

Current Topics and Events.

THE growth of our knowledge of stellar physics during the present century has been surprisingly rapid. It has arisen by combining the results of researches of most varied kinds. The older astronomy of position has afforded the data for the positions, distances, and motions of the stars, which were a preliminary to the establishment of the theory of giant and dwarf stars, and also to the detection of the possibility of finding parallaxes by the spectroscope, and so distinguishing the giants from the dwarfs. In another field, the discovery of radium, and radio-activity generally, has revolutionised ideas on the nature of the atom, and led to the detection of analogies between chemistry and dynamics. Prof. Eddington, whose lecture on "The Interior of a Star," delivered at the Royal Institution on February 23, is printed as a supplement to the present issue, is one of the leading pioneers in this field. His earliest astronomical work was concerned with stellar distances and proper motions; but he has recently worked more on the physical side. Prof. Eddington was one of the first to point out the importance of light pressure in causing the distension of giant stars, and also to suggest that the immense duration of their output of energy is explicable by their drawing on the store of energy in the atom. This was first offered as a tentative explanation, but Prof. Eddington now makes it definitely. A remarkable confirmation of the correctness of the accepted views on stellar physics was afforded by the close agreement of the diameter of Betelgeuse, as given by the interferometer, with that deduced from the study of the distribution of energy in the spectrum, which led to a value of the temperature and surface brightness.

THE approaching visit to London of Prof. H. A. Lorentz, of the Teyler Institute at Haarlem, and the University of Leyden, is being eagerly awaited by physicists. Prof. Lorentz is the *doyen* of mathematical physicists. In 1880 he developed from electromagnetic theory a connexion between refractive index and density (known by his name), which holds good through great ranges of density, though requiring a small correction for extreme states as recent experiments on carbon dioxide have demonstrated. At the present time, Prof. Lorentz is acclaimed in the main for the fundamental work he has done in connexion with the electromagnetics of moving bodies. In this work he has served as an intermediary between the old electromagnetics and the modern doctrine of relativity. Einstein's results agree mainly (though not exactly) with those which Prof. Lorentz had obtained, "the chief difference being that Einstein simply postulates what I have deduced with some difficulty and not altogether satisfactorily from the fundamental equations of the electromagnetic field" (Lorentz). Prof. Lorentz contributed to the explanation of the magneto optic phenomena discovered by Zeeman and others. "I may refer in the first place to the intensely stimulating influence of H. A. Lorentz's theories. It is difficult to find adequate words to express my indebtedness to

Lorentz's personal inspiration and to his theories" (Zeeman). Prof. Lorentz visited the British Association at the Birmingham meeting in 1913, and made important and guarded contributions to the discussion on radiation and the quantum theory. His first lecture in London is at 5.30 P.M. on May 17, at University College, Gower Street. Admission is free, without ticket. Three other lectures by Prof. Lorentz, at the same place, have been arranged to be delivered in the early part of June. He is also lecturing at Cambridge (Reid Lecture), at Manchester, and elsewhere.

SHORTLY after the death of Dr. W. H. R. Rivers in June last, it was suggested that the eminence of his services to science should be recognised by some form of memorial; but it was not found possible to take any further steps at the time. A few of Dr. Rivers's friends have now formed a small committee with the view of giving the proposal practical effect. Among those serving are: Sir Charles Sherrington, Sir William Ridgeway, Sir Humphry Rolleston, Sir James Frazer, Dr. Henry Head, Dr. A. C. Haddon, Mr. Henry Balfour, Prof. G. Elliot Smith, Dr. C. S. Myers, and Prof. C. G. Seligman. This committee has now issued an appeal for subscriptions to a fund of which Dr. L. E. Shore of St. John's College, Cambridge, acts as treasurer. The fund will be devoted to the promotion of those sciences in which Dr. Rivers was particularly interested, but the decision as to the manner in which this will be effected will rest with the subscribers, of whom a meeting will be summoned in due course. It is permissible to express a hope that the committee and subscribers will decide to devote the fund to some object which it is known that Dr. Rivers had closely at heart, such as, for example, the assistance of the publication of scientific memoirs for which ordinary scientific or commercial channels are not available on the ground of cost.

DURING the summer of 1922 a member of the Cambridge Natural History Society was in Vienna and made the acquaintance of Dr. Kammerer, who appeared to be willing to visit England, should an opportunity occur. After further correspondence with Dr. Kammerer, the matter was placed before the council of the society in March last, and it was then decided that Dr. Kammerer should be invited in the name of the society to give a lecture at Cambridge. The invitation was accepted by Dr. Kammerer, and the lecture is published elsewhere in this issue. All expenses of the journey were provided for by contributions from members of the society, and on April 25 Dr. Kammerer arrived in England, and has since been the guest of the society.

THE Croonian lecture of the Royal Society will be delivered on June 21 by Dr. F. F. Blackman, who will take as the title of his lecture "Plant Respiration as a Catalytic Process."

DR. JOHN PALIBIN, director of the Botanical Garden at Batoum, has accepted the post of assistant to the museum director in the principal botanical

garden of Petrograd, where he hopes to have more opportunity for those researches in palæobotany in which he has won distinction.

At University College, London, on Friday, May 11, the chairman of the College Committee (the Rt. Hon. the Viscount Chelmsford) is to unveil a tablet commemorating the munificent gifts for the new chemistry building made by Sir Ralph Forster, Bt.

A LOAN collection of pictures painted by Miss Edith Chesman in Mesopotamia will be on view in the North Gallery of the Imperial Institute from May 7 from 10 A.M. to 5 P.M. daily, except Sundays. Admission is free. The pictures, which are in oils and water-colours, are illustrative of life and scenery in Mesopotamia and include both portraits and landscapes.

A MASTER is required for service on the Colonial Government ship *Discovery*, whose duties will be mainly research in whaling in the Antarctic. Full information and forms of application are obtainable, by letter, from the Secretary, *Discovery* Committee, Colonial Office, S.W.1. No special form is necessary for candidates abroad. The latest day for the receipt of applications is May 31.

THE Air Ministry announces that the Royal Air Force pageant, which was instituted in 1920, will take place on Saturday, June 30, at the London Aerodrome, Hendon, by arrangement with the Grahame White Company. It is hoped that the King will be present. The pageant now affords the general public an annual opportunity of observing developments both on the flying and technical sides of the work of the Royal Air Force.

THE Faraday Society will hold a general discussion on "The Physical Chemistry of the Photographic Process" on Monday, May 28, in the Hall of the Institution of Electrical Engineers, Victoria Embankment, W.C.2. Prof. W. D. Bancroft, of Cornell University, will open the proceedings at 3 P.M. with an introductory address on "The Theory of Photography." This will be followed by detailed consideration of the subject, subdivided as follows:—(1) "The Physical Chemistry of the Vehicle and of the Emulsion"; (2) "Reactions in the Plate during Exposure"; (3) "Development and Characteristics of the Developed Plate"; (4) "Adsorption Reactions in Photographic Films." Each section will be introduced by a preliminary address and followed by general discussion. Among those who will read papers are Dr. T. Slater Price, Dr. F. C. Toy, Mr. Olaf Bloch, Mr. T. Thorne Baker, M. Clerc, Prof. Luther, and Prof. Goldberg. Several communications will be made from Mr. S. E. Sheppard and other members of the staff of the Eastman Kodak Company, and papers are also expected from Dr. Chr. Winther, Dr. Lüppo-Cramer, and Prof. L. Plotnikov. Between the afternoon and evening sessions a complimentary dinner will be given at the Hotel Cecil to Prof. Bancroft and the other guests. Members of the Chemical Society are invited to attend this meeting. Full particulars may be obtained from the Secretary

of the Faraday Society, 10 Essex Street, London, W.C.2.

THE New York correspondent of the *Times* states that Lieuts. Macready and Kelly completed a non-stop aeroplane flight across the United States from New York to San Diego on May 3. The distance traversed was approximately 2600 miles and the time is given as 26 hours 50 minutes 38½ seconds.

M. GEORGES BARBOT crossed and recrossed the English Channel on May 6 in a small monoplane fitted with a two-cylinder 15 h.p. engine, thus winning a prize of 25,000 francs offered by *Le Matin* for the complete journey. M. Barbot left the aerodrome at St. Inglevert at 6.20 P.M. and arrived at Lypne at 7.21 P.M.; the return journey was commenced at 8.1 P.M., and the aeroplane arrived over St. Inglevert aerodrome at 8.45 P.M.

WE learn from *La Geographie* for February that a wireless station has been erected at Mygbugten, on the east coast of Greenland, in lat. 73° 30' N., and has been functioning since last October. The station is due to the enterprise of the Norwegian Meteorological Service. Weather reports are sent by wireless *telegraphy to the station on Jan Mayen, and thence to Christiania*. The Greenland station and those on Jan Mayen, Iceland, Bear Island, and Spitsbergen almost encircle the Greenland sea.

At the Hull meeting of the British Association in September last there was a discussion in the Section of Anthropology upon the genuineness of some bone implements known as the "Holderness Harpoons" (see *NATURE*, October 7, p. 481, and December 2, p. 735). Mr. O. J. R. Howarth, secretary of the Association, writes to say that though several references have recently appeared to a committee of the British Association as having pronounced upon the question, no committee was appointed by the Association or its anthropological section to investigate this subject.

At the annual general meeting of the Manchester Literary and Philosophical Society held on April 24, the following officers and members of council were elected: *President*, Prof. H. B. Dixon; *Vice-Presidents*, Mr. T. A. Coward, Prof. A. Lapworth, Mr. C. E. Stromeyer, and Prof. F. E. Weiss; *Secretaries*, Dr. H. F. Coward and Prof. T. H. Pear; *Treasurer*, Mr. R. H. Clayton; *Librarians*, Mr. C. L. Barnes and Dr. W. Robinson; *Curator*, Mr. W. W. Haldane Gee; *Other Members of the Council*, Prof. W. L. Bragg, Prof. S. Chapman, Rev. A. L. Cortie, S.J., Prof. S. J. Hickson, Mr. F. Jones, Laura Start, Mr. R. L. Taylor, Mr. W. Thomson, and Mr. L. E. Vlies.

THE council of the Institution of Civil Engineers has made the following awards in respect of papers read and discussed at the ordinary meetings during the session 1922-1923: Telford medals to Mr. H. W. H. Richards (London) and Mr. E. O. Forster Brown (London); a George Stephenson medal to Mr. Asa Binns (London); a Watt medal to Mr. A. B. Buckley, jun. (Winchester); Telford premiums to

Mr. W. A. Fraser (Edinburgh), Mr. S. L. Rothery (Calexico, U.S.A.), Mr. Mark Randall (Johannesburg), and Mr. D. E. Lloyd-Davies (Cape Town); an Indian premium to Mr. D. H. Remfrey (Calcutta); a Manby premium to Mr. F. M. G. Du-Plat-Taylor (London); and a Crampton prize to Mr. F. W. Jameson (Kimberley).

AN appreciation of the scientific work and discoveries by Sir James Dewar was broadcasted by Prof. J. A. Fleming on May 4 from the London station 2 LO. Prof. Fleming first referred to Sir James Dewar's work on the liquefaction of air, oxygen, and hydrogen, and the invention of the silvered vacuum vessel for storing these liquids. Closely related with this work was the discovery of the use of charcoal cooled in liquid air for the production of high vacua. Sir James Dewar also made important discoveries in spectroscopy and in connexion with the production of physiological electric currents by the action of light. His work in chemistry contributed to the invention of cordite, while soap films and their behaviour in dust-free air occupied his attention until the last day of his working life. Sir James Dewar's investigations were undertaken in the first instance purely out of a disinterested desire to increase scientific knowledge, but the results have in nearly every case produced numerous beneficial and practical applications.

At the annual meeting of the members of the Royal Institution held on May 1, the following officers were elected: *President*, The Duke of Northumberland;

Treasurer, Sir James Crichton-Browne; *Secretary*, Sir Arthur Keith; *Managers*, Mr. S. G. Brown, Dr. J. M. Bruce, Sir Dugald Clerk, Prof. J. A. Fleming, Sir Richard Glazebrook, Earl Iveagh, Sir Alexander C. Mackenzie, Mr. Robert Mond, Sir Edward Pollock, Prof. A. W. Porter, Lord Rothschild, Sir David Salomons, Mr. W. Stone, Sir Alfred Yarrow, The Right Hon. Lord Justice Younger; *Visitors*, Sir Harry Baldwin, Prof. William A. Bone, Mr. A. Carpmäel, Dr. E. Clarke, Mr. E. Dent, Dr. T. W. Dewar, Mr. G. H. Griffin, Mr. W. E. Lawson Johnston, Col. F. K. McClean, Sir Malcolm Morris, Dr. W. Rushton Parker, Mr. W. Peacock, Major C. E. S. Phillips, Mr. H. M. Ross, and Mr. S. Skinner. Sir J. J. Thomson has been elected honorary professor of natural philosophy, and Sir Ernest Rutherford professor of natural philosophy. The Duke of Northumberland has nominated the following gentlemen as vice-presidents for the ensuing year: Dr. Mitchell Bruce, Lord Iveagh, Sir Edward Pollock, Lord Rothschild, Sir Alfred Yarrow, The Right Hon. Lord Justice Younger, Sir James Crichton-Browne (Treasurer), and Sir Arthur Keith (Secretary).

A CATALOGUE (No. 259) of books in all branches of chemical science and technology, including the textile industries and agriculture, has just been issued by Mr. W. Bryce, 54 Lothian Street, Edinburgh. It should be very useful for reference. The same bookseller also issues a short list of second-hand books in technology, the classics and general literature, surplus government stock, which are offered at greatly reduced prices.

Our Astronomical Column.

THE APRIL METEOR SHOWER.—Mr. W. F. Denning writes: "This event occurred on the nights of April 21-23. The weather, however, was not very favourable on the night of expected maximum, April 21, and few meteors could be seen owing to clouds. The special display of Lyrids supplied nearly half the total number of meteors observed on the three nights, and the radiant point was in the usual position at about $272^{\circ}+33^{\circ}$.

"It sometimes happens that when the Lyrids are not very abundant, meteors generally are very scarce, and this appears to have been the case on the recent occasion, the hourly rate of apparition being only 3.

"There are a considerable number of radiant points in activity at this period of the year, but the great majority of them are extremely feeble, and an observer must watch the sky for a long period before they may be recognised. Two meteors seen on April 20 last were each recorded at two stations and the paths indicate radiants at $271^{\circ}+35^{\circ}$ and $310^{\circ}+59^{\circ}$."

TEMPERATURE AND DENSITY OF THE UPPER ATMOSPHERE DEDUCED FROM METEORS.—Prof. F. A. Lindemann and Mr. C. M. Dobson contribute a paper on this subject to Proc. Roy. Soc. (Series A, vol. 102, No. A 717). They deal with the large number of doubly observed meteors discussed by Mr. Denning, and give reasoning which leads to the conclusion that during most, if not all, of the meteor's visible track, the molecules of air impinge on a layer of compressed

air in front of the meteor. Evaporation goes on from the surface of the meteor, and in general the meteor is wholly consumed long before reaching the ground. Long-enduring trains are explained as the slow recombination of ions separated by the energy of the meteor. The meteors are shown to be very small particles. One as bright as a star of the first magnitude would be 1 mm. in diameter. One as bright as the moon would be 2.5 cm. in diameter (mass 62 gm.). Discussion of the observed phenomena on these lines leads to determinations of the temperature and density of the air at different heights. It is concluded that the isothermal layer, already discovered by *ballon sondes* to extend to a height of 25 km., goes on up to 50 km.; but that above that height the temperature again rises to 280° or 300° abs. The density of the air at 100 km. (about the lower auroral limit) comes out 100 times that previously assumed; it is suggested that it may not be hopeless to reproduce the auroral spectrum in the laboratory, if the corresponding density is 10^{-8} instead of 10^{-10} .

It is suggested in explanation of the high temperature of the upper air that it is largely composed of ozone, which is heated by the infra-red radiations from the earth.

Prof. Lindemann describes in Mon. Not. R.A.S. for January a method which he is using of photographing meteors simultaneously at stations some distance apart, so as to get their height very accurately in order to apply a more rigorous check to his conclusions.