

kinds, the greater is the pleasure which life can afford him, the better can he contribute to the progress of the world both by stimulating others and by himself pointing out the way in which advances can be made. A university has to think, not only of forming specialists, but of making these specialists better by giving them a wide range of knowledge, and still more of sending out men who sustain the level of taste and insight in the whole community and are fit to be its intellectual leaders.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

CAMBRIDGE.—A public meeting under the auspices of the University Eugenics Society will be held in the new lecture-room, Emmanuel College, by permission of the master and fellows of the college, on Monday, May 22, at 8.30 p.m. The Rev. Prof. Inge, D.D., Dean Designate of St. Paul's, will give an address on "Some Social and Religious Aspects of Eugenics."

OXFORD.—The preamble of the Statute exempting students in natural science and mathematics from examination in Greek passed Congregation on May 16 by 156 to 79.

LONDON.—Presentation Day was on Wednesday, May 10. The Chancellor (Lord Rosebery) presided, and an unusually large number of graduates were presented. A precedent was established this year by the presentation of cadets of the Officers' Training Corps who had gained War Office certificates or proceeded to commissions in the Army. The principal's report showed that the total admissions to the University in 1910-11 were 4255, compared with 4053 in the previous year; internal students, 4350, compared with 4185; and total candidates in examinations leading to degrees or diplomas, 12,681, compared with 12,787. The number of degrees or diplomas granted was 1222. Reference was made to extension of university professoriate, following the appointment of a large number of board of advisors. Among individual benefactions during the year, the most important were those of Sir Francis Galton for eugenics (40,000*l.*), Mr. Henry Dixon for scientific investigations (8000*l.*), Dr. Charles Graham for medical and pathological research (33,500*l.*), and Sir Felix Semon for laryngology (10400*l.*). The report also referred to the notable development of student activities—military, athletic, and social. Lord Rosebery, in a short address, appealed for more adequate accommodation for the central premises of the University and for increased financial support from the authorities and city companies.

It has been decided by the council of Armstrong College, Newcastle-upon-Tyne, to establish a professorship of philosophy at the college, and to appoint an additional demonstrator in physics.

The *Lancet* announces the appointment, by the Lord President of the Privy Council, of Sir Donald MacAlister, K.C.B., principal of Glasgow University, as his representative on the International Committee for Post-graduate Medical Instruction.

THREE scholarships in naval architecture have been instituted at the University of Liverpool by the General Committee of Lloyd's Register of Shipping. Each scholarship is of the value of 50*l.* a year for three years, and one will be vacant annually. The first election will take place this year.

Two cases of importance to persons taking part in competitive examinations were settled at the Bow Street Police Court on Saturday last. The defendants were tutors at a coaching establishment, and therefore debarred from taking part in the examinations of the Royal Society of Arts. Notwithstanding their ineligibility, they duly competed under assumed names and gained prizes. The Royal Society of Arts, being anxious that their examinations should be inviolate, and to make it clear to all that people are not allowed either by the rules of the society or the law to compete in examinations in a way which is detrimental to other candidates, took action in the matter, and they are to be congratulated on the result, the defendants being found guilty and punished.

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ACCORDING to *Science*, at its recent session the legislature of Kansas voted approximately 200,000*l.* for the next State Agricultural College at Manhattan for the next biennium. The funds provide for one wing of an agricultural building, with a detached laboratory for the cutting and curing of meats. The first wing of the new building is to cost 25,000*l.* Two more wings are to be added as the money is voted, each complete in itself. The legislature also provided a special fund for various objects, including money for experiments in the western part of the State in cooperation with the Federal Government; for soil surveys, also in cooperation with the United States Government; for experiments in producing improved wheat, corn, and other crops. The college has this year approximately 2500 students, more, it is said, than are enrolled in any similar institution in the world. The cost per student in this institution in 1910 was 21*l.*

WE learn from *The Belfast News-Letter* that the Library and Technical Instruction Committee of Belfast contemplate making a collection of kinematograph films of educational value for public exhibition in that city. Mr. F. C. Forth, the principal of the Technical Institute, a week or two ago gave a very successful introductory demonstration of the advantages of the kinematograph for teaching the character of various operations and movements that students may perhaps never be able to see for themselves, and which are but poorly represented by the simple lantern-slide. Among the films shown there were illustrated metallurgical works, a visit to Niagara Falls, cheese mites, a fresh-water hydra, rotifers, the circulation of protoplasm in the water weed, the circulation of blood in a frog's foot, chameleons feeding, toads fighting, and the development of a flower.

ON July 14 the King will open the new buildings of the University College of North Wales, which have been completed at a cost of about 112,000*l.*, exclusive of the site, which was presented by the citizens of Bangor. Of the total cost, rather under 10,000*l.* remains still to be collected, and the sums already received include 16,800*l.* from Carnarvonshire, 18,350*l.* from London, 1350*l.* from the staff, and 3500*l.* from old students. The quadrangle of buildings, which is flanked on three sides by the classrooms and offices, has been completed on the fourth side by the Great Hall specially presented by Sir Pritchard Jones. The removal of the arts classes to the new buildings has given increased accommodation to the science departments, and among the gainers the agricultural and forestry departments may be noted. That theory and practice are not always inconsistent is evidenced by the large number of prizes secured by the former department at agricultural shows.

THE council of the Institution of Civil Engineers has made arrangements to hold a conference on the subject of the education and training of engineers on June 28 and 29 at the institution. The subject-matter to be discussed at the conference will be dealt with in three groups, namely, general education, scientific training, and practical training. Among other topics which will receive consideration at the meetings may be mentioned:—the extent to which mathematical and scientific subjects should share with other subjects of literate education the attention of schoolboys who intend to enter later the engineering profession; the question of specialised entrance examinations for university and college courses of study in engineering science with a view to the curricula to be followed, and also of the inclusion in the latter of courses in modern languages; the relation of practical training to college study—whether, or to what extent, before, sandwiched, or after its conclusion; the position and uses of engineering laboratories in relation to education at college; the value of a university degree in engineering science in relation to professional competence; the requirements of practical training in works, with the necessary complement of scientific study; practical training in workshops or on works of construction, with special reference to training in the engineer's office; the relation of engineering employers and colleges from the point of view of the practical training of college students; workshop training as a preliminary to practical training in other branches of engineering.

A COMPLIMENTARY banquet to Prof. H. E. Armstrong, F.R.S., took place at the Hotel Cecil on Saturday, May 13. Although intended, in the first instance, to take the form of a demonstration of affectionate regard on the part of his old students, it was soon found necessary to extend the scope of the celebration, which thus became the occasion for one of the largest scientific gatherings of recent years. The toast of the guest of the evening was proposed by the chairman, Prof. W. J. Pope, F.R.S., and was seconded by Mr. Maurice Solomon. The guests included Sir William Crookes, Sir James Dewar, Sir Chas. Lawes, Profs. H. B. Baker, A. Brown, Clowes, Crossley, Divers, Henderson, Kipping, and Wynne, Messrs. W. Barlow, G. T. Beilby, H. T. Brown, Cross, Hall, R. Messel, R. L. Mond, F. B. Power, and J. E. Stead amongst the chemists; engineering was represented by Profs. Perry, Dalby, Mather, and Sumner; education by Principal Miers, Mr. R. Blair, Dr. J. H. Cowham, Prof. R. A. Gregory, Mr. A. L. Soper, and Mr. C. M. Stuart; law by Mr. W. Phipson Beale, K.C.; and literature by Prof. M. A. Gerthwohl. On two occasions the Chemical Society has met in order to celebrate the jubilee of five of its past presidents, but we believe that only one similar gathering has previously been organised by a group of chemical students in honour of their professor. The success of the enterprise was most gratifying; "Central" students of every year, from the date of the opening of the college to the present day, united with chemists and others from all over the country, to the number of 230, in honouring one whose influence has been felt and valued by an exceptionally wide circle of admirers and friends.

THE following regulations with reference to the newly founded prize in memory of Lord Kelvin have just been issued by the University of Glasgow:—(1) The prize shall consist of a gold medal of the value of 10*l.*, together with the balance of the income of the capital fund accumulated during three years. (2) The adjudicators shall be the principal, the professor of natural philosophy, and the professor of mathematics. (3) The prize shall be awarded by the Senatus, on the recommendation of the adjudicators, at intervals of three years (the first period beginning with 1911) to the author of a thesis or published work in natural philosophy, including therein mathematical and experimental physics, which has been submitted and approved for the degree of Doctor of Science during the period, and which gives evidence of original research worthy in the opinion of the adjudicators of this special distinction. (4) In making their recommendation, the adjudicators shall have regard to the written reports presented to the faculty of science by the examiners and additional examiners appointed under Section X. of University Court Ordinance No. XXVI. (5) Not more than one award shall be made in each period of three years, and the prize shall not be divided. The adjudicators may, if they think fit, recommend that for a particular period of three years no award be made, and, in that case, the income of the prize shall be added to the capital fund. (6) The Kelvin prize and the William Jack prize shall not be awarded to the same person. (7) After the year 1920 the regulations may from time to time be modified by the Senatus, with the approval of the University Court, provided always that the prize shall continue to be awarded to graduates of the University for special distinction in original research relating to mathematical and experimental physics.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, May 11.—Sir Archibald Geikie, K.C.B. president, in the chair.—C. T. R. Wilson: A method of making visible the paths of ionising particles through a gas. The paths are made visible by condensing water upon the ions immediately after their liberation, an expansion apparatus being used which works without appreciable stirring up of the air. The trails of ions formed by the α particles from radium have in this way been made visible and photographed, very dense and sharply defined rays of cloud being formed on expansion. Air exposed to β rays gives clouds consisting mainly of

faint straight threads radiating from the source; these have not yet been photographed. In air exposed to γ rays, the cloud is again in the form of straight threads traversing the cloud chamber—the tracks of β particles from the walls. The cloud formed in air exposed to Röntgen rays is entirely concentrated in minute streaks and patches. A photograph shows these to consist mainly of fine threads not exceeding a few mm. in length, and generally far from straight, probably the tracks of kathode rays produced in the air by the X-rays. The whole of the ionisation would appear, as Bragg has already suggested, to be effected by the kathode rays derived from the X-rays.—W. H. Dines: The vertical temperature distribution in the atmosphere over England, and some remarks on the general and local circulation. This paper gives an account of the results of some 200 observations made in the British Isles in the years 1908, 1909, and 1910 on the temperature of the upper air. It discusses the annual variation of the temperature up to 14 kilometres, and shows that the annual range remains fairly steady, with a total amplitude of about 12° C. up to 11 km., above which the range suddenly drops to 3°, and the times of the maxima and minima go back two months. The question of the daily variation at great heights is then discussed. The relation between the temperature at various heights and the height of the barometer at the surface is dealt with, and it is shown how over a low-pressure area with the barometer below 740 mm. the temperature of the first 8 km. is very low, reaching at 7 km. a value of nearly 10° C. below its average value, and that above 10 km. it is considerably above the average. In the anti-cyclonic parts the conditions are reversed, and it is warm below and cold above. The height at which the isothermal region is met with in summer and winter and in times of high and low barometer is then referred to. A statement with regard to the existence of similar conditions that have been found to exist on the Continent is also given. In the second part of the paper various theoretical considerations are taken into account. It is shown that if an extensive and strong wind exists in any part of the atmosphere, warm air will be found somewhat below it on its right hand, and cold air above it on the right, with converse conditions on the left, and it is pointed out that this agrees with the distribution of temperature that is found to exist at the various levels of cyclones and anticyclones.—Prof. W. N. Hartley: Some mineral constituents of a dusty atmosphere.—Dr. H. Stanley Allen: The path of an electron in combined radial magnetic and electric fields. The path of an electron in a radial electric field superposed on a radial magnetic field is found to lie on a circular cone the vertex of which coincides with the magnetic pole. If the surface of the cone is developed into a plane, the trace of the path is a conic section with the vertex as focus. The solution in the particular case in which there is no electric field has been given by Poincaré; the path is then a geodesic line on the surface of the cone, and, of course, becomes a straight line when the cone is developed. In cases which can be realised experimentally, the developed path is hyperbolic, and does not in general differ greatly from a straight line. An account is given of some experiments carried out to illustrate the theory. The first observations were made with a focus tube in which the antikathode was the pole of an electromagnet. The phenomena observed are easily explained in terms of the theory. Other vacuum tubes were prepared in which a fine pencil of kathode rays could be produced by means of a Wehnelt kathode. In a radial magnetic field the stream of electrons assumed a spiral form, and a number of photographs were obtained showing the spiral paths on a cone of revolution.—Dr. R. A. Houston: The absolute measurement of light—a proposal for an ultimate light standard. A thermopile cannot be used for the measurement of candle-power, because it gives the same value to the energy of every wave-length, invisible as well as visible. The author has, however, found by spectrophotometric investigation in the ultra-violet, visible, and infra-red parts of the spectrum that if a filter consisting of aqueous solutions of copper sulphate and potassium bichromate in a particular strength in glass cells be placed before the thermopile, then this filter stops the ultra-violet and infra-red entirely, and lets through a fraction of each wave-length in the visible spectrum pro-