, MAY 15.

LONDON INSTITUTION, at 4.—On Astronomy: R. A. Proctor, F.R.A.S.
ANTHROPOLOGICAL INSTITUTE, at 8.—On Dreams, Sympathy, Presentiment, and on Divination and Analogous Phenomena among the Natives of Natal: Dr. H. Callaway.—Notes on a Cairn at Khangaum, and on a Kist in Argyshire: Dr. A. Campbell.

TUESDAY, MAY 16.

STATISTICAL SOCIETY, at 7.45.—On the Influence of a High Bank Rate of Discount on Monetary Crises: R. H. Patterson.
ZOOLOGICAL SOCIETY, at 9.—A Description of the Madreporaria dredged up during the Expedition of H.M.S. *Porcupine* in 1869-70: Dr. P. Martin Duncan.—On Speke's Antelope and the allied species of the genus *Tragelaphus*: Sir V. Brooke, Bart.—On a new Humming-bird, discovered by Mr. Whiteley, in Peru: Mr. J. Gould.
ROYAL INSTITUTION, at 3.—On Force and Energy: Charles Brooke, F.R.S.

WEDNESDAY, MAY 17.

SOCIETY OF ARTS, at 8.—On the Utilisation of Prison Labour: Captain E. F. Du Cane, R.E.
ROYAL SOCIETY OF LITERATURE, at 8.30.—On Shakespeare's Birthday: C. M. Ingleby, LL.D.

THURSDAY, MAY 18.

ROYAL SOCIETY, at 8.30.
SOCIETY OF ANTIQUARIES, at 8.30.
CHEMICAL SOCIETY, at 8.
ROYAL INSTITUTION, at 3.—On Sound: Prof. Tyndall.

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ERRATUM.—In vol. IV. p. 20, 2nd column, line 7, for "N. Hartog" read "M. Hartog."