

Emmanuel College holds its Entrance Scholarship Examination conjointly with Christ's and Sidney-Sussex Colleges. The subjects in Natural Science are Chemistry, Physics, Elementary Biology, and Geology and Mineralogy. In all branches of Natural Science there is a practical examination. The examinations will begin on January 6 next. A candidate for a Scholarship at one of the above Colleges may be elected to a Scholarship at either of the others in default of better qualified candidates.

Mr. Lea will lecture on Chemical Physiology this term at the New Museums.

Mr. Sedgwick has arranged for a repetition class in Elementary Biology in the Morphological Laboratory, to be superintended by Mr. Weldon.

OWENS COLLEGE, MANCHESTER.—At a recent meeting of the Council, on the recommendation of the Senate, made the following appointments to the three vacant Berkeley Fellowships:—In Chemistry, Dr. L. Claisen, formerly First Assistant in Organic Chemistry to Prof. Kekulé of Bonn. In Zoology, Dr. John Beard, of the University of Freiburg, and formerly of Owens College. In Philosophy, Mr. W. E. Johnson, B.A., of King's College, Cambridge. The Berkeley Fellowships are for the encouragement of original research, and the holders are required to reside in Manchester during term time.

### SCIENTIFIC SERIALS

*Bulletins de la Société d'Anthropologie de Paris*, tome vii. fasc. 2, 1884.—This number contains several more than usually interesting communications regarding French palæontological inquiry.—M. D'Acy's paper on the silex of the Chelles Station, which was begun in a previous number, shows that we must regard the Chelles deposits as belonging to two distinct formations: the old Quaternary, or true Chellean, containing remains of *Elephas antiquus* and *Rhinoceros merckii*, and the later Quaternary, or mousterian period, represented as usual by *Elephas primigenius*.—Baron de Baye communicates the discovery in the Neolithic caverns at Petit Morin (Marne) of transversely cut arrow-heads similar to those found in large quantities in Denmark, but hitherto undetected in France. They were intermixed with numerous ordinarily shaped arrow-heads, fragments of Neolithic pottery, and roughly-cut flints, and deposited in a cavity on the summit of a hill, while a vertebral bone (apparently of a badger), which was found in a grotto at a distance of 250 m. from the deposit, still retained a portion of a similarly shaped arrow-head.—M. Gustave Chauvet announced the discovery, in a tumulus on the right bank of the Charente, of a curiously ornamented bronze chariot, similar to those found in Mecklenburg and in Scandinavia. The tumulus, which is situated near Charroux (Vienne), and locally known as "le Gros-Guignon," contained a vaulted recess in which the body had rested, and on either side of which lay wheels with detached ornaments, as circles and spheres, and bronze and iron nails, together with two urns undoubtedly Gallic.—M. Nicaise reported the discovery of another chariot-bier in a tumulus at Septaulx (Marne), on which the body had been laid. In front of the right wheel lay the skeleton of a boar, between whose ribs a long knife was embedded. To this report the writer has added many interesting details in regard to several funeral chariots found in other parts of Marne, more especially in the Gallic cemetery of Varilles, where three skeletons (one adult and two children) had been interred in the same chariot. The weapons, horse-bits, bronze rings, &c., inclosed in these tumuli indicate their Gallic origin.—On the sepulchral grotto of Rousson, near Alais, by M. Charvet. This cave, which was opened in 1883, was found to contain a large number of skulls, mostly dolichocephalic, together with other human bones, and pins and beads of a metal regarded by French palæontologists as copper rather than bronze, and similar to that of various objects found in the Baume des Morts Cavern of Durfort, first explored in 1869, and regarded as belonging to a mixed Celto-Ligurian race.—On a series of explorations at Ploubinec, by M. Gaillard. Four tumuli opened in March 1884 contained cinerary urns, four human skulls, and other bones, flint lance- and arrow-heads, and broken pottery.—A communication by M. Kerckhoffs concerning the lacustrine station lately brought to light near the alluvial beds, in which the notable Maestricht jaw was discovered in 1823. The recent explorations of this interesting site have been conducted by M. Ubaghs, who has found a well-preserved dolichocephalic cranium, together with the bones of *Bos primigenius*, the horse, stag, beaver, dog,

&c., with bone instruments, remains of coarse pottery, &c.—On human sacrifices and anthropophagy among the Vaudous or serpent-worshippers of Haiti, by M. Dehoux.—On the settlements of the Canadian Redskins, and the fluctuation in their numbers, by M. Petitot. The author considers that the solar and demon worship, and the chief social institutions of the Sioux, Hurons, and other North American tribes indicate their affinity with the Dravidian races of India.—The report of a discussion raised by M. Beaugard on the correctness of his views regarding the Dardous, which had been called in question by M. de Ujfalvy.—On the Cachmiris and Pandits, by M. de Ujfalvy. The former he regards as a mixed Mongol and Aryan race, while in the latter he believes we have the representatives of a primitive North-West Indian Aryan type.—On the pretended Eastern origin of the Algonquins, by M. Petitot; and on the diffusion of analogous myths in different lands, by M. Luys.—On dynamometric errors, by Dr. Manouvrier, having special reference to the inexactness of instruments, and the discrepancies between the modes of gradation observed by different instrument-makers.—On the ethnographic researches of M. Quesde in the Antilles, by M. Hamy. The presence of cut flints, although there are no indications of any siliceous rock-formations, points to primitive commercial relations with the mainland.—On the methods of measuring the circumference of the head, by M. le Bon.—A new classification of the pelvis considered from an obstetric point of view, and with special reference to racial distinctions, by Dr. Verrier.—On the traditions and tribal divisions of the Somalis, by M. Bardey. Their legends include one in which Abel is represented as the black and evil brother, while Kahil is white-skinned and good, while the people profess to derive their descent from two men miraculously saved with their wives from an inundation which engulfed all the inhabitants of the lands near the Mount Taizz, sixty miles east of Mocha, on the summit of which they remained till the waters subsided.

*Bull-tin de l'Académie Royale de Belgique*, July 5.—Monograph on the central nervous system of adult Ascidiæ, and its relations to that of the Urodele larvæ (four plates), by MM. Ed. Van Beneden and Ch. Julin.—Note on the calculation of averages; application of a new principle of probabilities, by E. Catalan.—Remarks on the ventral disk of the sea-snail, *Liparis barbatus* (one plate), by Maurice Stuckens.—On the respiration of bats during the period of hibernation, by E. Delsaux.—Anatomy of the cephalic kidney of the larva of *Polygordius*; a contribution to the history of the excreting apparatus of worms, by Julien Fraipont.—On the central and surface nervous systems of the Archannelids (*Protodrilus*, *Polygordius*); a contribution to the history of the origin of the nervous system in these worms, by Julien Fraipont.—On a theorem in mechanics applicable to systems whose movement is periodical, by E. Ronkar.

August 2.—Note on two remarkable experiments in capillary attraction, by G. van der Mensbrughe.—On the theory of elliptical functions, by P. Mansion.—On the remainder in Taylor's formula, and on the binomial theory, by P. Mansion.—Chemical analysis of a rich phosphate recently discovered in the neighbourhood of Havré near Mons, by C. Blas.—On the conductivity of gaseous bodies for heat, by E. Ronkar.—On the theoretic relations between the coefficients of expansion, the internal heat of vaporisation, and the specific heats of bodies in the liquid and gaseous states, by P. de Heen.—Description of a new apparatus for determining the coefficient of diffusion of salts in solution, and the variations experienced by this quantity according to the temperature, by P. de Heen.—On the generation of certain surfaces by means of quadrilinear groups, by C. Le Page.—Researches on the production of cyanhydric acid in the vegetable kingdom, by A. Jorissen.—Historic note on Stephen Dushan, Emperor of Servia, and the Balkan Peninsula in the fourteenth century, by Emile de Borchgrave.—Discourse pronounced at the obsequies of M. Alexandre Pinchart, by M. Silngencyer.

### SOCIETIES AND ACADEMIES

#### LONDON

Mineralogical Society, October 21.—Anniversary meeting.—The Rev. Prof. Bonney, F.R.S., President, in the chair.—The Hon. Sec., Mr. R. II. Scott, read the Report of the Council.—The scrutineers reported that the following were elected Officers and Council:—President: Rev. Prof. T. G. Bonney, D.Sc., LL.D., F.R.S., F.S.A., Pres.G.S.; Vice-Presidents: Rev. S. Haughton, M.D., F.R.S., W. H. Hudle-

ston, J.P., F.R.S.; Council: T. W. Danby, M.A., F.G.S., J. J. Dobbie, D.Sc., L. Fletcher, M.A., Prof. W. J. Lewis, M.A.; Treasurer: R. P. Greg, F.G.S., &c.; General Secretary: R. H. Scott, M.A., F.R.S.; Foreign Secretary: T. Davies, F.G.S.—The President delivered an address, in which he congratulated the Society on the satisfactory character of the Report just presented by the Council. This mentioned three topics, all for congratulation: First, it announced that the fusion of the Society with the Crystallogical, thanks to the good offices of the Honorary Secretary, had been accomplished. Next, it announced that the finances of the Society, which three years ago were in a condition far from satisfactory, were now restored to a healthy tone. Lastly, it spoke of the great success which had attended the meeting held in Edinburgh last June. He trusted that in future one of the meetings of the Society would always be held in Scotland. He then proceeded to criticise two defects which in his opinion existed in systematic mineralogy as set forth by many authors. To some extent these were questions of nomenclature, but in his opinion they involved questions of principle. The one was the extreme proneness of mineralogists to give distinctive names to slight and often very ill-defined varieties of existing species, thus leading students to mental habits of dissociation rather than of correlation. The other at first sight appeared exactly the converse of this, namely, the laxity with which certain substances were classed as minerals. For instance, obsidian, pitchstone, &c., were often placed in text-books under the head of orthoclase feldspar, but they could not be brought under any received definition of a mineral. He pointed out how, in consequence as he believed, of the defective habits of reasoning thus engendered, the contributions to petrology, even of skilled mineralogists, were sometimes of little value.—Mr. R. H. Solly read a paper on five specimens of lilac calcite from Tankerville Mine, Salop.—Mr. Semmons read some further notes on "Euargite."—M. Guyot de Grandmaison exhibited a very fine crystal of "Parisite."—Mr. Rudler and Mr. T. Davies also exhibited several interesting minerals.

## SYDNEY

Linnean Society of New South Wales, August 27.—C. S. Wilkinson, F.G.S., F.L.S., President, in the chair.—Dr. Otto Finsch was introduced as a visitor.—The President announced that, at the last meeting of the Council, F. Jeffrey Bell, M.A., Professor of Comparative Anatomy at King's College, London, had been elected a Corresponding Member of the Society.—The following papers were read:—New fishes in the Queensland Museum, No. IV., by Charles W. De Vis, M.A. The families Gobiidae and Blenniidae form the subject of this paper; thirty-one new species are described.—Notes on the eyes of deep-sea fishes, by Dr. von Lendenfeld. In this paper the author combats the views expressed by Mr. Archer of New Zealand, in opposition to his (Dr. Lendenfeld's) theory as regards the eyes of *Lepidotus caudatus*.—The insects of the Maclay coast, by William Maclay, F.L.S. The "Maclay Coast," so named after the distinguished traveller Baron N. de Mikluho-Maclay, who resided there for nearly three years, is a portion of Astrolabe Bay, on the North Coast of New Guinea, and the insects collected there, and now enumerated, are of interest as being the only ones ever received from that portion of the island. The collection is very small, and the species have been for the most part previously described from Dorey and New Ireland.—Notes on the zoology of the Maclay Coast, New Guinea: (i.) on a new sub-genus of *Peramelidae*, by N. de Mikluho-Maclay. Baron Maclay gives to the bandicoot here described the name of *Brachymelis garagassi*. The sub-genus is characterised by having four upper incisors instead of five (in which character it resembles *Peramelis doreyanus*, Quoy and Gaimard, and *P. cockerelli*, Ramsay), in having very short limbs and in having the hair on the back very bristly. A stuffed specimen was exhibited, which Dr. Otto Finsch pronounced to be distinct from his New Britain species.—Descriptions of Australian Micro-lepidoptera, No. XI., by E. Meyrick, B.A. Mr. Meyrick continues the *Cecophoridae*, describing in detail over 100 species, bringing the number of that family up to nearly 400.—Critical list of Mollusca from the north-west coast of Australia, by John Brazier, C.M.Z.S., &c. Fifty species are here enumerated, with the geographical range and synonymy of each correctly defined.—Synonymy of some New Guinea land shells, by John Brazier, C.M.Z.S., &c. Mr. Brazier accompanied the reading of this paper with the exhibition of the following species of Helicidae:—*Helix broadbenti*, Braz.; *H. (Obba) goldiei*, Braz.; *H. (Geotrochus) zeno*, Braz.; *H. (Geotrochus) tapperonii*, Smith;

*H. (Geotrochus) tayloriana*, Ad. and Reeve; *H. (Sphaerospina) gerrardi*, E. A. Smith; *H. (Planispina) corniculum*, Hombr. and Jacq.; *Nanina (Xesta) citrina*, Linn.—The time of the Glacial period in New Zealand, by R. von Lendenfeld, Ph.D. The results of the author's survey in the New Zealand Alps, partly corroborating and partly extending the results of Dr. von Haast's surveys, showed that the present glaciers are as large and extend down as far as those in Norway, where the mean annual temperature is 3° C., whilst in New Zealand it is 11° C. The greater expanse of water in the southern hemisphere and the consequently greater amount of humidity in the air, and more copious rain and snowfall are considered to be the cause of this. The sounds in the south-west coast are similar to the fjords in Norway, and the alluvial deposits at their upper ends are small. Scooped out originally by flowing water, these sounds remained unchanged during the period of subsidence of the land, and were not filled up with debris, because large glaciers occupied them during that time. As soon as these glaciers disappeared, the formation of the alluvial deposits commenced, and from the fact that the latter are small and increasing rapidly in size from year to year, the author considers that the Glacial period in New Zealand must have been very recent.—List of papers and works relating to the mammalian orders Marsupialia and Monotremata, by J. J. Fletcher, M.A., B.Sc. The aim of this catalogue, which contains the titles and references of several hundred papers, &c., is to do for the student of these two interesting and peculiarly Australian orders of the Mammalia what Etheridge and Jack's Catalogue has done for the student of Australian geology. It includes all papers dealing with the anatomy of these groups, all descriptions of new species since the publication of Gould's work, and a few papers on palaeontology, omitted from Etheridge and Jack's Catalogue, together with a few published since that appeared. Mr. Fletcher exhibited a number of the rarer papers enumerated in the list.—On two new birds from the Austro-Malayan region, by E. P. Ramsay, F.R.S.E. The species here described are: (1) *Pitta finschii*, sp. nov., allied to *Pitta mackloii*, but distinct in having no red nape patch, and the whole of the upper surface except the head blue, instead of green. (2) *Halcyon albonotata*, sp. nov. This species comes under the sub-genus *Cyanalcyon*; it is allied to *Halcyon maclayi* and *H. diops*, but differs from all in having the whole of the back and upper tail-coverts white.

## PARIS

Academy of Sciences, October 20.—M. Rolland, President, in the chair.—Note on the conditions of the existence of equal roots in Hamilton's equation of the second degree, and on a general method of resolving a unilateral equation of any degree in matrices of any order, by Prof. Sylvester.—On the alkaline hydrates, third memoir: hydrates of potassa and soda, by M. E. J. Maumené.—Note on the effects of tar wash on vines attacked by Phylloxera, by M. Balbiani. A decisive experiment recently made by the author on a young plantation near Montpellier showed the possibility of utterly destroying the winter eggs deposited in any given vineyard by the application of a coal-tar wash. But all the plants subjected to this treatment arrived at maturity a fortnight or three weeks later than any others. This result was attributed to the obstacle opposed to the evaporation by the coating thus formed round the stem of the plant.—Occultation of stars by the moon observed at Toulouse during the recent lunar eclipse, by M. Baillaud.—Observations of the same eclipse made at the Observatory of Bordeaux, by MM. Doublet, Flamme, and Courty. These observations, made under rather favourable atmospheric conditions with the 8-inch and 14-inch equatorials, were directed chiefly to some of the stars indicated in M. Struve's list. It was ascertained that none of the stars disappeared at the exact moment of its occultation, almost implying that the edge of the lunar disk is transparent.—Observations of Wolf's comet (1884), made with the meridian circle of the Observatory of Bordeaux, by M. Courty. The brightness of the comet appears to have slightly increased since the first observations, although the nucleus still remains comparable to a star of the ninth magnitude.—Observations of the new planet 244, made at the Observatory of Algiers (0.50 m. telescope), by M. Rambaud.—Observations of the late total eclipse of the moon at Orgères (Eure-et-Loir), M. Edm. Lescaubault.—Note on the determination of the orbits of heavenly bodies by three observations, by M. R. Radau.—Observations made on the intensity of terrestrial magnetism in European Russia, by Gen. A. de Tillo.—Note on the elementary force of solar induction, whose periodical duration

is a mean day, by M. Quet.—On the disruptive discharges of Holtz's electric machine, by M. l'Abbé Maze.—On the triufluoride of phosphorus, by M. H. Moissan.—On the results obtained from the application of potash manures to certain hitherto unreclaimed lands in Brittany, by M. G. Lechartier.—Fresh comparative experiments with the rabbit and guinea-pig inoculated with the virus of human scrofula and tuberculosis, by M. S. Arloing.—Note on the character and constitution of the light fleecy clouds present in the upper regions of the terrestrial atmosphere, by M. A. Badoureau. In these regions the author assumes that the temperature falls to absolute zero, and although the pressure is also reduced to zero, it seems probable that the carbonic acid, nitrogen, and oxygen are here successively condensed into clouds analogous to those formed lower down by vapour. To the clouds formed by these elements might be attributed the phenomenal solar halos recently described by M. Cornu.

## BERLIN

**Meteorological Society, October 7.**—Dr. Hellmann gave a short report of the proceedings of the annual meeting of the German Meteorological Society, which held its sitting at Magdeburg from September 18 to 22, simultaneously with that of the German Natural Science Association. Communications on the scientific inquiries and observations having been delivered in the Meteorological Section of the Natural Science Association, it was only matters connected with organisation which occupied the attention of the Meteorological Society, and the most important of the conclusions arrived at by them formed the substance of Dr. Hellmann's address.—Prof. Börnstein spoke on rain measurement, and, after a concise historical review of the more important observations of earlier times, on the dependence of the readings of rain-gauges on their position and exposure, and on the attempts made to explain that fact, he reported observations of his own which he had made for the purpose of testing the influence which, according to assertions by many savants, the wind exercised on the readings of rain-gauges. Mr. Nipher, as was known, had in 1878 proposed, as a counteractive to the influence of the wind, to surround the collecting cylinder of the rain-gauges with a protective funnel. Beside a Nipher rain-gauge of this construction Prof. Börnstein had set another rain-gauge which was surrounded with a reversed funnel, and must necessarily show the influence of the wind in increased measure. By a comparison of the measurements of these two gauges from January to July of this year, he ascertained that the latter regularly collected less rain than the former. The difference was greatest in the case of snow falling, less in the case of a drizzling rain, still less during an ordinary shower of rain, and least of all with a heavy downpour. On comparing the readings of the two rain-gauges, according to the strength of the winds prevailing at the times of the different rainfalls, it appeared that, when the strength of the wind was 0, the differences were least of all; greater differences appeared when the strength of the wind was 1, still greater when its strength was 2, and the greatest when it rose to 3. Winds of greater violence than 3 came too seldom to allow of correct determinations regarding their influence on the rain-gauges.—In connection with this address Dr. Hellmann stated that at the Prussian stations it was sought to abate the influence of the wind by placing the rain-gauges one metre above the ground, and surrounding them with a hedge one metre and a half in height and at a distance of two metres. He then explained several models of rain-gauges.—Prof. Förster reported several series of experiments on the measurement of heat carried out by the Normal Standard Commission under his direction. As a result of these investigations it appeared that the possible errors of even the best mercurial thermometers were very considerable. In the first place, the successive expansion of the glass, if repeatedly heated up to 100° C., might be very great, to the extent even of displacing the fixed points by several degrees. The amount of this change was dependent on the chemical composition of the glass. According to Herr Wiebe's measurements those were the worst glasses in this respect which were markedly rich in potassium and sodium, especially those containing equal quantities of these substances. Happily glass factories were beginning to take account of this circumstance in their supply of glasses for instruments of precision. The expansion coefficients of the glass, and the relation of the glass to the quicksilver expansion, was another source of error, producing important deviations from the readings of the gas thermometer. In the latter case, likewise, the chemical composition of the glass played a part which would require

to be more particularly determined, and it was to be hoped that the investigations now in progress would soon settle the corrections imposed by that factor in the case. The gas thermometer was itself not absolutely trustworthy, as had been shown by the most recent experiments, which had demonstrated that all gases employed were more or less absorbed by the glass, and the more so the longer the gas remained in contact with the walls of the thermometer. That this absorption prejudicially affected the readings of the thermometer, if only to hundredths of a degree, had been already proved. Continued experiments with nitrogen and carbonic acid thermometers in vessels of glass and platinum-iridium would bring to light the corrections to be applied; these in conjunction with the other corrections would alone render the thermometer a true scientific instrument.—Dr. Kayser has photographed flashes of lightning, and obtained the ramified lightning-pictures now universally known. One flash, however, which he showed to the Society, was distinguished by the fact that it presented four unramified, irregularly undulatory lines running in exact parallels from top to bottom. These four lightning-lines must, by reason of their parallelism, have arisen simultaneously or immediately after one another in order that their discharges should have pursued the same lightning-track. The first flash was further distinguished by a series of light-layers attached to one side of it. Dr. Kayser was of opinion that a double discharge was here pictured, going and coming, the course of which had been displaced by a strong wind (thirty metres per second). The amount of the displacement could be approximately calculated, and so the time between the first and second discharge might be estimated to within some hundredths of a second.

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