

a course of study in naval architecture at one of the following institutions:—the Royal Naval College, Greenwich; University of Glasgow; Armstrong College, Newcastle-upon-Tyne (Durham University); or University of Liverpool. The value of the scholarship is to be 200l. per annum, and it may be tenable in ordinary circumstances for two years. The holder will be required to engage in research work at some approved institution at home or abroad where special facilities are available for advanced study in naval architecture, and/or to investigate the development of the shipbuilding industry by attaching himself to some recognised firm or establishment at home or abroad. The results of research carried on by the scholar will be published in the Transactions of the Institution of Naval Architects if the council of the institution deem advisable.

It is announced in *The Pioneer Mail* that the Secretary of State for India has recently sanctioned the modified scheme proposed by the local government authorities for the establishment of a technological institute at Cawnpore. The original scheme, which was put forward in 1907, on the recommendations of the Naini Tal Industrial Conference, proposed the formation of an institute with a staff of four technological chemists, and four assistant professors, with large laboratories. Financial considerations rendered its immediate introduction impossible, and it became evident that a more modest beginning must be made. The proposals, however, have been framed so as to admit of future expansion, and the new institute will be such that it can be adapted to form part of any more extensive organisation that may be required subsequently. For the present it is proposed to employ a chemist with four assistants to carry on research and to train students. Close to the institute will be a scientific library, which will be shared with the Agricultural Department. One of the main causes which operate against the success of scientific and technical research in India will thus be removed, and the staff of the new institute will be provided with facilities which in India are too rare. The sanction is conditional on funds being available from provincial revenues, but it is to be hoped that no difficulty will be experienced in finding such funds.

THE Department of Agriculture and Technical Instruction for Ireland has issued in the form of a pamphlet an article which appeared in its *Journal* (vol. xi., No. 4) on "Technical Education in Clonmel," by Mr. Cecil Webb, principal of the Technical and Day Trades Preparatory Schools, Clonmel. Mr. Webb points out that in the towns of the south of Ireland technical education often finds a difficult task, namely, to arrest decay and rekindle hope in a declining and disheartened population. Clonmel presents this problem. After reviewing the history of the attempts in Clonmel to develop a system of technical education, Mr. Webb directs attention to a special feature of the present scheme of instruction in the town. This has been the endeavour to make the work of the school a means of reviving the road carriage-building industry which, when the technical school was started, still existed in Clonmel in a precarious way. A class in coach-building was formed under a well-qualified local carriage-builder. The effect upon the local industry has been very gratifying. The design and construction of cars have greatly improved. At show after show through the country Clonmel cars have carried off the prizes. Their repute has spread, and summer and winter the coachbuilders in Clonmel are now kept busy. Such an effect could only be attained by the technological training which the school provided, being backed by enterprise and perseverance on the part of those engaged in the trade.

In the recently published "Statistics of Public Education in England and Wales, Part i.," some interesting numbers are given referring to the further education or occupation of pupils above twelve years of age who left secondary schools on the grant list of the Board of Education during the year ending July 31, 1909. The table in which the information is contained is based on data collected by the schools and recorded for each pupil in the admission registers. The total number of such boys and girls was 38,200, and of these 6790, or 17.8 per cent., went to a place of further education; 6048, or 15.8 per

cent., became teachers (including pupil-teachers) in elementary schools, or entered training colleges for elementary-school teachers; 11,136, or 29.2 per cent., entered upon some professional, commercial, or clerical occupation; 3356, or 8.8 per cent., entered upon some industrial or manual avocation; 1001, or 2.6 per cent., took up agriculture or some rural pursuit; and of the residue—9869, or 25.8 per cent.—12.8 per cent. remained at home, 2.4 per cent. went abroad, 1.2 per cent. left owing to illness or died, and in the case of 9.4 per cent. the occupation was unknown or unclassified. Another table shows that on January 31, 1910, there were in the secondary schools on the grant list 141,149 pupils, of whom 106,248 were twelve years of age or over. Of these, 23.5 per cent. were twelve and under thirteen; 26 per cent. were thirteen and under fourteen; 23 per cent. were fourteen and under fifteen; 15.7 per cent. were fifteen and under sixteen; 8.1 per cent. were sixteen and under seventeen; 2.6 per cent. were seventeen and under eighteen; 0.8 per cent. were eighteen and under nineteen; and 0.2 per cent. were nineteen and over.

THE Borough Polytechnic Institute authorities have issued a calendar under the title "Higher Education in Central South London," which takes the form of a joint prospectus of the Borough Polytechnic, Morley College, and affiliated evening-school centres. The varied programme of courses of study shows that the wants of every class of worker in the area served by the institute have been considered by the authorities, and met in a very thorough manner. Among other noteworthy departments of the institute may be mentioned the "national" school of bakery and confectionery, which forms a special department. It is managed—subject to the approval of the governing body of the polytechnic—by the Education Committee of the National Association of Master Bakers and Confectioners, which body contributes an annual sum not exceeding 500l. Any individual, society, or firm contributing not less than 25l. a year may appoint a representative upon the education committee. The London Master Bakers' Protection Society has contributed 50l. annually for some years past. A technical day school for boys has been founded for the purpose of affording opportunities for sound preparatory trade training, which will give London boys better chances of becoming skilled workers than they have hitherto had. The governors of the institute feel that the adequate training of bright boys who would be successful in various trades has been almost entirely neglected. They are of opinion that, owing to modern methods of manufacture, there is great need for the preparation of boys for trades on a broad basis, which will enable them to adapt themselves to changing conditions of employment and compete successfully in the industrial world. Boys are trained not to work mechanically, but to think for themselves. A similar trade school for girls has also been provided.

SOCIETIES AND ACADEMIES.

PARIS.

Academy of Sciences, September 25.—**M. Armand Gautier** in the chair.—**Paul Appell**: The θ functions of higher degrees.—**F. Quénisseet** and **F. Baldet**: The discovery of a comet at the Flammarion Observatory of Juvisy. The comet was noticed in the constellation Ursa Minor on September 23 as a slightly oval nebulosity, about 4' in diameter, with a central nucleus. (For further particulars see *Our Astronomical Column*).—**A. Demoulin**: The R and Ω surfaces.—**A. Blondel**: The influences of deadening the waves in orientation in wireless telegraphy.—**M. Reutter**: The analysis of a resin from an Egyptian sarcophagus. Besides mineral substances, there could be identified fragments of cypress or cedar wood, cedar resin, resins arising from styrax, mastic, Aleppo pine, and asphalt.—**Jules Cardot**: The mosses collected by the Antarctic expedition of the *Pourquoi-Pas?* The collection comprised thirty-four species, and enriched three genera of eleven species (seven of which are new), and two varieties (one new). The flora of the Antarctic region is poor compared with that of the Arctic region.—**Paul Marchal**: The obliteration of sexual reproduction in *Chermes piceae*.—**E. A. Martel**: The construc-

tion of roads and other works in limestone. It is pointed out that limestone is a dangerous material for public works, owing to the infiltration of water into fissures. In constructing roads and tunnels in limestone or dolomite, it should not be forgotten that these pseudo-compact rocks, owing to the existence of water in fissures and pockets, are especially delicate from the engineering point of view: very slight artificial derangement may have very serious effects on the stability of such a rock mass.—Ph. Négrie: The discovery of the Carboniferous and Eocene formations at Mts. Guiona and Vardoussa, west of Parnassus.

CALCUTTA.

Asiatic Society of Bengal, September 6.—W. Kirkpatrick: Exogamous sept of the Gehara section of Kunchhandiya Kanjars. Whatever the social structure of the primæval hordes, the system which requires division into exogamous and endogamous sept and sections has taken on a fresh activity under Brahmanical influence. The exogamous sept of the Geharas are mostly of totemic origin, though an exogamous sept is not always totemic; one can be entirely independent of the other. An exogamous sept may be of local or communal origin, or it may be eponymous, as well as having an occupational origin. In the camp system of "marrying out" practised by the Kanjars and allied tribes of a Gypsy character we are near exogamy in its most primitive form.—Dr. P. T. L. Dodsworth: Some notes relating to the classification, habits, and nidification of the ravens of India. The author maintains that the Panjab raven is distinct enough from the Himalayan raven to be regarded as a distinct species, and should not be united with it into *Corvus corax*, Linn. Hume recorded it as different in note and in the sheen of the plumage, and Oates noted it as different in the character and shape of the throat hackles. It is a smaller bird. There is a need for extended observations on the Himalayan raven: (1) To what extent does it show a slight seasonal migration? (2) When does it nest? Mandelli took the eggs in Sikkim on March 5; Stoliczka found the bird building on May 4 at Aktash, and Walton near Kala Tso Lake in Tibet on April 6. (3) Does it habitually nest on cliffs? and (4) in successive years on the same site? (5) What is the number of eggs? (6) Do both birds share in hatching them? and (7) how long do the young stay in the nest? The author adds some observations on the nidification of the plains raven. Five is the usual number of eggs; the nest is built, 18 to 24 feet from the ground, of sticks, lined with rags, sheeps' wool, bits of paper, cows' hair, and grass. Various trees are chosen, such as *Acacia leucophloea*, *Dalbergia Sissoo*, and *Albizia Lebbek*. When feeding these plains ravens are sociable, but in the breeding season they seem to scatter, and probably many cross into Afghanistan.—J. Coggin Brown: Shan and Palung Jew's harps from the Northern States. The Jew's harp used by the Shans and Palungs is distinct from all others in the presence of movable bamboo strips, by means of which the chamber in which the tongue vibrates can be altered and the tone changed in consequence.—R. K. Bhide: New and revised species of Gramineæ from Bombay. Diagnosis of the following new grasses:—(1) *Danthonia Gammiei*, from Castle Rock; (2) *Andropogon Paranjpyeanum*, from Castle Rock; (3) *Enteropogon Badamicum*, from Badami; and (4) *Tripogon Roxburghianum*, from Badami. Also a note on the identity of *Woodrowia diandra*, Stapf, with *Dimeria diandra*, Stapf.—I. H. Burkill and R. S. Finlow: *Corchorus capsularis*, var. *oocarpus*, a new variety of the common jute plant. *C. capsularis*, var. *oocarpus*, a variety distinguished by the elongation of its fruit, is a cultivated plant of south-eastern Mymensingh.—I. H. Burkill: The polarity of the bulbils of *Dioscorea bulbifera*, Linn. The bulbils of *D. bulbifera* are capable of growth from any part of their surface, but they grow most readily from the neighbourhood of the scar by which they were attached to the parent stem. If cut into halves equatorially, both hemispheres may put out shoots, and these shoots appear more readily near the cut than remote from it; but they appear in a much more restricted way on the abaxillary half (where almost all arise along the edge of the cut) than on the adaxillary half.—I. H. Burkill: Further spreading of *Croton sparsiflorus*, Morung. *C. sparsiflorus*, an alien which obtained an entrance into

India by Chittagong, it seems, some fifteen to twenty years ago, and about 1905 reached the banks of the Hughli, and before 1907 had reached Gauhati along the Assam-Bengal Railway, has now reached Narayanganj, in a different direction. It has also appeared newly at many stations along the Assam-Bengal Railway.

GÖTTINGEN.

Royal Society of Sciences.—The *Nachrichten* (physico-mathematical section), part iii. for 1911, contains the following memoirs communicated to the society:—

April 4.—K. Schwarzschild and E. Kron: The distribution of luminosity in the tail of Halley's comet.

March 24.—K. Stuchtey and A. Wegener: The albedo of the clouds and the earth (measurements made during six balloon voyages).—G. Hamel: Contributions to the problem of turbulent motion.

May 13.—G. Tammann: Contributions to the thermodynamics of equilibria in systems each composed of a single substance, i.

May 27.—E. Riecke: The theory of Michelson's interference experiment.

June 17.—K. Wegener: Aërological results for 1910 from the Samoa Observatory.—P. Furtwangler: General proof of the partition theorem for *Klassenkörper*.—O. Mügge: The structure of magnetite and its transformation into specular iron ore.

July 15.—G. Tammann: Contributions to the thermodynamics of equilibria in systems each composed of a single substance, ii.

CONTENTS.

	PAGE
A Zoological Tribute	443
The Agricultural Development of Egypt. By E. J. R.	445
The Propagation of Electric Currents. By Prof. Gisbert Kapp	446
Marine Refrigeration. By F. H.	447
Radiography. By A. C. J.	448
Our Book Shelf	448
Letters to the Editor:—	
Non-Euclidean Geometry.—Dr. D. M. Y. Somerville	450
Elements of Comet 1911 <i>f</i> .—Prof. J. B. Dale	450
Rainfall in the Summer of 1911 and of 1912.—Dr. Hugh Robert Mill	450
Miniature Rainbows.—Edward A. Martin	450
The Stone Ages of South Africa. (<i>Illustrated</i> .) By Sir H. H. Johnston, G.C.M.G., K.C.B.	450
Californian Trees. (<i>With Diagram</i> .) By W. J. Bean	452
Imperial Surveying. By H. G. L.	453
France and Classical Education. By A. E. Crawley	454
Sir Herbert Risley, K.C.I.E.	454
Notes	455
Our Astronomical Column:—	
Discovery of a Third-magnitude Comet (1911 <i>g</i>)	460
Brooks's Comet, 1911 <i>c</i>	460
Quénisset's Comet, 1911 <i>f</i>	460
Calcium Vapour in the Solar Atmosphere	460
Elements and Designations for Recently Discovered Minor Planets	460
The Masses of Spectroscopic Binaries	460
Publications of the U.S. Naval Observatory	460
Forthcoming Books of Science	461
Two Minor Australian Goldfields and the Antiquity of Man in Australia. By Prof. J. W. Gregory, F.R.S.	464
Entomological Notes	465
The Cultivation of Lucidity in Scientific Writings. By Dr. H. A. Miers, F.R.S.	465
Some Quantitative Studies in Epidemiology. By Sir Ronald Ross, K.C.B., F.R.S.	466
Research in Medicine. By Sir Henry T. Butlin, Bart.	468
Geography at the British Association	469
Mechanical Science at the British Association. By Prof. E. G. Coker	469
Anthropology at the British Association	471
University and Educational Intelligence	472
Societies and Academies	473