

Geology, (5) Botany, (6) Zoology and Comparative Anatomy, (7) Physiology, (8) Human Anatomy and Physiology.

THE Cambridge Botanic Gardens Syndicate have procured plans for a Curator's House and Syndicate Office, to be placed adjoining and overlooking the entrance from Panton Street to the Gardens. Mr. W. M. Fawcett, the architect, estimates its cost at 620*l*.

A REAL compulsory matriculation examination at entrance is absolutely needed, otherwise those who are endeavouring vigorously to bring about improvements will find their life worn out in elementary teaching and examination. If Senior Wranglers can be spared to examine thousands of arithmetic papers and to lecture upon arithmetic in Cambridge year after year, it can be only because they too tamely continue to do it, finding that the Philistine spirit of modern days provides no better pay for them if they preferred higher work. Either this lecturing is superfluous, or their pupils have never been to a good school till eighteen. Why should any student be entered on the books of a university if he does not know at the least the elementary principles of number and of grammar?

A MEMORIAL is being signed in various parts of the country to the Vice-Chancellor of the University of Cambridge, praying that the Senate will grant to properly qualified women the right of admission to the examinations for University Degrees, and to the Degrees conferred according to the results of such examinations.

OXFORD.—The examiners in the Burdett-Coutts Geological Scholarship have elected Mr. H. N. Ridley, B.A., of Exeter College, to the vacant scholarship.

THE following science scholarships have been awarded, after examination in Chemistry, Physics, and Biology:—Mr. T. H. Walker and Mr. J. H. Makinder, from Epsom College, to Natural Science Studentships at Christ Church; *Proximi*, Mr. G. C. Chambres, from Dulwich College; Mr. Alfred Shackleton, from Bradford Grammar School, to a Natural Science Exhibition at New College.

DR. GLADSTONE, finding that several teachers were unable to obtain admission to the lecture delivered by him in the Board Room of the London School Board in October last, on the Apparatus for Illustrating Object Lessons, has consented to repeat the lecture at the following schools on the dates named:—Westmoreland Road, Walworth, S.E. (near Walworth Road Station), on Tuesday, March 2; Saffron Hill, Cross Street, Farringdon Road, E.C. (near Farringdon Street Station), on Tuesday, March 9. Each lecture will commence at 7.30 o'clock. The apparatus recommended and described by Dr. Gladstone are all of the cheapest and commonest kind, such as a clasp-knife, frame-saw, two tin basins, tobacco-pipe, magnifying glass, &c. Such lectures are well adapted to encourage the teaching of science in schools.

THE report drawn up by M. Paul Bert, acting as referee of the Parliamentary Committee of the French Chamber of Deputies on Primary Instruction, has been published as a separate volume, and is selling largely.

THE new law on the organisation of the Superior Council of Education in France has rendered this body a representative one. Not only the several academies, but also the several faculties have been invested with the right of appointing delegates. The Faculties of Sciences have resolved to send delegates to Paris, in order to hear the *profession de foi* of several candidates, and to interrogate them on their opinion on the different topics ventilated by teaching bodies. This example will be shortly followed by other faculties. M. Gerard, Professor of Philosophy to the Faculties of Nancy, having sent a circular summoning the Faculties des Lettres to send a delegate to Paris, their appointed meeting is to take place at Easter, during the usual holidays.

SOCIETIES AND ACADEMIES

LONDON

Linnean Society, February 5.—Wm. Carruthers, F.R.S., vice-president, in the chair.—Mr. Chas. Stewart exhibited and explained a stained microscopic section of the ovary of *Hyalocinctus orientalis*, showing the intercellular network in the cells of the ova. The nuclei before dividing increase in size, and there is a well-defined highly refractile fibrous network which becomes aggregated at opposite sides of the nucleus, forming two star-shaped masses connected by fine fibres; the latter rupture when the stellate masses, becoming rounded, form the nuclei of

the two new cells.—Dr. Francis Day presented for inspection examples of Salmónidæ, some of which had been reared under natural and others under unnatural conditions. A *Salmo fontinalis* which had passed its existence in the Westminster Aquarium, had the head preternaturally elongated and a very narrow suboperculum, thus in striking contrast to examples reared from the same batch of imported eggs, and kept in a wild state in Cardiganshire.—Mr. R. Irwin Lynch brought under notice pods of *Acacia homalophylla*, wherein each end was attached by a very long and bright red funicle, which doubly folded on the sides of the seed. The funicle is supposed to be always detached with the seed, and from its brilliant colour to serve as an attraction to birds, and so assist in the dissemination of the plant.—Mr. A. Hammond drew attention to a larva of *Tanyptus maculatus*. He mentioned that the coronet and appendages of the thoracic and anal regions had been said to be homologous with the respiratory organs of the larva and pupa of gnats, &c. This he doubted, inasmuch as the former originated from the ventral and not from the dorsal surface, as did the latter, and no trachea of any size could be traced in them. He also stated his opinion that the two oval bodies in the thorax attributed by De Geer to the air reservoirs were more probably salivary glands similar to those previously described by himself in the larva of the crane fly.—Mr. C. B. Clarke then gave an oral *résumé* of the order Commelynacæ, which order he had lately worked out for De Candolle's "Prodromus." He defined the order by the position of the embryo, as not surrounded by the albumen, but closely applied to the embryostega, which is always remote from the hilum. An important auxiliary character is that the three segments of the calyx are always imbricated, so that one is entirely outside the two others. Mr. Clarke divides the Commelynacæ into three tribes, as follows:—1, *Polliceæ*, fruit indehiscent; (2) *Commelynacæ*, capsule loculicidal, fertile stamens 3-2; (3) *Tradescantieæ*, capsule loculicidal, fertile stamens 6-5. The author remarked on the character of the two ranked seeds on which the genus *Dichospermum* had been founded, but which character is exhibited in species of various genera. He also alluded to the manifest and important change of colour in the petals of several of the Commelynacæ (*Aneilema versicolor*, to wit), where from a bright yellow when fresh, they become of a deep blue when dry.—The Secretary afterwards read a paper on the Salmonidæ and other fish introduced into New Zealand waters, by H. M. Brewer, of the Wanganui Acclim. Soc., N.Z. The author herein gave data concerning the British salmon (*S. salar*), Californian salmon (*S. quinnat*), trout (*S. fario*), sea trout (*S. trutta*), American charr (*S. fontinalis*), perch (*Perca fluviatilis*), tench (*Tinca vulgaris*), Prussian carp (*Carassius vulgaris*), cat fish (*Pimelodes catus*), white fish (*Coregonus albus*), and lastly a New Zealand fish called by the natives Upukororo.

Physical Society, February 14.—Annual General Meeting, Prof. W. G. Adams, president, in the chair.—The President read the report for the past year, which showed that the position and prospects of the Society are in every way satisfactory, and that more papers were communicated during last year than on any previous year.—The following list of Council and Officers was elected for the ensuing year, and votes of thanks were given to the President, the Lords of the Committee of Council on Education, and to the Treasurer, Demonstrator, and Secretaries. President: Sir W. Thomson, LL.D., F.R.S. Vice-President (who has filled the office of President): Prof. W. G. Adams, M.A., F.R.S. Vice-Presidents: Prof. R. B. Clifton, Dr. Huggins, Lord Rayleigh, Dr. Spottiswoode. Secretaries: Prof. Reinold, and W. Chandler Roberts, F.R.S. Treasurer: Dr. Atkinson. Demonstrator: Prof. Guthrie; and Members of Council: Captain Abney, Walter Bailey, M.A., J. H. Cotterill, F.R.S., Dr. Warren de la Rue, Major Festing, R.E., Prof. G. C. Foster, Prof. Fuller, Dr. J. Hopkinson, Dr. Shuster, G. Johnstone Stoney, F.R.S. Honorary Member: J. E. R. Clausius.—After this business the meeting resolved itself into an ordinary one, and the following New Members were elected:—Senor Roig y Torres, of Barcelona, Mr. Mollison, Mr. Hare, Mr. J. C. Lewis, Miss Caroline Martineau.—A paper on a quartz and Iceland spar spectroscope, corrected for chromatic aberration was then read by Dr. W. H. Stone; the spectroscope consists of two Iceland spar prisms and a quartz train. It differs in no respect from those ordinarily made, except in the fact that the object glasses of the telescope and collimator are doublets with a positive lens of quartz and a negative of Iceland spar. The latter has a dispersive power so far greater than that of quartz that an approximation to achromatism may be easily obtained.

In a spectrum there is less fear of indistinctness from superposition of images than in a telescope, but a greater amount of focussing is required with unachromatic lenses, inasmuch that lines in the field at one time need alteration to obtain distinctness. Moreover it is an obvious advantage to transmit the whole of the rays coming from the collimator as nearly as possible parallel through the intra objective space and the prisms. The object glasses were made by Mr. Ahreas about four years ago, and sent to Prof. Macleod. They were put aside but have been recently re-mounted, owing to Mr. Cornu having recently published a similar device. A paper on an automatic switch for telephone circuits was then read by Dr. Wynne. The object of the switch was to enable any client of a telephone exchange to communicate with any other through the central office without the need of an assistant at the office. Mr. Varley and Prof. Ayrton criticised the device and the latter thought that the contacts might not be always reliable. Profs. Ayrton and Perry then read a note on their theory of terrestrial magnetism. Prof. Rowland of Baltimore had pointed out an error in their calculation which vitiated their results, and they therefore admitted that the charge statical electricity on the surface of the earth, assumed by them as competent to account for the earth's magnetism, was not sufficient to account for the whole but only a portion of that magnetism. Nevertheless they thought that the changes in the distribution of such a charge due to changes in the condition of the dielectric medium between the earth and the sun, might account for the observed perturbations in the magnetic elements.

Statistical Society, February 17.—Sir Rawson W. Rawson, C. B., in the chair.—The business of the evening was the reading and discussion of a paper by Mr. Thomas A. Welton, on certain changes in the English rates of mortality.

GÖTTINGEN

Royal Academy of Sciences, January 10.—The following among other papers were read:—On some Indo-Germanic, especially Latin and Greek, numerals, by Herr Benfey.—Remarks on some Thracian and Mæssian coins, by Herr Wieseler.—The chronology of Julius Africanus, by Herr Trieber.—Report on the polyclinic for ear diseases, by Dr. Bürkner.

PARIS

Academy of Sciences, February 16.—M. Edm. Becquerel in the chair.—The following papers were read:—Meridian observations of small planets at the Greenwich and Paris observatories during the fourth quarter of 1879, communicated by M. Mouchez.—Determination of the difference of longitude between Paris and Bregenz, by MM. Lœwy and Oppolzer. The difference between Paris Observatory and the station of Pfender on a mountain near Bregenz (which is about the most western point of Austria) was found oh. 29m. 45.14s. (By Pfender Austria was already connected with Germany, Italy, and Switzerland.) The operations are described.—Studies on persulphuric acid; its formation by electrolysis, by M. Berthelot. He has got liquors containing 123 gr. of the acid (S_2O_7), but this could not be exceeded or easily maintained, the rate of spontaneous decomposition becoming equal to that of formation. The liquor also contained 375 gr. sulphuric acid and 850 gr. water. For these results, dilute sulphuric acid ($SO_4H + 10 HO$, *e.g.*) is electrolysed in a porous vessel surrounded by a concentric vessel holding the same liquid. The liquids are cooled by water flowing in interior serpentine. The electrodes are large platinum wires projecting 2 or 3 ctm. from glass tubes, and six or nine Bunsens are used. (The electrolytic phenomena are studied). Persulphuric acid left to itself is destroyed gradually and wholly. Agitation, or rise of temperature, promotes decomposition; also diminished dilution.—Note on new derivatives of nicotine, by MM. Cahours and Etard. An isomer of *dipyridine* (*isodipyridine*) is obtained by a certain treatment of *thiotetrapyridine*.—Evolution of inflorescence in the *Gramineæ* (3rd part); order of appearance of the hist vessels in *Phleum*, *Cynosurus*, *Poa*, by M. Trécul.—On the divisions of cyclotomic functions, by Prof. Sylvester.—Equations of the small oscillations of an inextensible wire in motion in space, by M. Léauté.—On the linear differential equations with doubly periodic coefficients, by M. Picard.—On the same, by M. Mittag-Leffler.—On the hypergeometric series of two variables and on linear differential equations with partial derivatives, by M. Appell.—On Legendre's law of reciprocity extended to numbers not prime, by M. Genocchi.—On the impossibility of the algebraic relation $X^n + Y^n + Z^n = 0$, by M. Korkine.—On the approximation of circular functions by means of algebraic functions, by M. Laguerre.—On new fringes of interference, by M. Gouy. A collimator, with slit horizontal, and a telescope, are placed in

line, and between them a glass trough containing half water, half saline solution, diffusion having been allowed a few minutes. Light being transmitted, a series of fringes appears in the telescope, owing to variation in the index of refraction through diffusion, causing the plane wave to be no longer plane after traversing the trough. M. Gouy proposes to study the progress of diffusion by means of these effects.—On the density of some gases at a high temperature, by M. Crafts. He describes some results with his improved apparatus, having experimented with ammonia, carbonic acid, hydrogen, hydrochloric acid, &c. For the last named a normal density was obtained at the highest temperature of the furnace.—Action of water on fluoride of silicon and fluoride of boron; dissolution of cyanogen in water, by M. Hammerl. Numerical results for the heat of fusion of are given.—Reproduction of amphotene, by M. Hautefeuille. Vanadate of potash which (as formerly indicated) may replace alkaline tung states and phosphates in preparation of felspars, furnishes crystals having the form and composition of amphotene whenever the mixture of silica and alumina treated contains a large proportion of alumina. The density of artificial amphotene is 2.47 at 13°, that of amphotene 2.48 (Damour).—On the martite of Brazil, by M. Gorceix. By the hypothesis of alteration of pyrites he explains certain facts of pseudomorphism and filling up, observed in certain metamorphic rocks of the province of Minas; also the disappearance of iron pyrites in auriferous itabirites, where gold has for gangues ordinary or arsenical pyrites. Experimental researches on the phosphorescence of Lampyrus, by M. Jousset de Bellesme. He removed the cephalic ganglions, to abolish all spontaneous phosphorescence, then stimulated electrically. He could always thus produce phosphorescence if oxygen was present. He shows reason for thinking that the phenomenon is a chemical one, but produced in Lampyrus only under biological conditions. It is of the same order as muscular contraction, or liberation of electricity by the torpedo, which are doubtless due to chemical combinations effected in protoplasmic matter. The phosphorescent substance is probably gaseous, and phosphoretted hydrogen. The author is led to regard phosphorescence as a general property of protoplasm, consisting in liberation of the gas just named.—Researches on the action of salicylic acid on the respiration, by M. Livon. First retardation, then acceleration, then retardation and stoppage.—The temperature of frozen lakes, by M. Forel. The depths reached by Mr. Buchanan (*NATURE*, vol. xix, p. 421) were not sufficient to cover the limit of surface cooling, which may descend to 110 m. (Lake of Zurich). The penetration of cold is very gradual and progressive. A layer of ice on Lake Morat was found absolutely to stop the cooling, and the water, under ice forty days, underwent an equalisation of temperature, far, however, from complete uniformity.—Torrifugal deltas, by M. Desor. These deltas will have to be distinguished more than has hitherto been done from the deltas of great rivers.

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