

every tenth was barked so as to obtain the allowance necessary to be made for bark. The work of the students was supervised by Mr. Lyford-Pike, junior lecturer in the University, who was assisted by a few recent graduates in forestry.

DR. L. SILBERSTEIN will commence a course of twelve lectures on "The Theory of Relativity" at University College, Gower Street, W.C., to-morrow, October 11, at 5 p.m. The first part of the course will be historical, beginning with Maxwell's electromagnetic theory, and the Hertz-Heaviside equations; the second part will be concerned with the principle itself; and the third with its applications and recent extensions. Much attention has been paid to the subject since Einstein founded the modern theory in 1905, but the arguments for the principle, and the conclusions to which they lead, are not well understood. There must be many students of physics who will be glad to have a clear and connected statement of a theory which, carried to its furthest extent, would declare that "the phenomena of physical science do not lead us to any knowledge of a permanent and unique frame of reference relative to which the motions of bodies may be determined."

COPIES of the calendar for the academic year, 1912-13, of the University of Leeds are now available. As is natural in the case of a great modern university, the faculties of science and technology take a prominent place in the activities connected with the institution. The degree of bachelor of science, whether with or without honours, may be taken in pure or applied science. The student wishing to graduate on the technical side may study mechanical, civil, electrical, mining, or gas engineering, fuel and metallurgy, agriculture, colour chemistry and dyeing, or the chemistry of leather manufacture, and, if successful, secure his degree. In addition, the University grants diplomas in certain circumstances in the branches of applied science in which degrees are awarded, and also in textile design and cloth finishing, in woollen and worsted spinning, cloth manufacture, and textile chemistry. Evening classes in a wide range of subjects are also provided for students whose time is occupied in industrial pursuits during the day.

AN interesting short history of Bedford College for Women is included in the calendar for the sixty-fourth session, that of 1912-13, of the college, which was recognised in 1900 as a school of the University of London in the faculties of arts and science. It will be remembered that a bequest in 1908 of 11,500*l.* from the late Mr. R. J. Tule enabled the council in the same year to purchase the end of the lease of South Villa, Regent's Park, for the sum of 15,000*l.*, a promise from the Crown having been obtained of a new lease for 99 years. The site is an ideal one. New buildings, for which Mr. Basil Champneys has been appointed architect, and will include a library, laboratories, lecture rooms, and a residence for students, are now in course of erection, and it is hoped that they will be ready for occupation by next Easter. It is estimated that the cost of the undertaking will amount to about 115,000*l.*, including 18,000*l.* which has been expended in connection with the purchase of the lease of the new site. The total sum given and promised amounts to 130,000*l.*, which leaves 15,000*l.* to form the nucleus of an endowment fund.

THE calendar of the North of Scotland College of Agriculture for the session 1912-13 points out that the classes of the college are held in the University of Aberdeen, with the exception of the class in agri-

cultural engineering, which meets in Robert Gordon's Technical College. The courses of instruction provided are arranged for the benefit of every section of the agricultural community. The lectures, in the branches of agriculture and agricultural chemistry, are arranged in a series of three years with the view of giving full treatment to these subjects. Students unable to spare the time for a long course in agricultural science, but who can spare five months in winter, have an opportunity of obtaining a diploma in agriculture conferred by the University. Young men and women who wish to qualify themselves as agricultural teachers or as specialists in some branch of agricultural science may obtain the degree of bachelor of science of the University on passing the preliminary examination of the University and two professional examinations. Extended courses of lectures in forestry are arranged for those desirous of training as factors and land stewards; courses for teachers in school gardening and other subjects required in rural districts are provided, and every effort is being made to supply suitable technical education for the district.

THE *London University Gazette* for September 25 announces a number of courses of advanced lectures in various subjects, among them being a course of three or four lectures on "The Theory of the Solid State," by Prof. W. Nernst, professor of physical chemistry and director of the Institute of Physical Chemistry in the University of Berlin. Other courses to be delivered during the session are:—The fundamental chemical processes of plant life, Prof. H. E. Armstrong, F.R.S.; the Gnetales, Prof. M. J. Benson; the permeability of protoplasm, F. F. Blackman, F.R.S.; the activities of green plants in relation to light, Harold Wager, F.R.S.; meteorology in relation to the navigation of the air, Dr. W. N. Shaw, F.R.S.; the action of enzymes, Prof. W. M. Bayliss, F.R.S.; the physiology of the mammalian heart, Dr. F. S. Locke; protozoa, Prof. E. A. Minchin, F.R.S.; the growth of the vertebrate embryo, R. Assheton; recent work on experimental embryology, Dr. J. W. Jenkinson; mimicry and protective resemblance, Prof. E. B. Poulton, F.R.S.; the evolution of the mammary apparatus in the mammalia, Prof. E. Bresslau, of Strassburg; growth and form, Prof. D'Arcy Thompson, C.B.; the advanced metallurgy of gold, silver, copper, lead, &c., Prof. W. Gowland, F.R.S.

SOCIETIES AND ACADEMIES.

PARIS.

Academy of Sciences, September 30.—M. Emile Picard in the chair.—Edmond Perrier: The skull known as that of Descartes in the museum. Reasons are given for the probable authenticity of this skull.—Pierre Termier: The scientific results of the Alpine excursion of the Geologische Vereinigung; the lepontine strata to the west of Innsbruck.—M. Gouy: A particular kind of electric currents. A non-electrified body is usually regarded as carrying equal charges of the two kinds of electricity. The latter, according to current views, are carried by particles possessing a certain independence, and under certain conditions may move with different velocities. If this is the case, the movement of a non-electrified body may give rise to an electric convection current, producing its ordinary effects. This view is applied to the case of incandescent gases in motion.—M. Arnaud: Astronomical refraction in the neighbourhood of the horizon.—Em. Bourquelot and Mlle. A. Fichtenholz: The presence of quebrachite in the leaves of *Grevillea robusta*. The fresh leaves contain more than 4 grams of quebrachite per kilogram, or four times the amount extracted from the bark of

C. tanret. Details are given of the method of extraction and of the chemical and physical properties of the quebrachite.—A. Fernbach: A new form of soluble starch. Weak solutions of starch in water, not containing more than 2 per cent. of starch, are poured into a large excess of acetone, and the precipitate extracted with pure acetone, and dried in a vacuum. The starch thus obtained is distinguished by the property of dissolving easily in cold water, and this solution yields with iodine very pure blue colorations.—J. Wolff: Some new properties of the peroxydases and their mode of working in the absence of peroxide.—Jacques Parisot and M. Vernier: Researches on the toxicity of fungi. Their hæmolytic power. It is shown that the hæmolytic power of fungi, when it exists, is very strong, both *in vitro* and *in vivo*. This property is possessed by some of the edible fungi, and it is pointed out that a very long exposure to a high temperature during cooking is required to destroy this poisonous property.—Maurice Lugeon: The tectonic of the Morcles strata and its consequences.—De Montessus de Ballore: Seismological observations made at the island of Pâques.—Henry Hubert: The aerial currents in western Africa.

BOOKS RECEIVED.

Einführung in die Mathematik für Biologen und Chemiker. Prof. L. Michaelis. Pp. vii+253. (Berlin: J. Springer.) 7.80 marks.

The Cambridge Manuals of Science and Literature: The Individual in the Animal Kingdom. By J. S. Huxley. Pp. xi+167. The Work of Rain and Rivers. By Prof. T. G. Bonney. Pp. viii+144. The Psychology of Insanity. By Dr. B. Hart. Pp. ix+176. House-flies and How they Spread Disease. By Dr. C. G. Hewitt. Pp. xii+122. Brewing. By A. C. Chapman. Pp. xi+130. Heredity in the Light of Recent Research. By L. Doncaster. Second edition. Pp. x+160. (Cambridge University Press.) 1s. net each.

Die Existenz der Moleküle. By Prof. T. Svedberg. Pp. viii+243+4 plates. (Leipzig: Akademische Verlagsgesellschaft m.b.H.) 12 marks.

Untersuchungen über die Bildungsverhältnisse der ozeanischen Salzablagerungen insbesondere des Stassfurter Salzlagers. By J. H. van't Hoff and others. Edited by Profs. H. Precht and E. Cohen. Pp. xx+374+8 plates. (Leipzig: Akademische Verlagsgesellschaft m.b.H.) 16 marks.

Sylviculture in the Tropics. By A. F. Broun. Pp. xviii+309. (London: Macmillan and Co., Ltd.) 8s. 6d. net.

La Cementazione dell' Acciaio. By Dr. F. Giolitti. Pp. xi+506. (Torino: Unione Tipografico-Editrice Torinese.)

Handbuch der Spectroscopie. By Prof. H. Kayser. Sechster Band. Pp. vi+1067. (Leipzig: S. Hirzel.)

Hypnotism and Disease. By Dr. H. C. Miller. Pp. 252. (London: T. Fisher Unwin.) 5s. net.

Survey of India. Professional Paper, No. 13: Investigation of the Theory of Isostasy in India. By Major H. L. Crosthwait. Pp. iii+14+map. (Dehra Dun: Trigonometrical Survey of India.)

Biomechanik und Biogenesis. By Prof. M. Benedikt. Pp. iii+88. (Jena: G. Fischer.) 2 marks.

Richtlinien des Entwicklungs- und Vererbungsproblems. By Dr. A. Greil. Zweiter Teil. Pp. iii+364. (Jena: G. Fischer.) 10 marks.

Junior Sound and Light. By Drs. R. W. Stewart and J. Satterlv. Pp. 227. (London: W. B. Clive.) 2s. 6d.

The Marine Mammals in the Anatomical Museum of the University of Edinburgh. By Sir W. Turner. Pp. xv+207. (London: Macmillan and Co., Ltd.) 6s. net.

Narrative of the Visit to India of their Majesties King George V. and Queen Mary, and of the Coronation Durbar held at Delhi, December 12, 1911. By the Hon. J. Fortescue. Pp. viii+324. (London: Macmillan and Co., Ltd.) 10s. 6d. net.

The Theory of Light. By the late Prof. T. Preston. Fourth edition. Edited by Prof. W. E. Thrift. Pp. xxiii+618. (London: Macmillan and Co., Ltd.) 15s. net.

Education and National Life. By Dr. H. Dyer. Pp. 112. (London: Blackie and Son, Ltd.) 1s. net.

Vibration and Life. By Dr. D. T. Smith. Pp. 178. (Boston: R. G. Badger.) 1.50 dollars net.

The Composition of the Atmosphere: with Special Reference to its Oxygen Content. By F. G. Benedict. Pp. iii+115. (Washington: Carnegie Institution.)

A Bicycle Ergometer with an Electric Brake. By F. G. Benedict and W. G. Cady. Pp. iii+44. (Washington: Carnegie Institution.)

The Production of Elliptic Interferences in Relation to Interferometry. By C. Barus. Part ii. Pp. vi+79-168. (Washington: Carnegie Institution.)

CONTENTS.

	PAGE
Five New School Geographies	157
Laboratory Chemistry	158
Local and General Geology. By Prof. Grenville A. J. Cole	159
What is Instinct?	160
Our Bookshelf	160
Letters to the Editor:—	
Sailing Flight of Birds. (With Diagram).—Prof. Edwin H. Hall	161
Errors of the Computed Times of Solar Eclipse Phenomena.—Dr. A. M. W. Downing, F.R.S.; Dr. William J. S. Lockyer	162
A Flower-sanctuary.—Frank H. Perrycoste; Right Hon. Sir Edw. Fry, G.C.B., F.R.S.; A. R. Horwood	162
The Summer of 1912.—Rev. Dr. A. Irving	163
Turkish Earthquake of September 13.—George W. Walker	163
The Northern Elephant Seal. (Illustrated.)	164
The Natural History of the Dead Sea and Jordan Valley. By T. G. B.	165
The Medical New Year	166
The Church Congress at Middlesbrough	167
Notes	168
Our Astronomical Column:—	
Gale's Comet, 1912a	172
Sun-spot Activity	173
The Systematic Motions of Sun-spots	173
The Parallax of Nova Lacertæ	173
The Royal Hungarian Astrophysical Observatory	173
Observations of Variable Stars	173
Bird Notes. By R. L.	173
Experimental Work at an Agricultural College. (Illustrated.) By Prof. J. R. Ainsworth-Davis	174
Additional Forthcoming Books of Science	174
The British Association at Dundee:—	
Section K.—Bo any.—Opening Address by Prof. Frederick Keeble, Sc.D., President of the Section	175
University and Educational Intelligence	182
Societies and Academies	183
Books Received	184