

Fisgard. The discussion will be opened by Dr. C. W. Kimmins. A paper on the study of German will also be read by Mr. G. F. Bridge, and a paper on school books and eyesight by Mr. G. F. Daniell.

A "MEMORANDUM on Physical Training in Secondary Schools" has just been issued by the Board of Education, and is obtainable from Messrs. Eyre and Spottiswoode, price 2d. That physical education at the secondary-school age is of primary importance scarcely needs to be insisted on, but it is well to have the large generalities of such education set forth, as here, in a coherent exposition. The secondary school covers the adolescent age of boys and girls—the age when growth is very rapid and the transit to manhood and womanhood demands all the care and knowledge that the best informed teacher can provide. The present memorandum does take some account of this, but does not emphasise it quite so much as the trainers of male and female youth might properly expect. Under the "objects of physical training"—it is a pity that the term "physical education" is not uniformly used—Sir George Newman gives a good summary of the nervous basis of training and the value of training in promoting "habits of discipline, obedience, ready response, and self-control." Doubtless, physical education, being a special department of mental education, can be used to generate such "habits"; but why insist on the merely passive aspect of education? The end of education is not to produce habits of obedience or ready response except as means to the greater end of personal self-sufficiency and independence of character. Self-development is as important as self-control, and presupposes it. But Sir George Newman is not unaware of this, for he says, "undue emphasis should not be laid upon the disciplinary effects of physical training." He justifies the Swedish system on the whole. He gives general directions as to length of lessons, the place of physical education in the time-table, and the qualifications of the teachers. "Especially as regards children and young people, physical training is not a mere matter of technical expertness." "Girls should, of course, be taught by women." Any system should be practised under the general supervision and with the constant cooperation of the medical officer of the school. The memorandum is really a memorandum, and should be to every secondary-school teacher a constant reminder of the principles and risks of physical education.

SOCIETIES AND ACADEMIES.

PARIS.

Academy of Sciences, July 24.—M. Troost in the chair.—**H. Deslandres**: Remarks on the movements of the solar prominences. The author regards the upper layer of the solar atmosphere as being ionised and under the action of a magnetic field. This field causes movements in the solar ions, especially those rising and falling. The theory explains easily all the observed peculiarities of the velocity of rotation in the prominences and the upper layer. In the present paper some further consequences of this theory are developed, and a scheme of research suggested for its control.—**A. Laveran** and **M. Roudsky**: Concerning the action of oxazine (triaminophenazonium chloride) on trypanosomes. The selective action of the centrosomes of the trypanosomes for oxazine, noted by Werbitzki, takes place both *in vitro* and *in vivo*. The disappearance of the centrosomes in *T. brucei*, and the fact that this morphological modification can be transmitted by heredity, is confirmed. Other species are similarly affected, but to varying degrees. The virulence of the trypanosomes submitted to the action of oxazine is reduced.—**R. Zeiller**: A Triassic flora discovered at Madagascar by M. Perrier de la Bâthie.—**Emile Belot**: The period of rotation of Venus. The observed period of rotation of Venus has been recently given by M. Bigourdan as twenty-nine hours. The author points out that in a communication to the academy in 1906 he gave a general formula from which this period was deduced to be 28h. 12m.—**M. Giacobini**: Observations of the Brooks comet (1911c) made at the Observatory of Paris. Data given for July 22 and 23.

The comet appears as a rounded nebulosity 35" to 45" diameter, with a well-defined central nucleus. Magnitude 11.5 to 12.—**L. Picart** and **F. Courty**: Observations of the Brooks comet (1911c) made at the Observatory of Bordeaux with the 38 cm. equatorial. Data given for July 22 and 23. Comet showed a clear nucleus about tenth magnitude.—**Witwold Jarkowski**: An approximate law for the ascent of an aeroplane.—**Marcel Brillouin**: Polymorphism and molecular orientation.—**G. Sagnac**: Some paradoxes concerning the optical actions of the first order of the translation of the earth.—**A. Cotton**: Circular dichroism and rotatory dispersion.—**G. Bruhat**: The study of rotatory dichroism of a definite organic compound (diphenyl-*l*-bornyldithiourethane).—**E. Besson**: The asymmetry of the positive and negative ions relatively to the condensation of water vapour. An attempt to record photographically the results described by C. T. R. Wilson.—**H. Buisson** and **Ch. Fabry**: The amount of energy necessary to produce the unit of luminous intensity. Working with a Heraeus quartz mercury vapour lamp, the number of watts radiated per mean spherical candle was found to be 0.31 for the violet (4538), 0.018 for the green (5460), and 0.031 for the yellow (5780).—**M. Herschfinkel**: The action of the radium emanation on thorium salts.—**Ettore Cardoso**: The densities of the coexistent phases (orthobaric densities) and the diameter of sulphur dioxide in the neighbourhood of the critical point. Part of a series of researches on the law of the rectilinear diameter at temperatures near the critical point. The influence of agitating the liquid under experiment is clearly shown in the results.—**L. Tchougaeff** and **P. Koch**: An anomaly of the molecular refraction in the series of the substituted gloximes.—**L. Gay**: The notion of an expansibility pressure.—**Victor Henri**: Study of the ultra-violet radiation of quartz mercury vapour lamps. The ultra-violet rays from a mercury lamp increase very rapidly with the watts used, this increase being especially rapid in the neighbourhood of 209 watts. The action on citrate of silver papers is parallel with the bactericidal action upon the coli bacillus, and the yield of such a lamp when used for sterilising purposes may be very conveniently controlled by such papers.—**G. Massol** and **A. Faucon**: The latent heat of fusion and specific heat of the fatty acids. The discrepancy previously noted between the latent heats of fusion and solidification of formic, acetic, and propionic acids is now shown to occur with lauric acid. The possible causes of this difference are discussed.—**G. Darzens** and **F. Bourion**: The action of thionyl chloride upon metallic oxides. In numerous cases in which the action of thionyl chloride upon metallic oxides was studied the chloride behaved as a mixture of chlorine and sulphur dichloride. Since the latter is easier to prepare and purify, its use for chlorinating oxides is preferable.—**Marcel Guichard**: The extraction of the gases from copper by a chemical reaction, and the estimation of oxygen. Methods are described for converting copper either into the iodide or oxide, and recovery of the gases contained in the metallic copper. The limits of error of the two methods are indicated.—**Georges Dupont**: The catalytic preparation of some substituted ketohydrofurfuranes. Some examples of the hydration of some acetylenic pinacones by the catalytic action of a dilute solution of mercuric sulphate.—**Frédéric Reverdin**: The nitration of the ortho-, meta-, and para-nitrobenzoyl-*p*-anisidines.—**Marcel Delepine**: The sulpho-ether salts or thionic esters R.CS.OR'.—**H. Colin** and **A. Sénéchal**: The action of acids on the catalytic oxidation of the phenols by ferric salts.—**R. Locquin**: α -Methyl-laurenone, a new ketone derived from camphor. Baeyer and Villiger have shown that one of the products of Caro's reagent on camphor is a lactone, C₁₀H₁₆O₄. A compound C₁₀H₁₆O has been isolated in the course of researches made to determine the constitution of this lactone, and this compound is shown to be a tetramethyl-cyclopentenone. It is a methyl derivative of the laurenone previously described by Tiemann.—**Th. Nicoloff**: The ovule and the embryonic sac of the *Platanæ*.—**A. Guilliermond**: The formation of the chloroleucites at the expense of the mitochondria.—**P. A. Dangeard**: Complementary chromatic adaptation in plants.—**A. Magnan**: The digestive surface of the ventricle and the muscular

arrangement of the gizzard in birds.—Jacques **Pellegrin**: The distribution of the soft-water fishes in Africa.—Paul **Marchal**: Spanandria and the obliteration of sexual reproduction in Chermes.—M. **Bordas**: Considerations on the reagents employed for the determination of blood stains in legal medicine. Remarks in confirmation of the views put forward in a recent paper by A. Sartory on the unsatisfactory nature of various colour reactions in use for the detection of blood stains.—Y. **Manouelian**: Researches on the pathology of arterio-sclerous lesions.—L. **Launoy** and C. **Levaditi**: Mercurial treatment of experimental syphilis of the rabbit and of Brazilian spirillosis.—Albert **Berthelot**: Researches on the intestinal flora. Isolation of the micro-organisms which specially attack the ultimate products of the digestion of proteids.—Em. **de Martonne**: The principles of morphological analysis of erosion levels applied to the Alpine valleys.

CALCUTTA.

Asiatic Society of Bengal, July 5.—R. C. **Mazumdar**: The Stambhesvari. Mr. Mazumdar identifies the goddess Stambhesvari, whose name is to be found in the copper-plate inscriptions of Kulastambhadeva and Ranastambhadeva, with a goddess still worshipped by some aboriginal tribes.—D. **Hooper**: Phosphorus in Indian foodstuffs. This paper is the result of an inquiry, made in collaboration with Major E. D. W. Greig, into the diet of patients suffering from epidemic dropsy in Calcutta in 1909-10. The amount of phosphorus in the form of phosphoric anhydride is given in several samples of rice, wheat, and other cereal grains, as well as in animal foods, farinaceous foods, vegetables, nuts, and fruits consumed in India.—W. **Kirkpatrick**: Folk songs and folk lore of the Gehara (Kanjars).

CAPE TOWN.

Royal Society of South Africa, June 21.—Dr. Marius Wilson in the chair.—E. P. **Phillips**: A note on the principal systematic work and publications dealing with the South African Proteaceæ. The first recorded publication of a member of this order was by Clusius in 1605. In 1720 Boerhaave attempted a systematic study of the order, but it was not until 1809 that a really scientific monograph was published by Salisbury; in the following year appeared the classic work of Robert Brown. The standard work on the order is a monograph by Dr. Meisner, which appeared in De Candolle's "Prodromus" in 1856, where 279 species are described. The writer undertook to revise the order, and has recorded between 300 and 400 species of the genera *Diastella*, *Salisb.*, and *Orothamnus*. *Pappe*, sunk by Meisner, have been re-established, and one new genus, *Spatalopsis*, Phillips, founded.—J. **Moir**: The spectrum of the ruby, part ii., and the artificial ruby. By examination of the ruby with better instruments, the complete spectrum of eight hair lines has been discovered; they are best seen in the artificial ruby, which is identical with the natural ruby in all respects, and when free from flaws is actually superior to the natural gem.—J. **Moir**: Notes on the spectrum of the precious emerald, and other gem stones. The emerald spectrum contains three very distinct hair lines in the red. Sapphires have no hair lines in their spectrum. Artificial emeralds are green sapphires, and have an indefinite spectrum, as is also the case with the following:—rubellite, spinel, amethyst, fluor, aquamarine, rose-quartz, lepidolite, and topaz. The almandine spectrum has been re-examined.—J. R. **Sutton**: A note on the land and sea breezes of South Africa.

FORTHCOMING CONGRESSES.

AUGUST.—Centenary of the Foundation of the University of Breslau.
AUGUST 12-18.—First International Congress of Pedology. Brussels. President: M. Alexis Sluys. Secretary: M. Vital Plas, 35 Avenue Paul de Jaer, Brussels.
AUGUST 13-20.—Prehistoric Society of France. Nîmes.
AUGUST 31-SEPTEMBER 6.—British Association. Portsmouth. President: Sir William Ramsay, K.C.B., F.R.S. Address for inquiries: General Secretaries, Burlington House, W.

NO. 2179, VOL. 87]

SEPTEMBER 4-6.—Centenary of the University of Christiania. President of Festival Committee: Prof. Brøgger.

SEPTEMBER 9-20.—International Congress of the Applications of Electricity. Turin. President of the Committee of Honour: H.R.H. the Duke of the Abruzzi. Honorary Secretary of the Committee: Signor Guido Semenza, Via S. Paolo 10, Milano. International Secretary: Col. R. E. Crompton, C.B., R.E., Crompton Laboratory, Kensington Court, W.

SEPTEMBER 12-15.—Celebration of the Five-hundredth Anniversary of the University of St. Andrews.

SEPTEMBER 18-23.—International Conference of Genetics. Paris. President: Dr. Viger. Secretary: M. Philippe de Vilmorin.

OCTOBER 2-7.—Third International Congress of Hygiene. Dresden. General Secretary: Dr. Hopf, Reichsstrasse 4, Dresden.

OCTOBER 12-18.—Italian Society for the Advancement of Science. Rome. President: Prof. G. Ciamician. General Secretary: Prof. V. Reina, Via del Collegio Romano 26, Roma.

OCTOBER 15-22.—Tenth International Geographical Congress. Rome. President: Marquis Raffaele Cappelli. General Secretary: Commander Giovanni Roncaqli, Italian Geographical Society, Rome.

DECEMBER 27.—American Association for the Advancement of Science. President: Dr. C. E. Bessey, University of Nebraska. Permanent Secretary: Dr. L. O. Howard, Smithsonian Institution, Washington, D.C.

CONTENTS.

	PAGE
Zoogeography	137
Central Asia	138
Luciani's Human Physiology	140
Abbe's Theory of Image Formation in the Microscope	141
The Nutrition of the Algæ. By H. W.	141
Popular Astronomy. By W. E. R.	142
Our Book Shelf	143
Letters to the Editor:—	
The Nature of γ Rays—Prof. T. H. Laby; P. Burbidge	144
The Occurrences of a Fresh-water Medusa (<i>Limnocooida</i>) in Indian Streams—Dr. N. Annandale	144
Standard Time in Portuguese Territories—Vice-Admiral Campos Rodrigues	144
Obsolete Botanical and Zoological Systems.—L. C. M.	144
Lolo and Border Tribes of Western China. (<i>Illustrated</i>)	145
Rubber Cultivation. (<i>Illustrated</i>)	146
The Coast of North Devon. (<i>Illustrated</i>) By A. J. J.-B.	147
Notes	149
Our Astronomical Column:—	
Comet 1911b (Kiess). (<i>Illustrated</i>)	154
Brooks's Comet, 1911c	154
Hourly Number of Meteors Visible	154
Charts for the Southern Heavens	154
The Circuit of Britain by Aeroplane	155
The Birmingham Meeting of the British Medical Association	156
Scientific Aspects of the Universal Races Congress	158
The Institution of Mechanical Engineers	160
The Belfast Health Congress	161
The Fifth International Dairy Congress	162
The British Pharmaceutical Conference	163
The Scents of Butterflies. By Dr. F. A. Dixey, F.R.S.	164
University and Educational Intelligence	168
Societies and Academies	169
Forthcoming Congresses	170