

other representatives of the universities and technical colleges, twenty-eight gentlemen intimately connected with various industries as owners and managers of works, &c., and eighteen Indian technical students.

The information laid before the Committee at the four centres visited has been sufficient to enable it to prepare a report which will indicate the main lines of the policy which should be followed, but the inquiry as to the facilities available for Indian students for industrial and technological training is by no means exhausted, and it will, the Committee thinks, be necessary—if possible, early next session—for some representative of the Secretary of State to visit such centres as Sheffield, Liverpool, Bradford, and Newcastle, where it appears probable that special facilities exist for the study of particular subjects.

Among recommendations made by the Committee the following may be mentioned:—Students sent to this country should ordinarily have read in India up to the standard of the B.Sc. or B.A. with science, or have obtained an equivalent diploma. Exceptions may, however, be made in favour of students who have an hereditary connection with the industry which they propose to study, provided that they know enough English to follow lectures in this country.

Wherever possible, students should be familiar in India with the industry which they are sent here to study. In mining, this condition must in the future be enforced strictly, and no student be sent to the United Kingdom to study mining unless he has had at least a year's experience down an Indian mine.

The Local Governments should, in making selections, consult the business men and directors of industry in the province to a greater extent than appears to have been the practice hitherto. Business men are often likely to know of a promising lad who would make excellent use of a technical scholarship; they could also advise the Local Government as to the type of man whom the industries of the province need, and to whom they would readily offer employment.

Practical training in a business firm should be considered an integral part of the technical scholar's education, and consequently the period for which the scholarship is tenable should be extended so as to cover the time spent in undergoing such training.

A technical scholarship should not, except in rare cases, be tenable for more than five years, and in very few cases should it be granted for less than three; whatever duration is assigned to the scholarship it should be long enough to include a spell of continuous practical training. Wherever possible this training should be given in the United Kingdom.

The general effect of the recommendations will be to increase the cost to Government of the system of State technical scholarships. This additional expenditure will, however, be amply justified if in consequence of the changes the Committee proposes the men are better selected and better equipped for the work they have to do. Indeed, the expense of technical scholarships cannot be defended at all, says the report, unless they give the best preparation possible for the highest kind of industrial work. The ideal training for an industrial career is both lengthy and costly, and for this reason it should only be given, at public expense, to men of quite exceptional capacity. The average man, who can never be expected to do more than carry on well-known industries by well-known methods, can be trained in India; if he is trained in England it should be at private expense. But when the best men, so far as human foresight can discriminate, have been selected, it is false economy to give them any but the very best training.

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UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

CAMBRIDGE.—The General Board of Studies will in the ensuing Michaelmas term proceed to appoint a University lecturer in surveying and cartography to hold office until September 30, 1916. Particulars of the stipend and duties of the lecturer can be obtained on application to the Vice-Chancellor. Candidates are requested to send their applications, with such testimonials as they think fit, to the Vice-Chancellor on or before October 11.

Mr. J. H. Burn, of Emmanuel College, has been elected into the Michael Foster research studentship.

The Royal Commissioners for the Exhibition of 1851 have, on the recommendation of the Vice-Chancellor, appointed Mr. I. Abrahamson, of Clare College, to an industrial bursary.

The Raymond Horton-Smith prize for 1913 is awarded to F. A. Roper and F. S. Scales, who are adjudged equal for theses for the degree of Doctor of Medicine. Subjects: "Creatinine and Creatin Metabolism, especially in Reference to Diabetes," and "The Electrocardiogram as an Aid to Diabetes." The M.D. degree committee expresses appreciation of the high standard attained by most of the theses submitted for the degree of Doctor of Medicine. Many of these theses, either records of clinical investigations on obscure diseases or of original laboratory research, ought, in the opinion of the committee, to be published. The theses submitted by Dr. A. Abrahams, on the analysis of nystagmus, Dr. H. T. Ashby, on the anæmias of infancy and childhood with special reference to the connection of iron with anæmia, Dr. A. F. MacCallan, on trachoma and Egyptian ophthalmias, and Dr. L. B. C. Trotter, on embolism and thrombosis of the mesenteric vessels, are adjudged worthy of special distinction. Amongst the theses not eligible to compete for the Raymond Horton-Smith prize that submitted by Dr. W. E. Hume, on a clinical and pathological study of the heart in diphtheria, attained a very high standard of merit.

LONDON.—Since the appointment of a full-time secretary, the work of the Appointments Board, constituted by the Senate to assist graduates and students of the University in obtaining appointments, and to coordinate and supplement the work done by the schools and institutions of the University in this direction, has increased to a very considerable extent. The secretary, Dr. A. D. Denning, will be pleased to give further information as to the Board, and to see graduates, at the central offices of the University, South Kensington, on Wednesday afternoons, 2 to 5, or Thursdays, 12 to 1.30, or at other times by arrangement. Approximately 1000 posts have been notified to suitably qualified graduates registered with the Board within the last three months and many appointments secured.

By the will of the Right Hon. Stuart, Baron Rendel, of Hatchlands, Guildford, who died on June 4, the sum of 500*l.* is bequeathed to the University College of Wales, Aberystwith, of which he was president.

WE learn from *Science* that the General Education Board of the United States recently promised Washington and Jefferson College a grant of 20,000*l.* on condition that the college raised 80,000*l.* by June 30 last. On the date mentioned the college was able to announce that 88,000*l.* had been collected. Except for 10,000*l.*, which is to be expended on a physics department, the entire sum now at the disposal of the college is to be added to the general endowment fund.

THE organisation created by Lord Morley in 1909 for the benefit of Indian students included an Advisory Committee, and was mainly composed of influential Indian residents; fresh regulations have now been promulgated, we learn from *The Times*, giving the committee a definite constitution and specifying its functions. At least half of the committee are always to be Indian gentlemen resident in this country. The appointments are to be made by the Secretary of State for a term of three years. The functions of the committee are to keep itself informed as to the views of parents in India; to advise the Secretary of State; and to bring to his notice matters respecting the needs of the students. The committee has arranged to meet regularly on the first Monday in each month, and has appointed Sir M. M. Bhownagree vice-chairman.

SOCIETIES AND ACADEMIES.

PARIS.

Academy of Sciences, July 28.—M. F. Guyon in the chair.—Maurice **Hamy**: Study of the nitrogen radiations. The explanation of the width of the lines of the spectrum of rarefied gases, based on the Doppler-Fizeau principle, has been recently verified experimentally by Buisson and Fabry working with Geissler tubes containing the rare gases of the atmosphere. Similar work on nitrogen, a gas furnishing a band spectrum, is now described by the author, and he concludes that the band spectrum of nitrogen obeys the same laws as line spectra, as regards the difference of path required to make interference bands disappear.—E. **Jungfleisch** and L. **Brunel**: The sulphur set at liberty in the action between sulphurous acid and water. A study of the condition in which the sulphur is deposited in this reaction. Five photographs accompany the paper.—Lucas **Championnière**: Operation for club foot by ablation of all the bones of the tarsus. Osseous regeneration in young subjects. The operation consists in the removal of all the tarsal bones with the exception of the posterior portion of the calcaneum. A description of the results in forty-two cases is given. In young children there is distinct regeneration of a portion of the bone removed.—Coyat **Barthoux** and H. **Douvillé**: The Jurassic in the desert to the east of the Isthmus of Suez.—P. **Duhem**: The formula for the velocity of sound. A correction of a formula recently published by M. Ariès.—J. **Guillaume**: Observations of the sun made at the Observatory of Lyons during the second quarter of 1913. Observations were possible on seventy-seven days, and the results are grouped in three tables showing the number of spots, their distribution in latitude, and the distribution of the faculæ in latitude.—Rodolphe **Soreau**: An approximate formula for the arc of an ellipse.—E. **Stiemke**: Numbered moduli.—Kr. **Birke-land**: The conservation and the origin of terrestrial magnetism.—Georges **Claude**: The maintenance without difficulty of a temperature of -211° C. by the use of liquid nitrogen. A rapid stream of hydrogen, 20 to 25 litres per minute, previously cooled by flowing through a copper spiral immersed in liquid nitrogen, is passed through about 0.75 litre of liquid nitrogen contained in a capacious Dewar vessel. The temperature rapidly falls, and after about twenty minutes remains steady at -211° C., the melting point of nitrogen. At this point about two-thirds of the original liquid remains in the tube.—R. **Ladenburg** and F. **Reiche**: The absorption of coloured flames. It was shown more than thirty years ago by M. Gouy that the absorption of a coloured flame for the narrow lines of the spectrum which it emits is far from being complete, and that it was possible to calculate from

his measurements the brightness of the lines as a function of the product of the thickness of the layer by the density of the metallic vapour. In the present paper these experimental results are compared with relations furnished by the electronic theory of dispersion. The two are shown to be in good agreement. If, on the other hand, the intensity of the lines is governed, not by the theory of dispersion, but by Rayleigh's theory according to the Doppler effect, then there is no agreement between the theory and Gouy's experiments.—E. **Briner**: The dissociation of the molecules into atoms considered as one of the factors of reaction velocity.—Victor **Henri** and René **Wurmser**: The negative photocatalysis of hydrogen peroxide. The stimulating or poisoning effect produced by certain substances on ferment actions has been hitherto ascribed to the action of the stimulant or poison on the ferment; the authors hold that this view must be modified in so far as this action may take place not on the ferment but on the body under transformation. In support of this view they adduce experiments on the photocatalysis of solutions of hydrogen peroxide in presence of traces of various substances, including sulphuric acid, caustic soda, iodine, potassium cyanide, &c. The addition of traces of these substances caused an increase of stability of the hydrogen peroxide towards ultraviolet rays.—F. **Bourion** and A. **Deshayes**: The quantitative separation of chromium and aluminium. The analysis of chromite. The method proposed is based on the use of a mixture of chlorine and sulphur chloride.—C. J. **Pitard**: Statistics and affinities of the flora of Chaouia.—O. **Mengel**: The evolution of mildew according to the conditions of the medium.—Ch. **Julin** and A. **Robert**: *Ascidia fumigata*. Contribution to the study of the classification of the Phallusiidae.—M. **Ruot**: *Bacillus lactis fermentens*, a spore forming butyleneglycol ferment of milk sugar. This organism produces an active fermentation of milk, 2 : 3-butylene-glycol accumulating in the culture, other products being carbon dioxide, hydrogen, acetylmethylcarbinol, acetic and formic acids.—Maurice **Renaud**: The irradiation of bacteria and the irradiated vaccines. For all the organisms studied irradiation with a quartz mercury-vapour lamp rendered the media sterile, leaving intact the histochemical properties. Irradiation prolonged beyond the period necessary for sterilisation does not diminish the activity of the soluble products of bacterial origin, such as toxins. The therapeutic application of irradiated cultures is discussed.—F. X. **Lesbre** and R. **Pécherot**: A calf born without the upper jawbone; a new Cyclocephalian type.—Eric **Gérard** and Hermann **Chauvin**: The waters of Spa. Radioactivity, electrical resistance, and cryoscopy.—J. **Ventre**: The influence of the yeasts on the variations of dry extract and of glycerol in wines.—L. **Lindet**: The soluble albuminoid matters of milk.—Ch. **Dhéré**: The diversity of hæmocyamines according to their zoological origin.

NEW SOUTH WALES.

Linnean Society, June 25.—Mr. W. S. Dun, president, in the chair.—C. **Hedley**: Studies on Australian Mollusca. Part xi. During 1912 the writer spent a furlough in Europe and America. Opportunities occurred for prosecuting conchological studies. Many types were examined, and much information was gathered from the Cumingian collection at the British Museum, the Lamarckian collection at Geneva, the collection of A. Angus at Newcastle, and that of Gould at Washington. Ten weeks were spent in constant study at the British Museum, during which almost the whole series of Australian marine gastropods and bivalves was examined. From these sources critical