able at once to the foundation of the professorship, and it is expected that an election to the post will therefore take place shortly. All praise is due to the college for having thus promptly acted in the best interests of science in the University, and given this professorship precedence amongst several other schemes which might have been carried out by it first instead. The Profesor is required by the Statutes to give instruction in Human and Comparative Physiology, with histology.

CAMBRIDGE.—The annual report of the Museums and Lecture Rooms Syndicate at Cambridge has contained in past years no more valuable record of work than that lately issued. Taking first the department of experimental physics, we learn that sixty-two students were attending the practical classes in the Lent term, doing work which few of the candidates for the mathematical or natural sciences triposes ever did at Cambridge before the establishment of the Cavendish Laboratory. The pupils in mechanism in Prof. Stuart's workshop have numbered thirty-six during the past winter. In chemistry the increase in the students has considerably exceeded the accommodation available in the University laboratory, notwithstanding the existence of several college laboratories. Professors Liveing and Dewar plead strongly for further provision as regards both buildings and appliances, such as may bear comparison with those of Zurich and Bonn; they believe that to delay building until other departments can be adequately dealt with will be most detrimental to the present flourishing prospects of chemistry. A new register of the specimens in the mineralogical museum is completed; but the want of additional apparatus is seriously felt. Prof. Hughes records the use of the Arts School as a lecture-room, and the arrangement for additional class and work-rooms in the Woodwardian museum. The accessibility of the collections, and the determinations being kept up to date, attract many geologists who wish to pursue special investigations. Among the additions to the collections are 700 species of Pliocene shells from Tuscany, casts of vertebrates from Lausanne Miocene, 270 species of Miocene shells from the Vienna basin; Upper greensand corals from Devonshire, many Cretaceous specimens from the neighbourhood of Cambridge, 450 specimens from Neocomian of Saint Croix, Switzerland, and casts of *Hesperornis regalis*, Marsh, from Kansas; several hundred specimens from Portland Sands, Swindon, Wilts, collected by Mr. H. Keeping, the curator of the museum; numerous specimens of rocks and building-stones.

Turning, now, to the biological departments, the Woodward and Hepburn collections of shells have been carefully examined and catalogued by the curator, Mr. A. H. Cooke. The report gives notes upon the principal families of mollusca, as represented in the museum, with indications of gaps in the series; it should be widely circulated in the interest of the museum itself, as many old University students must have it in their power to supply deficiencies at a slight cost of trouble to themselves. Mr. Salvin reports that his catalogue of the Strickland collection of birds is complete, making an octavo volume of 653 pages. The species in the collection number 3125. Mrs. Strickland has presented a further portion of the valuable library of her late husband to the museum. In Amphibia and Reptilia the collection is still relatively poor. A beautiful skeleton of Menopoma has been prepared by W. Robinson, one of the assistants in the museum, and a considerable number of skeletons and skins of representative genera in these groups has been added. Among the mammalian acquisitions should be mentioned the skeleton of a male giraffe purchased from the Zoological Society; a skeleton of a mare, presented by Mr. R. Pryor, of Trinity College; skeletons of a ringed seal, a bladder-nosed seal, and a Polar bear, all carefully killed and preserved, so that the bones were neither injured nor missing, as is too often the case. A complete skeleton of an Indian elephant has been given by Sir John Phear, and a less perfect skeleton of an individual of the same species, sent from Calcutta through the kind exertions of Sir Joseph Fayrer. English additions of interest continue to be made, such as a male badger, an adult male otter from Norwich, and a female wild cat from Sutherlandshire.

The average number of students working at physiology practically is now over 100. Mr. Balfour's classes in practical morphology have very nearly attained the same numbers. More demonstrators are seriously needed. Mr. Vines has been assigned a small room for practical botany, but the advanced students can only do their work by the course being repeated two or three times, since only ten students can work at once. Elementary students are at present unprovided with any space for practical study.

Prof. Paget, in reporting on the department of medicine, strongly urges the speedy appointment of a Professor of Pathology, and the provision of a Pathological Laboratory. The Museum of Human Anatomy has been enriched by sixteen models of the brain and other models, prepared by the late Mr. Joseph Towne, modeller to Guy's Hospital, presented through Mr. T. Bryant.

One further note should be made, calling attention to the magnificent presents made to the Philosophical Library, on its transfer to the new room, and being made available for all students in the museums, by Mr. J. W. Clark, Prof. Humphry, Mr. F. M. Balfour, Prof. Babington, Prof. Newton, and others. Mr. Clark's gift is of priceless value to the science school, including as it does several hundreds of volumes of the most valued and superb editions of zoological and anatomical works.

The Hopkins Prize for the best original memoir, invention, or discovery in connection with mathematics physical or mathematics experimental science that may have been published during the three years immediately preceding, has been awarded to Lord Rayleigh, M.A., F.R.S., of Trinity College, Professor of Experimental Physics in the University, for his various important papers connected with the theory of vibrations, and particularly for his paper on "The Theory of Resonance."

Prof. Humphry announces practical classes in histology by the Demonstrator, Mr. Hill, and in osteology by Mr. Wheny, during July and August.

The Cavendish Laboratory will be open to students obtaining permission from the Professor during July and August, and the Professor or one of the Demonstrators will attend daily.

It has been decided to confer the Honorary Degree of LL.D. on Prof. J. P. Cooke, the eminent Professor of Chemistry in Harvard College, U.S.

The opening of the Botanic Garden during three hours on Sundays to members of the Senate and friends accompanying them has been confirmed by 88 to 76 votes.

MR. H. S. HELE SHAW has been appointed Professor of Engineering at University College, Bristol, vice Dr. J. T. Main, elected Assistant Professor of Mechanics at the Normal College of Science and Royal School of Mines, South Kensington. Mr. Sidney Young, D.Sc. London, succeeds Mr. W. L. Goodwin as Chemical Lecturer and Demonstrator, the latter having obtained the professorship of Sackville College, New Brunswick, Canada.

SOCIETIES AND ACADEMIES

LONDON

Royal Society, May 11.—"On the Organisation of the Fossil Plants of the Coal-measures," part xii. By Prof. W. C. Williamson, F.R.S.

At the recent meeting of the British Association at York, Messrs. Cash and Hick read a memoir, since published in part iv. of vol. vii. of the *Proceedings* of the Yorkshire Geological and Polytechnic Society, in which they described a stem from the Halifax Carboniferous deposits characterised by a form of bark hitherto unobserved in those rocks. To this plant they gave the name of *Myriophylloides Williamsonis*. It was characterised by having a large cellular medulla, surrounded by a thin vascular zone composed of short radiating lamellæ. This, in turn, was invested by a cylinder of cortical parenchyma from which radiated a number of thin cellular laminæ, like the spokes of a wheel, separating large lacunæ. Each lamina generally consisted of a single series of cells. At their peripheral end, these laminæ merged in a thick, large-celled, cortical parenchyma. The generic name, Myriophylloides, was given to the plant because of the resemblance between sections of its cortical tissues and those of the recent Myriophyllum. Two reasons induced the author to object to this name (NATURE, December 8, 1881, p. 124), and to propose the substitution of that of Helophyton. Such substitution, however, was rendered unnecessary by the discovery, by Mr. Spencer, of Halifax, of some additional specimens which indicate that the supposed new plant was merely the corticated state of the Astromyelon, described by the author in his Memoir, part xi. (*Phil. Trans.*, 1878). These specimens showed that the plant was more complex than had been supposed, different ramifications of it having each their individual peculiarities.

In some of the new specimens the vasculo-medullary axes present no differences from those of the Astromyelon already described. The radiating lines of cells separating the laminæ prove to be transverse sections of elongated vertical laminæ composed of cells with a mural arrangement, and which separate large vertical lacunæ of varying lengths; a type of cortical tissue clearly indicating a plant of aquatic habits. So far as this bark is concerned, all the ramifications of the plant display similar features, but several of the specimens exhibit important variations in the structure of the vasculo-medullary axis. In them the central cellular medulla is replaced by an axial vascular bundle, which has little, or in some examples apparently no, cellular element intermingled with the vascular portions. In some examples this axial bundle is invested by the thick exogenous zone seen in Astromyelon. In others that zone is wholly wanting. Yet there appears to be no reason for doubting that these are but varied states of the same plant which branched freely, the differentiated branches having, doubtless, some morphological significances, as yet incapable of being explained. That the plant was a Phanerogam allied to Myriophyllum, is most improbable. It has several features of resemblance to the Cryptogamic Marsileæ, from which it does not differ more widely than the fossil Lepidodendra do from the living Lycopodiaceæ.

The author describes a new specimen of *Psaronius Renaultii*, found by Mr. Wild, of Ashton-under-Lyne. Those previously described, consisted almost entirely of fragments of the bark and its aerial rootlets. The present specimen contains a perfect C-shaped fibro-vascular bundle and a portion of a second one, resembling some of those described by Corda, and which leave no room for doubting that our British Coal-measures contain at least one arborescent fern, equal in magnitude to those obtained from the deposits at Autun.

In his Memoir, Parts IX. and X., the author described, under the provisional generic name of Zygosporites, some small spherical bodies with furcate peripheral projections. Similar bodies had been met with in France, and were regarded by some of the French palæontologists as true Carboniferous representatives of the Desmidiaceæ. The author was unable to accept this conclusion, deeming it much more probable that they would prove to be spores of a different kind. Mr. Spencer exhibited the specimen now described at the York meeting. It is a true sporangium, containing a cluster of these Zygosporites. Though they undoubtedly bear a close superficial resemblance to the zygospores of the Desmidiæ, their inclosure within a common sporangium demonstrates them to be something very different. There is now no doubt but that they are the spores of the strobilus, described by the author in his Memoir, Part V., under the name of *Volkmannia Dawsoni*. Hence the genus Zygosporites may be cancelled.

Another interesting specimen found by Mr. Wild, is a young Calamite, with a more curiously differentiated bark than any that has hitherto been discovered. The structure of the vascular cylinder and of the innermost layer of the bark, differs in no essential respect from those previously described; but the outermost portion displays an entirely new feature. It consists of a narrow zone of small longitudinal prosenchymatous bundles, each one having a triangular transverse section, the apex of each section being directed inwards, whilst their contiguous bases are in contact with what appears to be a thin epidermal layer. As in every previously discovered Calamite in which the cortex is preserved, the peripheral surface of this specimen is perfectly smooth or "entire." It displays no trace of the longitudinal ridges and furrows seen in nearly all the traditional representations of Calamites figured in our text-books.

It has long been seen that the medullary cells of the Lepidodendra, as well as the vessels of their non-exogenous medullary sheaths, steadily increased in number as these two organs increased in size correlatively with the corresponding general growth of the plants. But the way in which that increase was brought about has continued to be a mystery. The author now describes a Lepidodendron of the type of *L. Harcourtii* in which nearly every medullary cell is subdivided into two or more younger cells, showing that, when originally entombed, the pith was an extremely active form of meristem, though the branch itself had attained to a diameter of at least two inches. The numerous small young cells are of irregular form. Their development by further growth into a *regular* parenchyma would inevitably necessitate a corresponding increase in the diameter of the branch as a whole; and it must have been from these newly-formed cells that the medullary cylinder obtained the element out of which to construct the additional vessels, the increase of which has been shown to be the invariable accompaniment of the growth of the branch. As might be expected, the growth of the vascular cylinder, or medullary sheath, could only have been a centripetal one.

A new form of Halonia from Arran is described. Instead of its central portion consisting, as in previously-described examples, of the usual Lepidodendroid medulla surrounded by a vascular cylinder, it consists of a solid axis of vessels, resembling in this respect all the very young Lepidodendroid twigs previously described from the same locality. Many recently obtained specimens of Lepidodendroid branches sustain the author's previous observations that all examples from Arran having less than a certain diameter, have the solid axial bundle, whilst all above that diameter have a cylindrical vascular bundle inclosing a cellular medulla. The first type commences with the smallest twigs, and is found increasing gradually up to the diameter referred to. The second type begins where the other ends, and increases in diameter until attaining the dimensions of the largest stems, in none of which does the solid bundle reappear. Halonial branches have not hitherto been described attached to the branches of any true Lepidodendron, though in 1871 (Memoir, Part II.), the author gave reasons, based upon organisation, for insisting that Halonia was a fruit-bearing branch of a Lepidodendroid tree. This conclusion was sustained by Mr. Carruthers in 1873 in his description of a branch belonging to a Lepidophloios.. The author now figures a magnificent example, from the museum of the Leeds Philosophical Society, of a dichotomous branch of a true Lepidodendron of the type of *L. elegans* and *L. selaginoides*. In this specimen every one of the several terminal branches bears the characteristic Halonial tubercles. The leaf scars of these latter branches have the rhomboid form, once deemed characteristic of the genus Bergeria, whilst those of the lower part of the specimen are elongated as in *L. elegans*, &c. These differences are not due to their appearance in separate cortical layers of the branch, but to the more rapid growth in length of its lower part compared with its transverse growth.

The author throws some additional light upon the structure of Sporocarpum ornatum, described in Memoir, Part X., as also upon the nature of the development of the double leaf-bundles seen in transverse sections of the British Dadoxylons, described in Memoir IX. After a prolonged but vain search for a structure similar to the latter amongst the twigs of the recent Conifers, the author has at length found it in the young twigs of the *Salisburia adiantifolia*. Sections of these twigs made immediately below their terminal buds exhibit this germinal arrangement in the most exact manner. Pairs of foliar bundles are given off from the thin, exogenous Xylem zone which encloses the medulla, whilst at the same points the continuity of the Xylem ring is interrupted, as was also the case with the Dadoxylons, by an extension of the medullary cells into the primitive cortex. Sections of the petiolar bases of the leaf-scales of the bud show that these bundles enter each petiole in parallel pairs, subsequently sub-dividing and ramifying in the Adiantiform leaf. This curious resemblance between Salisburia and Dadoxylon, accompanied as it is by other resemblances in the structure of the wood, bark, and medulla, suggest the probability that our British Dadoxylon was a Carboniferous plant of Salisburian type, of which Trigonocarpum may well have been the fruit. If so, the further possibility suggests itself that this plant may have been the ancestral form whence sprang the Baieras of the Oolites, and, through them, the true Salisburias of Cretaceous and of recent times.

Linnean Society, May 4.—Sir J. Lubbock, Bart., F.R.S., president, in the chair.—Dr. Cuthbert C. Gibbes was elected a Fellow.—The Council and Fellows passed a resolution of sympathy with the family of the late Mr. Chas. Darwin.—The Rev. R. P. Murray called attention to specimens of *Carex montana* obtained at Heathfield, Sussex, corroborating Mr. Roper's late rediscovery of the plant in that county.—Mr. J. Murison exhibited dried examples of *Helipterum eximium* from the Cape, of *Ixodia achilleoides* from South Australia, and of jungle cotton from Nagpoor.—A paper was read, on a collection of algæ from the Himalayas, described by Prof G. Dickie.—A communication was made, referring to new varieties of the sugar-cane produced by planting in apposition, as asserted by experiments of the Baron de Villa Franca and Dr. Glass of Rio de Janeiro. In correspondence which had passed between

the authors and Mr. Chas. Darwin, the latter had expressed doubts as to whether two varieties could affect the character of the buds produced by either, it appearing more probable to him that the so-called new variety was due to bud-variation. The Baron de Villa Franca thereupon forwarded a document signed by eight distinguished Brazilians, testifying to the fact that valuable varieties have been raised by the process in question. Dr. Glass furthermore describes in detail his early but fruitless attempts to graft two varieties of the sugar-cane, though he succeeded with another monocotyledon, viz. *Dracæna*.—Mr. S. Grieve gave a notice of the discovery of remains of the Great Auk (*Alca impennis*) on the Island of Oronsay, Argyllshire. Wing and leg-bones were obtained, along with a various assortment of remnants of the Guillemot, Red Deer, Otter, Seal, and other mammals, mingled with fish-bones and shells. These were dug out of a large mound, which, the author believes, must in early times have been occupied by man. The exceeding rarity of the Garefowl remains in Britain gives a special interest to the record of their being found in these western Scottish Isles.—Then followed the reading of notes on some Cape orchids, by Mr. Harry Bolus, wherein several new species were described, and details given in elucidation of particular structural points in the flowers of certain forms, accompanied by a full list of the Cape orchids named by previous writers.—A note was read, on the dimorphic florets of *Catananche lutea*, by Mr. B. D. Jackson, which was followed by a paper on the clasping organs auxiliary to the generative parts in certain Lepidoptera, by P. H. Gosse. After some general remarks the latter author mentioned his mode of manipulation, and proceeded to a description of the organs in question, finally dealing with the modification of the apparatus as investigated in a very considerable number of species.

Zoological Society, May 16.—Osbert Salvin, F.R.S., vice-president, in the chair.—The Secretary read a report on the additions that had been made to the Society's Menagerie during the month of April, 1882, and called special attention to the following birds, all of which were said to be new to the collection:—(1) a male Rifle-bird (*Ptilorhis paradisea*), in immature and worn plumage, changing very slowly into the adult dress, but apparently in good health; (2) a pair of Black-headed Tragopans (*Ceriornis melanocephala*); (3) four Rüppell's Parrots (*Pœocephalus rueppelli*), from Western Africa; (4) a Western Black Cockatoo (*Calyptorhynchus naso*), conspicuously differing from the eastern *C. banksi* in its smaller size; (5) a male Cabot's Tragopan (*Ceriornis caboti*), making a fine addition to the gallinaceous series; and (6) two of the recently described Uvæan Parrakeet (*Nymphicus uvæensis*).—There was exhibited, on behalf of Mr. Henry Stevenson, a specimen of the Dusky Petrel (*Puffinus obscurus*), which had been picked up dead in the neighbourhood of Bungay, Norfolk, in 1858.—A communication was read from the Rev. O. P. Cambridge on some new genera and species of *Araneidea*. Of the sixteen species described, two were from Caffraria, one from St. Helena, two from Ceylon, and the remaining eleven from the Amazons.—Mr. W. A. Forbes called attention to a peculiarity recently observed in a young male specimen of *Pithecia satanas*, in which the third and fourth digits of both hands were completely "webbed."—Mr. W. A. Forbes also read a paper on certain points in the anatomy of the Todies (*Todus*), and on the affinities of that group. He dissented from the views of most previous authors as to the close affinities of these birds to the *Momotidæ*, considering that they must form a group by themselves, to be called *Todiformes*, of value equivalent to the *Pici-*, *Passeri-*, and *Cypséli formes* of Garrod. There were many grounds for supposing that *Todus* is a very ancient form, more nearly representing the ancestors of the whole group of Anomalogonatous birds than any other living form.—A communication was read from Mr. Roland Trimen, F.Z.S., containing a description of an apparently undescribed Sun-Bird obtained in the province of Mossamedes, South-western Africa, which he proposed to name *Cinnyris erikssoni*, after its discoverer Mr. Abel W. Eriksson.—Mr. P. L. Sclater read some notes on a species of Duck (*Anas gibberifrons*), examples of which had recently bred in the Society's Gardens.—Mr. W. E. Forbes gave an account of some points in the anatomy of a rare Australian Duck *Biziura lobata*) from examples that had recently died in the Society's Menagerie.

Physical Society, May 20.—Prof. Fuller in the chair.—Prof. W. Chandler Roberts, F.R.S. communicated the results he had obtained in repeating the experiments of M. W. Spring, Professor at the University of Liége, on the union of finely-divided particles of metal by pressure. M. Spring had shown that at a pressure varying from 5000 to 7500 atmospheres, metallic filings may be united into coherent discs. Thus at a pressure of 6000 atmospheres bismuth filings may be united into a disc which has a crystalline fracture and a density which is identical with that of the metal cooled from the molten state. Zinc again, also a very crystalline metal, will weld into a disc at a pressure of 7000 atmospheres, and the metal will even "flow" into cracks between the die and the collar surrounding it, just as in the experiments of M. Tresca, lead "flowed" under similar circumstances. Prof. Roberts had repeated and confirmed many of the experiments of M. Spring, whose more recent results are of special interest, as he has shown that if filings of bismuth, lead, and cadmium be *mixed* in suitable proportions, such, for instance, as in Wood's alloy; and if the mixture be submitted to a pressure of 7500 atmospheres, an *alloy* is obtained which will actually fuse at 70° C. the true fusing point of Wood's alloy being 63° C. Prof. Roberts showed to the Society an alloy he had prepared which melted below 100° C., although of the constituent metals the lowest melting-point is 230° C., and he pointed out the great interest both to the physicist and metallurgist of M. Spring's results.—Mr. Walter Baily then showed mathematically that the repulsion between the magnet and revolving copper disc in the experiment shown by Prof. Guthrie at the last meeting of the Society ought to vary as the square of the velocity of rotation of the disc, a result which Prof. Guthrie had found.—Mr. Lecky gave the results of tests of Mr. Bennet's cell (described at the last meeting) made by Prof. Guthrie. The electromotive force was 1·14 volts; the internal resistance 0·8 ohms, but both quantities vary under certain conditions. Prof. Macleod also gave the results of tests made by him. These show that the cell rose in E.M.F. from 1·005 volts on changing to 1·213 volts after standing three days. The internal resistance was then 1·007 ohms. Both quantities varied under different conditions of working.—Mr. C. V. Boys then exhibited an improved form of his vibratory meter for measuring electric currents, and specially designed for electric lighting purposes. He has applied to the form formerly shown to the Society, the contact-making device employed in Hipp's electric clocks, which, though imperfectly adaptable to the clocks, is perfectly adaptable to the meter. The force is proportional to the displacement. No sliding contacts are employed. Mr. Boys also explained some other plans for current meters, one of which he believes to be the final form for practice, and which, besides being remarkably simple in construction, is free from the objection of being tampered with by means of extraneous magnets. In reply to Prof. Foster he stated that self-induction does not disturb their action.

PARIS

Academy of Sciences, May 22.—M. Jamin in the chair.—The following papers were read:—Note on the application of a theory of Poncelet to approximate calculation of the arcs of plane curves, by M. Resal.—Researches on the absorption of gases by platinum, by M. Berthelot. He investigates the liberation of heat in absorption of hydrogen and oxygen by platina in different states. It is shown that the state of porous bodies changes continually while they absorb gases.—Action of oxygenated water on organic substances and fermentations, by MM. Bert and Regnard. *Inter alia*, dilute oxygenated water stops fermentations due to living organisms, and putrefaction of all substances which do not decompose it; it does not act on diastasic fermentations. It is rapidly destroyed (under 70°) by collagenous azotised matters, by musculine, blood fibrine, and azotised vegetable matters; but not by fats, amylaceous matters, soluble ferments, egg albumen, caseine, peptones, creatine, creatinine, or urea.—Reply to objections made by M. de Lesseps in the last *séance*, by M. Cosson.—A new scientific cruise of the *Travailleur* in the Atlantic, in July and August, as far as Madeira and the Canaries, was announced by M. Alph. Milne-Edwards.—M. Demontzey was elected Correspondent in Rural Economy, in room of the late M. Pierre.—On the measurement of carbonic acid contained in the atmosphere, by M. Mascart. He describes a method based on direct measurement of the diminution of pressure of a mass of air at constant volume and temperature, when the CO_2 is removed. Travellers may take about 500 cc. of air in glass tubes sealed at a lamp, and afterwards analyse at leisure.—Quantity of carbonic acid contained in the

air at Colèves, near Nyon (Switzerland), altitude 430 m., by M. Risler. The general average for three years is 3·035 vols in 10,000.—Inoculability of tuberculosis by respiration of consumptives, by M. Giboux. In these experiments air expired by animals in phthisis was introduced twice a day for 105 days into a wooden case containing young rabbits, the grated apertures of the case being closed for two hours. Tubercles appeared in the rabbits' lungs. Other rabbits in a similar case, and similarly treated, except that the infected air was passed through carbolised wadding, showed no organic alteration.—Researches of pathological physiology on respiration, by MM. Grehant and Quinquaud. In the case of bronchial, pulmonary or pleural alterations, even in fever, the exhalation of carbonic acid is considerably diminished. The lesion, apparently, does not act by barring the elimination of CO_2, so that this accumulates in the blood, but by interfering with general nutrition at the various points where CO_2 if formed.—On the persistence of effects of preventive inoculation against symptomatic *charbon*, and on the transmission of immunity of the mother to her product in the bovine species, by MM. Arloing, Cornevin, and Thomas. The persistence of immunity for seventeen months has thus far been verified.—Observations serving in the study of phylloxera, by M. Lichtenstein.—Telegram from Cairo about the solar eclipse.—On the observations of the telescopic comet at the Imperial Observatory of Rio de Janeiro, by M. Cruls.—On a new case of formation of the dark ligament, and its utility for observation of the transit of Venus, by M. André. This was observed, during the recent eclipse, by MM. Gonessiot and Marchand, where the moon's disc came on three sun-spots. The ligament is much less dark than in the case of the transit. Here the laws of diffraction can alone explain it.—On a class of invariants relative to linear equations, by M. Poincaré.—On uniform functions affected by sections, by M. Picard.—On the chemical work produced by the battery, by M. Tommasi.—On the employment of rotating discs, for the study of colour-sensations; relative intensity of colours, by M. Rosenstiehl.—Influence of introduction of the interior sea on the *régime* of Artesian sheets of water in the region of the Chotts, by M. Dru. These Artesian sheets would not be destroyed, but the general *régime* of waters in the country would be improved and protected.—Sulphhydrate of sulphide of nickel, by M. Baubigny.—Action of alkaline sulphides on proto-sulphide of tin, by M. Ditte.—Researches on cuproso-cupric sulphites, by M. Etard.—Basic salts of protoxide of manganese, by M. Gourgeu.—On the addition of hypochlorous acid to monochlorinated chloride of allyl, by M. Henry.—The odd eye of Crustaceans, by M. Hartog. It is composed of three simple eyes, anterior to the brain, with optic rods reversed, receiving the conductive fibres of the optic nerve on their external border, and having the pigment layer confounded in one mass. A similar structure is found in Chætognatha and in some Planaria. To this primitive and ancestral group of Turbellaria, the eyes of Crustacea and Chætognatha may probably be referred.—Researches on flagelliferous Infusorians, by M. Kunstler.—On a bed of tertiary mammalia at Aubignas (Andèche), by M. Torecarpel.—Influence of ethylic alcohol, and of essence of absinthe on the motor functions of the brain, and on those of the muscles of the life of relation, by M. Danillo. The influence of alcohol (in strong doses) referred to is similar to that of other anæsthetics (ether, chloral, morphine). Five periods are distinguished in the case of essence of absinthe, a tonic, a clonic, a choreïform, a period of delirium, and one of resolution. Thus the poisoning is like that from strychnine, in which, however, the period of delirium is absent.

VIENNA

Imperial Academy of Sciences, April 20.—L. I. Fitzinger in the chair.—The following papers were read:—Fr. Brauer, on the *segment mediare* of Latreille.—R. Maly, on the ratio of bases and acids in blood-serum and other animal fluids; a contribution to the theory of secretion.—Fr. Emich, on the behaviour of ox-bile to Huefner's reaction, and on some properties of glycocholic acid.—T. Mauthner, on the optic-rotatory power of tyrosine and cystine.—G. Becka, on the orbit of the planet Ino (No. 173).—E. Suess, on Fr. Bassani's work, "Discrizione dei pisci fossili di Lesina."—T. V. Rohon, on the origin of the nervus acusticus in Petromyzon.—F. T. Paulsen, on the path of the air-stream in the nasal cavity of man.—O. Simony, on a series of new mathematical principles derived from experience.

May 4.—L. I. Fitzinger in the chair.—The following papers were read:—C. Doelter, on the mechanical separation of minerals.—G. Gruss, on the orbit of the "Loreley" (165).—O. Seeliger, on the history of development of the Ascidia.—S. Lustgarten, on test for zodoform, naphthol, and chloroform in animal liquids and tissues.—A. Wassmuth, on the specific heat of strongly magnetised iron and on the mechanical equivalent of a diminution of the magnetism by heat.—T. V. Tanovsky and H. v. Perger, a sealed packet containing a paper on a new reaction of the azo-bodies.—A Brezina, report on some new and little-known meteorites (part iv.)—Z. A. Skraup, synthetical experiments on the chinolin series (part iii.).—R. Wegscheider, on the derivates and constitution of opianic and hemipinic acid.—A. Boehm, on the tertiary fossils of the Isle of Madura.

BERLIN

Physiological Society, May 19.—Prof. du Bois-Reymond, president.—Dr. Rabt Rückard spoke about the development of the brain in fishes, and about the import of its so-called lobi optici. He especially combated the view that the part covering these lobes is a part of the cerebrum; he is, on morphological, histiological, and embryological grounds, rather of the opinion that this portion of the brain belongs to the middle brain, and that it is an homologue to the corpora quadrigemina in the brain of the higher orders of animals. He endeavoured to establish this view by the history of the development of the brain in fishes, which he made a minute study of in the trout.—Prof. Hirschberg laid before the Society the results of his dioptric measurements of the eyes of fishes and amphibia (pikes and frogs), as a further contribution to the comparative dioptrics of the eye. According to his measurements, the cornea in the pike has a large radius of curvature which exceeds the length of the optic axis; consequently, these animals are very myopic in the air; when, however, the eye was ophthalmometrically examined under water, the distance of distinct image formation was much greater. The eye in fishes (both those of the pike and roach were examined) behaves quite differently in air and in water. This fact is a contradiction of Herr Rateau's statements, who also found the seeing distance of fishes almost the same in both media. The eye of the frog also behaves differently in water from what it does in air; the radius of curvature of its cornea is much smaller in proportion to the length of the optic axis, and its myopia in air is much less than in fishes. It is remarkable, that in the case of the eyes of both the frog and the pike, neither a solution of atropine nor of eserine produced any alteration in the distance of the formation of images; it is hence probable that the accommodation of the eye, if it occur at all in these animals, takes place by some other mechanism than that which affects it in the higher vertebra.

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