glanced at the well-known phenomena of the same kind at St. Acheul and Schussenried, and gave a list of articles received by the Museum of Dresden from the pile-buildings of Robenhausen, in the Pfaffikon Lake. Prof. Geinitz also noticed the contents of some recent anthropological publications.—M. Klemm exhibited a ring of serpentine, measuring about two inches in diameter, found in the year 1835, in an urn in Lower Lusatia. —In the mineralogical and geological section, M. C. Bley noticed the occurrence of roestone in the neighbourhood of Bemburg, and ascribed the peculiar structure of the stone to the great amount of salt contained in the water from which the carbonate of lime for its formation was precipitated.—Prof. Geinitz referred to the discovery of a well-preserved molar of *Elephas primigenius* in the bed of the Elbe below Kötschenbroda, and also exhibited a great number of marly concretions and transported blocks from the loam pits between Strehlen and Mockritz. He also noticed some of the localities in which fossils are to be found in the Loess. M. H. Engelhardt communicated notices of some plants from the brown coal of Saxony, namely, *Anona cacaoides* Zenk. sp., *Gardenia pomaria* Schl. sp. (=*G. Wetzleri* Heer), *Livistona Geinitzi* n. sp., *Glyptostrobus europæus* Brongn. sp., and a species of *Carpolithes*.—Prof. Geinitz communicated a list of some corals from the Lower Pläner of Plauen, which had been determined by Dr. W. Bölsche; eleven species are enumerated of which six are indicated as new, namely, *Montlivaltia* (?) *tourtiensis*, *Thecosmilia* (?) *Geinitzi*, *Latimæandra*, *Fromentali*, *Psammohelia granulata*, *Thamnastræa tenuissima*, *Dimorphastræa Dunkani*, and *Astrocœnia tourtiensis*.—M. Engelhardt communicated a paper on the Loess in Saxony, in which he described the general nature and mode of occurrence of the deposit, and the special peculiarities presented by it in particular localities. In connection with this paper and the concretions from the Loess exhibited by Prof. Geinitz at a previous meeting, M. Klemm presented a memoir on concretions and on the globular forms occurring in the minerals and rocks.—Dr. O. Schneider noticed the minerals occurring in the granite of the Königshayner mountains, and in the Zechstein of Niederludwigsdorf near Görlitz, and described some crystals of zircon received from Haddam in Connecticut.—Prof. Geinitz reported upon some fossils from a sandy deposit of Cretaceous age at Château de Meauene near Angers. The predominant form is *Siphonia pyriformis* Goldf. Three species of *Palmacites* are noticed, and one of them is described as a new species under the name of *P. Boxbergæ*— In the mathematical, physical, and chemical section, the only paper of which particulars are given is a description by Prof. Klein of an apparatus invented by him to enable the magnetic needle to be employed on board of armour-plated ships. The arrangement consists of a compass placed at the mast-head and connected with an electro-magnetic apparatus, by which an index is moved.—In the Zoological Section Prof. Günther gave a short exposition of the comparative anatomy of the brain in mammalia. —M. Engelhardt exhibited some corals and shells obtained from Guano.—Dr. Ebert remarked upon Huxley's *Bathybius*.—M. C. F. Seidel described the excrescences and other deformities produced on the stalk of the common cabbage by a small weevil, *Baris cuprirostris*.—Dr. Ebert referred to the support afforded to the theory of the evolution of organic types by the discovery of the curious lizard, *Hatteria punctata*, upon the anatomy of which Dr. Günther has given us such interesting information. Dr. Ebert tabulates the characters of the orders of reptiles to show in what a singular manner *Hatteria* combines their peculiarities.— Dr. Schneider noticed the scorpions collected by him in Egypt.— Dr. Mehwald noticed the occurrence of a snake (*Coronella lævis*) and of a lizard (*L. agilis ?*) as far north as 62° and 63° in Norway; and M. Kirsch gave some account of experiments with vipers and the common snake. According to the latter the bite of a new-born viper, five inches long, killed a mouse in a short time; snakes killed by decapitation exhibit irritability by galvanism for a very much longer time than those destroyed by poison; and the common snake (*Tropidonotus natrix*) is the only snake indigenous to Bavaria that attacks frogs.—The Botanical Section received from M. C. Wilhelmi an account of those Australian plants which may furnish nourishment to man. The abstract of this paper here published enumerates a considerable number of plants, parts of which are used as food chiefly by the natives.— The rest of the communications to this section require no mention, except a report by M. F. A. Weber upon Hildebrand's work on the sexual relations of the Compositæ.—At one of the general meetings Prof. Hartig reported upon the applicability of various kinds of wood to the manufacture of paper.

SOCIETIES AND ACADEMIES

LONDON

Zoological Society, June 6.—Mr. G. Busk, vice-president, in the chair. Prof. Owen, F.R.S., read a paper on Dinornis, being the seventeenth of his series of communications on these extinct birds. The present paper gave a description of the sternum and pelvis, and an attempted restoration of the whole skeleton of *Aptornis defossor*.—Prof. Flower, F.R.S., gave a description of a specimen of the so-called Risso's Dolphin which had been taken in a mackerel-net near the Eddystone Lighthouse, and of a second specimen of the same dolphin subsequently purchased in Billingsgate Market. After a searching investigation of the history of this supposed species, Prof. Flower came to the conclusion that the differences usually held to separate it from the *Delphinus griseus* of Cuvier were untenable, and that the species should be correctly designated *Grampus griseus*.—A second paper was read by Prof. Flower on a specimen of the Ringed or Marbled Seal, which had been obtained on the coast of Norfolk, being the first certain instance of the occurrence of this seal in the British seas. To this was added some remarks on the difficult questions presented by the synonymy of this species, which, after full consideration, Prof. Flower came to the conclusion ought to be called *Phoca hispida*.—A paper was read by Prof. W. Peters, giving a description of the Bats collected by Mr. F. Day, in Burmah. The collection contained a very interesting new form of *Rhinolophi*, which Dr. Peters proposed to call *Phyllorhina trifida*.—A communication was read from Dr. A. Günther, F.R.S., containing the description of a new species of Teius (*Teius rufescens*) from Mendoza, founded on five specimens of this lizard living in the Society's Gardens.—Mr. A. G. Butler communicated a Monograph of the Lepidoptera hitherto included in the genus *Elymnias*.—A second communication was read from Mr. Butler, containing a revision of the species of Butterflies formerly included in the genus *Terias* (*Pierinæ*).—A paper by Dr. J. E. Gray was read, containing a reply to Mr. Theobald's observations on Dr. Gray's paper on the families and genera of Tortoises, printed in a recent part of the Society's "Proceedings."

Chemical Society, June 1.—Prof. Frankland, F.R.S., president, in the chair.—The following gentlemen were elected Fellows: H. Adrian, H. Durham, G. Martineau, E. Neison.— Dr. Debus, F.R.S., delivered a lecture "On Ozone." The first who had observed that the passage of electric sparks through oxygen brings about a change in the properties of this gas was Van Marum. The next to take up the subject was Schönbein, in 1840. He ascribed the peculiar odour and the more energetic oxidising properties of the altered oxygen to a substance which he termed ozone. He also found that ozone may be prepared by many other methods. His experiments, however, led to no positive results, as regards the nature of ozone. It was through the researches of Marignac and De la Rive that ozone was shown to be nothing but an allotropic modification of oxygen. Dr. Debus then discussed the question whether there existed another modification of oxygen, called antozone, and answered the proposition negatively—the substance called antozone was only peroxide of hydrogen. The lecturer concluded by calling special attention to one of the characteristic reactions of ozone, viz., the decomposition of potassic iodide, which reaction is differently explained by the various observers. Schönbein has shown that potassic iodide protects free iodine against the action of potassic hydrate. It may be assumed that potassic hydrates and an iodine solution react upon one another thus:

$$KHO + I_2 = KIO + HI, \text{ and then } KHO + HI = KI + H_2O;$$

if now an excess of potassic iodide be added, the potassic hypoiodite and potassic iodide produce again potassic oxide (which becomes in its turn a hydrate) and iodine, and the excess of iodide prevents the action of KHO on the iodine, but not that of the latter on starch.

Society of Biblical Archæology, June 6.—Mr. Samuel Birch, LL.D., F.S.A., president, in the chair. The following ladies and gentlemen were proposed by the council for ballot at the next meeting:—Rev. A. H. Sayce, Queen's College, Oxford, E. R. Hodges, late of Jerusalem, Mrs. J. W. Bosanquet, and Miss Dorothy Best, of Maidstone. Mr. George Smith (British Museum) read an elaborate and interesting paper "On the Early History of Babylonia." Commencing with a *résumé* of facts already ascertained by the labours of Sir Henry Rawlinson and

other *savans*, he proceeded to describe seriatim the principal localities where excavations had been already undertaken, and to identify them with many of the cities mentioned in the older Books of the Pentateuch. A chronological list of kings and a brief account of the military and political changes, including several new facts from contemporary inscriptions, concluded the first part of the paper. In its second division, the theology, the arts, the social and moral characteristics of the ancient Chaldeans were examined, and the examination was further illustrated by the exhibition of sundry casts of ancient bricks and cylinders, translations of which were also given.—Mr. J. W. Bosanquet, F.R.A.S., treasurer, read a paper "On the Date of the Nativity."

Linnean Society, June 1.—On the nomination of the President the following members of the Council were elected vice-presidents for the ensuing year:—Mr. J. J. Bennett, F.R.S., Mr. George Busk, F.R.S., Dr. J. D. Hooker, F.R.S., and Mr. W. Wilson Saunders, F.R.S.—The following papers were read:—"On some plants from North China," by Dr. Hance; "On South American *Hippocrateaceæ*," Mr. J. Miers, F.R.S. The history of this family shows the widely divergent opinions of numerous botanists in regard to its affinities, the absolute want of knowledge to guide these opinions at last culminating in the extinction of the *Hippocrateaceæ* by the authors of the new "Genera Plantarum," who have reduced it to a mere tribe of the *Celastraceæ*; and not only so, but have amalgamated the several genera previously established into 2, viz.: *Hippocratea* and *Salacia*. The large amount of evidence here presented will, however, show its right to stand as a distinct natural order, having in fact little connection with *Celastraceæ*. The chief characters in its floral structure consist in having five sepals, five alternate petals imbricated in æstivation, and only three stamens (very rarely five); the most important feature is the hypogynous disc, variable in shape, but constantly placed between the stamens and petals; the ovary is always superior, usually 3-locular, with definite anatropous ovules fixed in the axis. The mode of growth of the ovary varies greatly, dividing the family into three separate tribes. 1. *Hippocrateæ*, where, in the progress of growth, the axis of the ovary never lengthens, remaining completely atrophied, the cells growing upwards vastly, sometimes to 100 times the length of the axis at the maturity of the flower, thus producing three distinct capsules from a single ovary, which sometimes open 2-valvately, and have winged seeds, or are indehiscent with nuciform seeds borne upon a carinated ovular support; upon such differences five several genera are established. 2. *Tonteliceæ*, distinguished by a drupaceous fruit, often a large size, the growth of an ovary wherein the axis lengthens commensurately with the cells, the fruit being thus 3-locular, with several seeds, which in most cases are covered by an *arilline*, a fleshy complete coating, resolving itself into a mucilaginous pulp that envelopes the seeds; this tribe consists of eight genera. 3. *Kippistieæ*, remarkable for a floral development hitherto unknown among Dicotyledones, but long ago described by Robert Brown in Monocotyledones; here the stigmata, instead of alternating as usual with the stamens and standing opposite to the cells of the ovary, are opposite to the stamens and alternate with the cells of the ovary; the fruit is drupaceous, variable in the position of the seeds, but with characters resembling those of *Tonteliceæ*; this tribe consists of three genera. There are thus seventeen genera in all, with well-marked characters, which are separately illustrated by as many drawings, each amply explained by analytical figures. The numerous facts here shown in regard to structure are, for the most part, hitherto undescribed, many being derived from analyses made of plants in the living state. In summarising these details, the author points out the many salient points of distinction in the structure of *Hippocrateaceæ* and *Celastraceæ*. 1. In the former the stamens are generally anisomerous in regard to the petals (three to five); in the latter they are constantly isomerous with stamens equal to, or double the number of, the petals. 2. In the former the stamens are distinctly inserted *inside* the disc; in the latter they are invariably inserted *outside* of the disc. 3. In the former the anthers, generally of a peculiar form, are constantly *extrorse*; in the latter they are of the usually normal structure, and always *introrse*. 4. In the former the disc is generally elevated, and presents a free wall of separation between the stamens and more external parts; in the latter it is a mere expansion of the torus, intervening between the ovary and all other floral parts. 5. In the former the sepals, petals, stamens, and disc are persistent at the base of the fruit, and are never seen in such position in the latter family. 6. In the former, the superior ovary is always elevated above the torus and quite free from it; in the latter it is always more or less partially imbedded in the disc and half agglutinated with it. 7. The atrophied condition of the axis of the ovary, though not a constant feature, is one quite peculiar to the *Hippocrateaceæ*, and on the other hand, in *Celastraceæ*, we find no growth at all approaching the several kinds of large drupaceous fruits seen in the *Hippocrateaceæ*. 8. In the development of the seeds there is a constant distinction. In *Hippocrateaceæ* they are invariably without albumen, in the *Celastraceæ*, without exception, the embryo is enveloped in albumen, usually copious. In the former the cotyledons are often closely conferruminated in a solid mass, a circumstance quite unknown in the latter. 9. In the *Hippocrateaceæ* no trace of an arillus can be seen, in *Celastraceæ*, though not universal, a distinct arillus, in most cases, partially surrounds one extremity of the seeds. In the former, in one tribe, the seeds exhibit a greater or smaller expansion of the testa, in the shape of a large membranaceous wing, or a narrower alar keel, while in the two others they are invested by an *arilline*, an entire fleshy coating, the nature of which was explained many years ago, a feature seen in some other families, though too often unnoticed by botanists. 10. In the *Hippocrateaceæ*, the leaves, but more particularly the branches of the inflorescence, the pedicels, sepals, and petals, contain numerous white elastic threads, which hold the parts together when broken, and these spiral threads often extend to the pericarps, to the integuments of the seeds, and even occasionally to the fleshy cotyledons. Nothing of this kind has yet been observed in *Celastraceæ*. Any one of these peculiarities, by itself, would tend little to support any separation of these two families, but the sum of the whole tells powerfully to mark a great distinction in their organisation. The only arguments that have yet been urged for their near affinity are that both generally consist of arborescent plants with evergreen leaves, an axillary inflorescence, petals and sepals with imbricated æstivation, a three-celled ovary, a simple style and stigma; but these are all characters common to many other families distantly related, and wholly insufficient by themselves to establish any near affinity. The more probable inference is that these two families should be separated by a long interval.

Dublin

Natural History Society.—Prof. E. Perceval Wright, M.D., in the chair. Dr. A. W. Foot read a paper on a small collection of Hymenoptera, named for him by Mr. F. Smith. None of the species referred to were rare, and they had, for the most part, been collected in the counties of Wicklow and Kildare.—Mr. W. Andrews read "Notes on some Irish Saxifrages." Fine living specimens were exhibited of *Saxifraga geum*, and of its varieties *umbrosa*, *hirsuta*, and *elegans*. A coloured drawing by the late Mr. Du Noyer was also shown of a remarkable variety found at the Great Blasquet, in which the flowers presented a glandular disc surrounding the base of the pistil. Specimens of *S. Andrewsii* were also laid on the table. Mr. Andrews stated that he had lately given Mr. A. G. More the exact locality of this rare form, supposed by some to be a hybrid, and he fully expected that in the course of this summer Mr. A. G. More would be able to verify this as well as he had done other of his discoveries. He believed, judging from the structure of its ovaries, that this species had strong affinities with *S. nivalis*. Lastly Mr. Andrews exhibited some very remarkable specimens of *S. stellaris*, which very much resembled in shape *S. leucanthemifolia*, and indeed Mr. John Ball appears to regard this latter form as but a variety of the former.—A resolution was passed that Mr. R. J. Montgomery, Mr. R. P. Williams, Mr. A. Andrews, and Dr. A. Wynne Foot be a committee to have the museum of the society catalogued and arranged for sale, and that the committee be requested to report to the society in November as to any offers they may receive for it. The museum is very rich in Irish birds, containing some unique specimens; but the society not having a house of its own, and holding its meetings in the Royal Irish Academy House, has considered it advisable to dispose of its collections.

Royal Geological Society, May 12.—The Rev. Maxwell Close in the chair. Prof. Traquair exhibited a collection of Carboniferous Ganoid fishes, found in nodules of clay ironstone from Wardie near Edinburgh.—Mr. G. H. Kinahan read a paper on the Geological Drift of Ireland.—Rev. Prof. Haughton read some analyses made by the late M. H. Ormsby of the Geological Survey of India of Granitic Rocks and their Constituent Minerals, found in Lower Bengal and Ceylon. These analyses were made by Mr. Ormsby in 1868,

and in expressing his sense of their importance Prof. Haughton also expressed his deep regret, shared in by the Society, at the loss geological science had sustained by the untimely death of so promising a geologist and mineralogist as Mr. Ormsby.—Mr. Edward T. Hardman read a paper on an Analysis of a Trachyte porphyry from Tardree Quarry near Antrim. The paper gave tha result of a careful analysis of one of the two specimens of trachyte known to exist in the British Islands, and from it Mr. Hardman was able to come to such conclusions with regard to the age and altered state of the rocks as led him to controvert the theories of Cotta and Richthofen on the relative ages of basalts and trachytes. Prof. Haughton, who had seen the rock *in situ*, was able to endorse the view taken by Mr. Hardman as to the altered condition of it.

Royal Irish Academy, May 8.—Rev. President Jellett in the chair. Prof. J. M. Purser read a second report on the researches of Prof. Cohnheim on inflammation and suppuration, which was referred to the Council for publication. The secretary read a paper by Mr. Hyde Clarke, on the ancient name Hibernia. This paper was very severely criticised by several members of the Academy, the impression apparently being that the author had no true scientific basis for the conclusion at which he had arrived, and further that the method adopted by him was helping—if it had not already done so—to bring discredit upon this branch of Ethnology.

May 22.—Rev. President Jellett in the chair. The president read a paper on Saccharometing, with special reference to an examination of specimens of sugar beet grown in Ireland.—Prof. Sullivan read a paper on the comparative composition of ancient Bronzes in connection with the ethnology of the ancient people of Europe; also, one on the Great Dolomite Bed of the North of Spain in connection with the Lithonic stage of opal.

PARIS

Academy of Sciences, May 5.—M. Delaunay in the chair. M. Roulin, a member of the Institute, delivered an address, discussing the last communication from M. Ledillot on Arabic Etymology. The learned member contends that M. Ledillot is deceived by superficial and casual analogies, and gives too large a credit to the Arabic language in the formation of French. He frequently quoted the great Etymological Dictionary written by M. Littré, who is now a representative of Paris in the Versailles Assembly, and attempted to vindicate M. Littré's various etymologies.—M. Elie de Beaumont read a letter from M. Bertrand, now at Tours, where he is a delegate for teaching the pupils of the National Polytechnic School. M. Bertrand has worked out theoretically the assertions of M. Navier on the flight of birds. He asserts that the clever mathematician was deceived in supposing the birds exerted an immense force in flight. M. Navier's assertions, which were supposed correct for upwards of thirty years, were very often assailed on practical grounds, and almost generally supposed worthless. But it was necessary to revise his mathematical analyses. M. Bertrand's communication will be welcomed by people engaged in the construction either of flying machines or of apparatus for guiding aërostats.—M. Martins, director of the Montpellier Botanic Gardens, sent a communication on the extraordinary frost of last December. He showed by reliable observations that the temperature at Montpellier was lower by 4° C., than the temperature at Paris. If the Paris minimum is supposed to have been −12°, the Montpellier minimum must have been −16°. M. Martins explains the circumstance by the influence of the Gulf Stream, which diminishes the coldness of the air at Paris more than at Montpellier, owing to the greater distance of that southern station from the ocean.—M. Charles Emmanuel read a paper on certain movements of floating bodies, which he attributes to some electrical influences unnoticed and consequently unexplained hitherto.

May 29.—M. Marié Davy, director of the Meteorological service at the Observatory, read a paper on the effects of the two great atmospheric currents of the atmosphere; one of them north-east, and the second, opposite to the first, south-west. To recite the history of the struggle between these two primary currents would be to recite the eventful history of temperature. Judicious balloon ascents would greatly help meteorologists in executing useful work.—M. Yvon Villarceau gave some most interesting details on the state of things at the Observatory during the night of May 22. The Communists tried to set fire to the establishment, but succeeded only in burning down the wood casements, used to protect the instruments from shelling during the Prussian investment. One circle constructed by Rigault was destroyed. This circle was intended to be used as a mural circle for observations connected with the next international geodesic congress to be held at Vienna, in order to revise the determination of the earth's radius. M. Yvon Villarceau declares that in spite of this misfortune, the French Republic will be able to hold its ground on that pacific battle-field.—M. Chevreul read the speech delivered on his behalf at the funeral of the lamented M. Payen. The learned orator reviewed at full length the different processes resorted to in order to render edible different substances during the first investment of Paris. M. Payen was the originator of these ingenious processes. One of them will be largely used in naval expeditions for procuring fresh albumine for crews and passengers. Ordinary albumine, as it is used by dyers and photographers, is melted at a temperature of 100° C., and can be used for all the cooking purposes. Distant marine expeditions will always remember with gratitude the exertions of M. Payen and his associates for feeding 2,500,000 people surrounded during months by an hostile overpowering force.—M. Chevreul gave some interesting details on the protection of the Museum, and the losses experienced by the great Gobelins' conflagration.

BOOKS RECEIVED

ENGLISH.—Hours of Exercise in the Alps: Prof. Tyndall (Longmans).—Astronomy Simplified for General Reading: J. A. S. Rollwyn (Tegg and Co.)

FOREIGN.—Verhandlungen der k.k. zoologisch-botanischen Gesellschaft in Wien: Trübner.

DIARY

THURSDAY, JUNE 15.

ROYAL SOCIETY, at 8.30.—On the Fossil Mammals of Australia. Part V. Genus Nototherium.—Contribution to the Fossil Botany of the Coal Measures. II.: Prof. W. C. Williamson, F.R.S.—On Cyclides and Sphero Quartics: Dr. Casey.—On a Law in Chemical Dynamics, and other Papers: Dr. Gladstone, F.R.S., and A. Tribe.

SOCIETY OF ANTIQUARIES, at 8.30.—On a Reliquary of Sculptured Ivory of the Sixth Century: A. Nesbitt, F.S.A.

LINNEAN SOCIETY, at 8.—On British Spiders: Rev. O P. Cambridge.—On a Luminous Coleopterous Larva: Dr. Burmeister.

CHEMICAL SOCIETY, at 8.—An Experimental Inquiry as to the Action of Electricity upon Oxygen: Sir B. C. Brodie, Bart.

FRIDAY, JUNE 16.

ROYAL INSTITUTION, at 9.—On the Esquimaux and Ice of Greenland, illustrated by Drawings and Photographs: Mr. William Bradford, Artist, of New York. (Extra meeting.)

MONDAY, JUNE 19

ANTHROPOLOGICAL INSTITUTE, at 8.—Mode of Preserving the Dead among the Natives of Queensland: Albert M'Donald.—Forms of Ancient Interments in Antrim: Dr. Sinclair Holden.—Analogies and Coincidences among Unconnected Nations: Hodder M. Westropp.—Peruvian Antiquities: Josiah Harris.

TUESDAY, JUNE 20.

ZOOLOGICAL SOCIETY, at 9.—Report on Additions to the Society's Menagerie in May: The Secretary.—On some Arachnida, collected by Cuthbert Collingwood, M.D., during rambles in the China Sea: Rev. O. P. Cambridge.—Notes on some Rodents from Yarkand: Dr. J. Anderson.

WEDNESDAY, JUNE 21.

METEOROLOGICAL SOCIETY, at 7.—Anniversary Meeting.

ROYAL SOCIETY OF LITERATURE, at 8.30.—On the Life and Writings of William of Malmesbury: Mr. W. Birch.

GEOLOGICAL SOCIETY, at 8.—Notes on the Geology of Part of the County of Donegal: A. H. Green, F.G.S.—On some Supposed Vegetable Fossils: W. Carruthers, F.R.S., F.G.S.—Memoranda on the Most Recent Geological Changes of the Rivers and Plains of Northern India, to show the Practical Application of Mr. Login's Theory of the Abrading and Transporting Power of Water to effect such Changes. T. Login, C.E.

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