

Current Topics and Events.

THE Royal Swedish Academy of Sciences, Stockholm, has awarded the Nobel prize for physics for 1923 to Dr. R. A. Millikan, director of the Norman Bridge Laboratory of Physics at the California Institute of Technology, Pasadena, and the Nobel prize for chemistry for 1923 to Prof. F. Pregl, professor of applied medical chemistry in the medical faculty of the Karl Franzens University, Graz, Austria. Dr. Millikan is best known for his work on the determination of the absolute value of the charge of the electron. Before his experiments various measures had been made of this, by condensing a cloud on free electrons in a gas and observing how the cloud behaved. Millikan found that it was possible to watch the single drops, and thus discovered many inaccuracies to which the earlier work was subject, and this enabled him to modify it into a method of precision. In his final arrangement, a small drop of oil or mercury was watched in a microscope as it slowly fell under gravity or, acquiring a charge, rose in an electric field. In this way he could observe directly the atomic nature of electricity; for if the speed of the drop ever changed it would always change by a discrete amount. In the course of these experiments he worked out the problem of the motion of a sphere in a viscous fluid, and found under what conditions Stokes's law is verified; more recently he has made his work throw light on the nature of the collision of a gas molecule with a solid or liquid surface. It is a fairly safe prediction that it will be long before methods are devised which will give more accurate values than Millikan's for the electronic charge and the associated constants. Only second in importance is his very accurate determination of the quantum by means of the photoelectric effect. His work not only completely verified the Einstein theory, but also showed that the "limiting potential" of that theory is identical with the ordinary contact potential. Since then Dr. Millikan has added a great deal to our knowledge of the spectrum in the region of very short waves.

THE London School of Tropical Medicine, co-operating with the New Zealand Government, has just sent an expedition to Samoa to study the depopulation of the Pacific from the medical point of view. The expedition is led by Dr. Patrick Buxton, and will probably be in Samoa about two years. It is proposed to select a small island and try to exterminate *Aedes variegatus* (*pseudo sentellaris*), the particular mosquito which carries filariasis: a majority of the natives are infected with this disease. This large-scale experiment should afford information about costs and methods, and will be of value in many parts of the world. An investigation of all biting insects will be made, and the party is equipped to study the problems of ventilation and temperature in various types of house. An effort will be made to collect insects in general, even those of no economic importance, because it is presumed that a peculiar fauna still exists in the virgin forests which cover the centres of the islands, and that this fauna is in danger of being

exterminated by enemies introduced from other islands.

WITH the December issue the monthly publication of the meteorological ocean charts ceases. The information supplied on the back of these charts will in future appear in a monthly magazine entitled the *Marine Observer* which will be on sale by the Stationery Office. The magazine will be supplied free to the commanders of all ships on the list of regular observers to the Meteorological Office. The face of the charts for each month of the year, with information which is of a permanent nature, have been printed in limited numbers, and one set will, we understand, be supplied, according to its trade, to each ship on the list of regular observers, on request being made by the commander. These charts of frequencies and normals of the North Atlantic or East Indian Seas for each month of the year may be purchased at one shilling each from the Admiralty chart agents. The December issue of the East Indian chart contains a useful index to the information published on the back of the charts from 1906 onwards.

THE many friends of Sir Arthur Schuster will learn with much regret that a few days ago he met with an accident which may lead to the loss of sight of one of his eyes. It appears that he was accidentally struck by a golf-club while standing near a lady player, the result being that his glasses were broken and a piece of glass entered one of his eyes.

THE selection committee of the Harrison Memorial prize, which, in accordance with the trust deed, consists of the presidents of the Chemical Society, the Institute of Chemistry, the Society of Chemical Industry, and the Pharmaceutical Society, will meet shortly to consider the first award of the Harrison Memorial prize. The prize, of the value of about 150*l.*, is to be awarded to the chemist of either sex, being a natural born British subject and not at the time over thirty years of age, who, in the opinion of the selection committee, during the previous five years has conducted the most meritorious and promising original investigations in any branch of pure or applied chemistry and published the results of those investigations in a scientific periodical or periodicals. Provided that in the opinion of the selection committee there is a candidate of sufficient distinction to warrant an award of the prize, the first award is to be made in December next. The selection committee is prepared to receive applications, nominations, or information as to candidates eligible for the prize, which must be addressed to the president of the Chemical Society, and should reach Burlington House, Piccadilly, London, W.1, before December 10.

ON November 14, Prof. R. A. Peters delivered his inaugural lecture as Whitley professor of biochemistry in the University of Oxford. Speaking of the interchange of teachers between Oxford and Cambridge, which he thought was to the advantage of both Universities, he directed attention to the fact that Oxford had inclined to the synthetic and Cambridge to the analytic aspect of biochemistry. The "steam-

engine" view of the body has been proved inadequate; nutrition cannot be expressed in terms of calories. The proteins of food enter the blood as amino-acids; the body forms its own proteins. The connexion between "miners' cramp" and the loss of salts is well established, and gives promise of further light on other morbid conditions. Increased cleanliness in food has tended to cause a deficiency in vitamins. Bread and rice have both suffered in this respect, but under civilised conditions the deficiency can be made up in other ways. A new importance to physiological chemistry is given by the discovery of the functional activity of endocrines. A large audience, including the Vice-Chancellor, was present at the lecture.

WE learn from the *Belfast Evening Telegraph* of October 24 that a new Naturalists' Field Club, styled the "Route," has been founded for northern Antrim, and that it is affiliated to the Belfast Club. The latter now numbers 703 members, and has been described by those who derive much mental profit from its various meetings and excursions as a second university for Belfast. It has the advantage of retaining as advisers members who have watched and fostered its progress for more than fifty years.

IT is announced in *Science* that Mr. John D. Rockefeller, Jr., has given 100,000*l.* toward the endowment fund of 400,000*l.* required by the New York Zoological Society, and will contribute a further 100,000*l.* as soon as the society raises another 200,000*l.* Mr. Edward S. Harkness has given 20,000*l.* and the estate of Mrs. Frederic Ferris Thompson 10,000*l.* For some time the Society has been carrying educational, philanthropic, and civic burdens far beyond its financial resources. Mr. Rockefeller's gift is without restrictions and the income becomes immediately available.

NOTIFICATION is given by the Chemical Society that applications for grants from the society's research fund (made upon forms obtainable from the Assistant Secretary, Burlington House, W.1) must be received on or before Saturday, December 1. The income arising from the donation of the Goldsmiths' Company is to be more or less especially devoted to the encouragement of research in inorganic and metallurgical chemistry; the income from the Perkin memorial fund is to be applied to investigations relating to problems connected with the coal-tar and allied industries.

THE following officers have been elected by the London Mathematical Society for the session 1923-1924:—*President*: Prof. W. H. Young; *Vice-Presidents*: Prof. L. N. G. Filon, Prof. H. Hilton, and Prof. A. E. Jolliffe; *Treasurer*: Dr. A. E. Western; *Secretaries*: Prof. G. H. Hardy and Prof. G. N. Watson; *Other Members of the Council*: Mr. J. E. Campbell, Prof. A. L. Dixon, Miss H. P. Hudson, Prof. G. B. Jeffery, Prof. A. E. H. Love, Mr. E. A. Milne, Mr. L. J. Mordell, Mr. F. B. Pidduck, and Mr. F. P. White.

VISCOUNT LONG OF WRAXALL has accepted the presidency of the forthcoming Empire Mining and

Metallurgical Congress to be held at the British Empire Exhibition on June 3-6, 1924, of which the Prince of Wales is honorary president. The following have accepted invitations to become honorary vice-presidents of the Congress: The Secretary of State for the Colonies; the Secretary of State for India; The Secretary for Mines; the Prime Ministers of Canada, Australia, New Zealand, and Newfoundland; the High Commissioners of the Dominions and British India; and the Lord Mayor of London. The presidents of the seven convening bodies (*v.* NATURE, September 22, p. 453) will act as vice-presidents and will preside over the sections with which they are concerned.

THE issues of the Journal of the Royal Society of Arts for October 5, 12, and 19 contain the three Cantor Lectures by Mr. J. E. Sears on precise length measurements. To those who have not access to the various publications of the National Physical Laboratory, these lectures provide up-to-date information on the methods in use there for maintaining the ultimate standards of length and for accurately comparing the secondary standards in use in industry with the ultimate standards. The instruments used are almost all unique, and the accuracy attained with them one-millionth of an inch. We are glad to note that, as the result of work done by one of the staff of the Laboratory, it is likely that gauges of the accuracy of the Johansson gauges from Sweden will be made on a commercial scale in Great Britain.

ON Thursday and Friday, November 8 and 9, the sixth joint meeting of the Challenger Society and representatives of Marine Biological Stations was held at Cambridge under the chairmanship of Prof. J. Stanley Gardiner. The meeting was attended by more than fifty representatives of various organisations. Papers were read by Messrs. J. Barcroft, G. Bidder, F. F. Blackman, H. G. Carter, H. M. Fox, J. Gray, W. B. Hardy, H. G. Hopkins, T. Moran, J. Piqué, F. A. Potts, J. T. Saunders, and J. M. Wordie. Special attention was paid to the problems of cold storage. These meetings, which were inaugurated and are assisted by the Development Commission, are held periodically at the various marine laboratories and elsewhere.

THE opening meeting of the Illuminating Engineering Society on November 13 was, as usual, devoted to reports of progress and exhibits illustrating developments in lighting. Mr. Gaster, reviewing progress during the vacation, alluded to the appointment of a Committee on Illumination by the Department of Scientific and Industrial Research, and mentioned that the next technical session of the International Illumination Commission is to be held in Geneva in July next year. A conference dealing, among other matters, with industrial lighting, is being arranged by the International Labour Bureau of the League of Nations in Geneva in the same month. Reference was made to the newly-formed Association of Public Lighting Engineers as an illustration of the growing interest in illumination and the need of bringing the aims of the Society before a wider circle of the public.

This point was again emphasised in the report presented by the Committee on Progress in Lamps and Lighting Appliances, which described efforts being made to effect standardisation of lamps and fittings. Amongst other recent steps ten standard types of lamps suitable for automobile headlights, meeting the requirements of practically all British cars, have been evolved. Mr. L. E. Buckell showed some of the very large gas-filled electric lamps consuming 3000-4000 watts and other types with filaments specially designed for projector work. A new feature was the process for spraying bulbs with finely divided china clay; this gives a soft light and good diffusion, with an absorption estimated not to exceed 7 per cent. The sprayed surface is said to have good wearing properties, and it is believed that these lamps will prove useful in cases where they are unavoidably exposed to view in the direct range of vision and yet it is desirable to avoid glare. Miss Beatrice Irwin gave a demonstration of the colour filter system associated with her name, a variety of lighting units consisting of cylinders of hand-painted parchment paper in pleasing combinations of colours being shown.

LEAFLET R. 58 received from Messrs. Newton and Wright, Ltd., 471-3 Hornsey Road, N.19, describes the "Harley" unit for dental radiology. The chief feature of the apparatus is in the movements of the X-ray tube, which is a very important feature in practice. Flexibility is here combined usefully with rigidity, and arrangements are made which allow of stereoscopic radiographs being taken. The high-tension transformer is oil-immersed, and when in

action one pole is earthed; a separate transformer with the necessary adjustments for the control of the filament current of the Coolidge tube is supplied. In order to vary the penetration of the X-rays, four alternative voltages may be applied to the tube terminals. This appears to be an ample margin for the requirements of dental radiology.

MESSRS. C. F. CASELLA AND CO., LTD., 49 and 50 Parliament Street, London, S.W.1, have issued a new catalogue, No. 523, which contains particulars and illustrations of a very wide range of surveying and drawing instruments and appliances. Detailed specifications are given of the more important instruments manufactured by the firm. In the design of several of these, many improvements are embodied, which either give some additional facility to the user or increase the accuracy or length of life of the instrument. A notable addition to the list is the new double-reading micrometer theodolite, which has been designed for geodetic and exploration purposes where accuracy of the highest order is desired. In this instrument the diametrical points of the circle are brought together in one field by an optical arrangement. It is therefore possible to set the telescope on the object, take the readings of the bubbles and all four readings of the circle without moving from the front of the instrument. The length of time spent in taking a set of readings is thus considerably reduced. This improvement is accompanied by a reduction in the number of parts employed, and the possibility of the instrument being put out of adjustment is thereby diminished.

Our Astronomical Column.

REINMUTH'S COMET, 1923B.—The following two observations, both made at Königstuhl, are now to hand, the positions being referred to 1923.0:

	G.M.T.	R.A.	N. Decl.
Oct.	31 ^d 9 ^h 22.1 ^m	1 ^h 15 ^m 11.36 ^s	22° 26' 36.0"
Nov.	5 8 15.1	1 17 50.90	19 47 23.2

Mr. Waterfield states, as the result of an unsuccessful visual search, that the object is certainly fainter than the 11th magnitude. This faintness is probably the reason of the delay in obtaining a third observation.

THE NOVEMBER LEONIDS.—Mr. W. F. Denning writes: "Very stormy, unsettled weather" prevailed during the most of the period when the return of the November meteors was expected, and it was not possible to watch for the shower on several consecutive nights. Mr. I. P. M. Prentice, of Stowmarket, endeavoured to obtain an early observation of the shower on November 10. For that purpose he carried out a long watch of the heavens commencing at 5.55 G.M.T. and ending at 17.55 G.M.T. He recorded 82 meteors though the sky was partly cloudy at times. Six of the meteors seen were Leonids with a radiant point apparently at 145° +22°. If this position for the radiant is confirmed it will indicate that the Leonid radiant, similarly to that of the great Perseid shower of August, is a movable position which advances about 1° per day. On November 11, Mr. Prentice saw 35 meteors, but the sky became cloudy before 14.50 G.M.T. and watching had to be discontinued. At 12.38 G.M.T. he saw a bright fireball directed from a shower of Taurids. It would be

interesting to get another observation of this if other observers happened to be looking for Leonids on the night of November 11 at about 12.38 G.M.T."

THE EXTRAFOCAL METHOD OF STUDYING MAGNITUDES.—The advantages of this method are the practical equalisation of the size of disc for different magnitudes and elimination of the effect of peculiarities of images arising from defects in the objective. The quantity measured is simply the density of the image. Mr. Edward S. King (Proc. Nat. Acad. Sciences, U.S.A., Oct. 1923) communicates the results for 100 bright stars from Harvard observations. A yellow screen and isochromatic plates were used, thus giving photovisual magnitudes. The mean excess of the resulting magnitudes over the photometric ones is as follows: B -0.02, A0 0.00, F -0.10, G -0.15, K -0.16, M -0.20. The following colour-indices were deduced: B0 -0.23, A0 -0.02, F0 +0.25, G0 +0.88, K0 +1.28, M +1.87. These are independent of visual observations.

A rediscussion of the observations of Nova Aquilæ, 1918, when near its maximum brilliance, gives colour-index -0.19, instead of -0.35, published earlier. Mr. King also measured the colour-indices of the planets by the same method. The values are: Venus +0.91, Mars +1.45, Jupiter +0.96, Saturn (without rings) +1.22, Uranus 0.74. These accord well with the ruddy colour of Mars and the "sea-green" of Uranus.

The paper also contains new formulæ for the effect of phase-angle on the magnitudes.