

## Educational Topics and Events

CAMBRIDGE.—The following grants have been authorised from the Anthony Wilkin Studentship Fund: £40 to J. R. B. Stewart, of Trinity Hall, to enable him to continue the excavations he is doing near Balikiser in Asia Minor; £40 to G. E. Daniel, of St. John's College, for the investigation of a megalith in South Wales.

In the report of the Buildings Syndicate on the completion of various building schemes undertaken in connexion with the Rockefeller benefaction for the physical and biological sciences, it is stated that the total cost amounted to £196,858.

At St. John's College the following have been elected into fellowships: E. H. F. Baldwin, H. Carmichael and J. S. Mitchell.

EDINBURGH.—Dr. A. L. Craig-Bennett, of the Department of Zoology, has been appointed by the Colonial Office to be chief fisheries officer in Palestine.

SHEFFIELD.—The following appointments have recently been made: Mr. Glyn Davies, to be lecturer in obstetrics and gynaecology; Mr. J. C. Paisley, to be junior assistant bacteriologist; Mr. A. J. Holland and Mr. N. A. Nichols, to be research assistants in the Department of Glass Technology.

It is announced by the Lisbon correspondent of *The Times* that the honorary doctorate of the Technical University of Lisbon has been conferred on Sir Josiah Stamp, president of the British Association. Sir Josiah has presented to the University Library the original letter from a Lisbon merchant to his principal in England describing the effects on his business of the great earthquake of 1755; also a book containing some English publications of the period describing the earthquake. In return Sir Josiah was presented with a copy of the *Lusiads* by Camoens in a silver casket. It is stated that this is the first honorary doctorate to be conferred on an Englishman.

Two fellowships (700 dollars), eleven studentships (600 dollars) and seventeen bursaries (500 dollars) have been awarded for the year 1936-37 by the National Research Council, Ottawa, to candidates selected from Canadian universities. The policy of assisting exceptional students to pursue post-graduate work in Canadian universities has been followed since the inception of the Council, the object being to build up in Canada a supply of well-trained men of science capable of undertaking and carrying through research investigations involving a more profitable utilisation of Canadian raw materials and the expansion of markets for Canadian products.

THE education of girls in India has in recent years passed through a phase of tumultuous changes. Its backward state made such an impression on the Indian Statutory Commission that it was declared in an Interim Report (generally referred to as the Hartog Report) "priority should now be given to the claims of girls' education in every scheme of expansion". In a paper to the Indian Section of the Royal Society of Arts (*J. Roy. Soc. Arts*, March 20), Lady Hartog estimated the extent and character of the developments that have followed the publication of that Report. Whereas the Committee found that the disparity in numbers as between boys and girls at

school, about 5 to 1, was increasing by more than 350,000 a year, the next few years were marked by such a rush of girl pupils alike to primary school, secondary school and college, that by 1932-33 their annual increment was exceeding that of boy pupils by more than 100,000. The gratification with which this advance has been received should not, Lady Hartog pointed out, obscure the fact that it has been accompanied by serious abuses. In the primary schools almost 40 per cent of the girl pupils are, for lack of girls' schools, accommodated in boys' schools, where they have no real place in the school life. There are, as a rule, no women teachers and no provision for teaching the girls anything outside the boys' curriculum. Of all the primary schools for girls in India, Bengal possesses nearly half, and in this province so inefficient is their instruction that the whole system of girls' primary schools is condemned as, with a few exceptions, practically useless. In the secondary schools the position is not so bad. Though overcrowded, the buildings are on the whole good, and it is beginning to be recognised that the curriculum, instead of being a replica of that of the boys, should have some relation to the home life which will be the lot of the vast majority of the girls. In the universities, the influx of girls has been justifying itself by results, especially in the medical schools; but there is said to be a crying need for more women's colleges and hostels.

## Science News a Century Ago

### Registration of Statistics

ON May 16, 1836, at a meeting of the Statistical Society, the Right Hon. Holt Mackenzie read a paper entitled "Observations on the means of collecting information on various points of Statistics, explanatory of a proposition for the appointment of a Committee to consider the expediency of opening books for the contemporary record of various statistical facts, and to prepare the forms in which such books shall be kept". Mr. Mackenzie said, that everyone who had attempted to prosecute statistical inquiries relating to past ages, must have been struck with the difficulty of getting fully and accurately, for any considerable series of years, information relating to things, which, at the time of their occurrence, were known to all the world, and he suggested that the Society should do for posterity what we wish our ancestors had done for us, or in other words, realise the probable wishes of the men of the year 2000. In accordance with his scheme, he therefore suggested that a set of registers should be opened to contain statistics relating to prices, wages, earnings, salaries, fees, weights and measures, coinage, interest, dividends, exchanges, insurance and income and expenditure of different classes of society, etc.

### Observations of the Solar Eclipse

AMONG those who observed the annular solar eclipse of May 15, 1836, was J. D. Forbes, who on May 17 wrote from Edinburgh to Quetelet at Brussels: "On the 15th the solar eclipse was most admirably seen here. . . . I observed with a 7-foot reflector the immersion and emersion of the spots, of which there were several, but I could not observe the slightest distortion produced by refraction upon those delicate objects. My attention was chiefly directed to this

object: to examine the light from the sun's edges, at and near the annular period, in order to ascertain whether the dark lines in the spectrum were more numerous or stronger in the light which must have traversed the greatest thickness of the sun's atmosphere, and which have been supposed by Sir D. Brewster and others to be due to the absorptive action of that atmosphere. An attentive examination assures me that no material difference could exist; indeed, I did not perceive the slightest." Writing to Miss Forbes four days later, he said: "The eclipse was admirably seen here, and seemed to strike every sort of person much more than expected. I was making optical experiments in a dark room most of the time, but ran out for half a minute to see the ring, which was a wonderful sight. I sent you an account in the *Advertiser*. Dr. Chalmers preached, and I managed to hear him, too. Evening service was postponed in the churches and chapels, except Mr. Bagot's, and the smoking of glass and the burning of fingers and blacking of faces was wonderful. . . ."

#### Glass Balance-Springs in Chronometers

At a meeting of the Royal Society held on May 19, 1836, Captain F. Beaufort, R.N., communicated a paper by Arnold and Dent "On the Application of Glass as a substitute for metal balance-springs in Chronometers". In their endeavour to determine and reduce the errors arising from the expansion and contraction of balance-springs in chronometers due to the variations in temperature, glass had been suggested as possessing desirable qualities. It was found that a glass balance-spring would resist the effect of cold, and by experiments made on board H.M.S. *Excellent* at Portsmouth that it would withstand the shock arising from the discharge of cannon in the vicinity. "On comparing the performance of glass balance-springs with metallic ones when the temperature was raised from 32° to 100°, it was found that while the loss in twenty-four hours in the gold springs was 8 m. 4 s., that of steel 6 m. 25 s. and that of palladium 2 m. 21 s., that of a glass spring was only 40 s." Chronometers with glass balance-springs were being tested at the Royal Observatory.

#### Death after Flogging

THE *Gazette des hôpitaux* of May 20, 1836, contains the following report: "A jury met at the King's Head Tavern, Woolwich, to inquire into the death of a sailor named William Saundry who died after being flogged. According to the coroner, the case required much consideration, as it had to be decided whether death was the result of a military punishment or of some disease. Death had occurred ten days after the flogging. The autopsy ordered by the coroner took place in the presence of ten doctors who decided that death was the result of fever and not of the flogging. Eight of the jury maintained that death would not have taken place without the flogging, but nine of the others agreed with the opinion of the doctors. The following verdict was given: 'William Saundry died by the visitation of God, and not by the hand of a person of any kind'. On reading a report of this case, it is difficult to say which is the most astounding: the contradictions in the report, the intense partiality of the doctors or the existence of so barbarous a punishment in a country so highly placed in the scale of civilisation as England."

## Societies and Academies

### LONDON

Royal Society, May 7. P. M. S. BLACKETT: Measurement of the energy of cosmic rays. (1). The electro-magnet and cloud chamber. An electro-magnet weighing about 11,000 kgm. has been constructed for the purpose of measuring the energy of cosmic rays and for studying the cosmic ray showers. The magnet gives a field of 14,000 gauss in a gap of 15 cm. between pole pieces 25 cm. in diameter for a power of 25 kw. The coils are air-cooled using a 4 h.p. fan. A special cloud chamber, 27 cm. in diameter by 3 cm. deep, is placed between the pole pieces. Two different optical systems are used, one employing a mirror and a camera at the side, and the other employing a stereo-camera photographing through a hole in one pole piece. The various arrangements of gap and optical system are compared from the point of view of measuring cosmic rays of the greatest possible energy. P. M. S. BLACKETT and R. B. BRODE: The measurement of the energy of cosmic rays. (2). The curvature measurements and the energy spectrum. The measurement of the energies depends on the measurement of very small curvatures. The method of making these measurements is described. Measurements of 180 cosmic ray tracks are given. The highest detectable energy with tracks 17 cm. long in 14,000 gauss is  $2 \times 10^{10}$  e.v. The energy spectrum between  $10^9$  and  $10^{10}$  e.v. is shown to be approximately of the form  $g(E) \propto E^{-2}$ ; in this range of energies about equal numbers of positive and negative particles are found. The particles over  $10^{10}$  e.v. are mainly positive. W. EHRENBERG: The connexion between cosmic ray showers. Cosmic ray showers have so far been investigated chiefly by counting the number of triple coincidences of suitably arranged Geiger-Müller counters. The information obtained in this way is restricted to the number of these events. To obtain more complete information on showers, an ionisation chamber was put above the counters in the experiments described, and the ionisation in the chamber was recorded whenever all three counters were operated simultaneously. This ionisation is due to the shower particles traversing the chamber, and the number of ions produced is proportional to the number of particles in the shower. The number of particles in showers obtained under different conditions varies between 3 and 1,200. With lead above the chamber the rate of occurrence  $R$  of showers of  $N$  particles decreases rapidly with  $N$ , following approximately a law  $R = N^{-s}$  where  $s$  lies between 2.2 and 3.1. It is concluded that all 'bursts' are nothing else than showers measured by the ionisation they produce. D. H. FOLLETT and J. D. CRAWSHAW: Cosmic ray measurements under thirty metres of clay. The zenith angle distribution of cosmic ray intensity in a north-south plane was determined at ground-level and in Holborn Underground station. At this level the vertical intensity was approximately 1/20 that at ground level. The shape of the distribution curve is the same at the two levels. This leads to the conclusion that the intensity of cosmic radiation varies as a power of the path length in an absorber, rather than exponentially; and the shape of the curve gives the value  $-2$  for this power. Using five counters, so arranged that at least three particles arriving simultaneously are required to discharge all five at once, the presence of showers in the Underground station was proved. Rough