

Current Topics and Events.

ARRANGEMENTS are being made by a committee convened by the Royal Society to celebrate on June 26 the centenary of Lord Kelvin's birth. The committee is composed as follows: Sir Richard Glazebrook (chairman), Prof. F. O. Bower (Royal Society of Edinburgh), Mr. W. R. Cooper (Physical Society), Sir John Dewrance (Institution of Mechanical Engineers), Mr. D. N. Dunlop (hon. secretary), Mr. F. Gill (Institution of Electrical Engineers), Sir Donald MacAlister (Vice-Chancellor of the University of Glasgow), Sir Charles Morgan (Institution of Civil Engineers), The Duke of Northumberland (Institution of Naval Architects), Dr. E. C. Pearce (Vice-Chancellor of the University of Cambridge), Dr. Alexander Russell (Institution of Electrical Engineers), Mr. F. E. Smith (Royal Society). A large number of Dominion, American and foreign men of science and engineers will be attending conferences at the British Empire Exhibition at that time, and July 10 and 11 have been selected as convenient dates for the Kelvin centenary celebrations. These will include a meeting for the receipt of addresses from delegates, at which Sir J. J. Thomson will deliver a memorial oration, and a dinner at which the Rt. Hon. Earl Balfour has promised to preside. There will also be an exhibition of Kelvin apparatus, and probably a memorial volume will be prepared containing the addresses and speeches delivered, with some account of the apparatus exhibited. It is hoped that the president and council of the Royal Society will receive the delegates during the celebrations at the rooms of the society in Burlington House.

THE preliminary programme of the Empire Mining and Metallurgical Congress, to be held at the British Empire Exhibition on June 3-6, has just been issued. The congress is intended to bring together all concerned in the development of the various branches of the mineral industry of the British Empire, and is convened by the Institution of Mining and Metallurgy, the Institution of Mining Engineers, the Institution of Petroleum Technologists, the Iron and Steel Institute, the Institute of Metals, the Mining Association of Great Britain, and the National Federation of Iron and Steel Manufacturers. Invitations have been issued to the corresponding Institutions in India, in the British Dominions and Colonies, and have been enthusiastically accepted. The work of the congress will be divided into four sections: mining, subdivided again into coal mining and metalliferous mining; petroleum; metallurgy of iron and steel; and non-ferrous metallurgy; in these the more important problems connected with their various branches of technology will be discussed. It is also proposed to take advantage of this unique opportunity in order to lay the foundation of an Empire Council of Mining and Metallurgical Engineering Institutions, the main object of which would be to create and maintain throughout the British Empire the highest possible standard of scientific and technical efficiency amongst all those engaged in the mining and metallurgical

professions. It has long been felt by mining engineers that some means is required by which the public could identify those whose education and experience had qualified them to give trustworthy advice on mining and metallurgical propositions, and it is hoped that an Empire Council will attain this object by establishing a register of qualified mining and metallurgical engineers of the British Empire. Whether this latter part of the programme be carried out or not, it is evidently all to the good of the mineral industries of the great British Empire that representatives of every part thereof should meet in conference with the object of advancing the status of the industries in which they are interested.

IN a paper read before the Illuminating Engineering Society on January 22, Mr. J. S. Dow pointed out the varied opportunities for research in connexion with the applications of artificial light. There are certain outstanding problems such as the selection of an ideal standard of light, series of standard colours and methods of colour-nomenclature, and the definition of "white light," which require much time for solution. The same applies to many questions involving co-operation between the physicist and the physiologist, *e.g.* the effects of light of different colours on the eye and the phenomena classed as "glare." Other questions, such as the conditions of lighting necessary in various industries, cannot be dealt with properly by individuals, but need the efforts of joint committees, on which both the lighting expert and the user should be represented. Considerable progress has been made in instruments for the measurement of illumination, but the use of a battery and glow-lamp is a drawback to the average user; in future possibly the problem may be solved by the use of photo-electric cells in some form of physical photometer, calibrated in the laboratory but relieving the eye of the observer from the task of making a photometric balance. Hitherto attention has been devoted mainly to intensity of light. But our methods of controlling the colour of light emitted are progressing, and the various effects and applications of special forms of radiation form a fascinating field for study. In conclusion the author pleaded not for undue organisation, but co-ordination of research—a condition specially desirable in connexion with the subject of lighting, with which so many different experts are concerned.

IN the course of his introductory address at a meeting of the Royal Microscopical Society (Industrial Applications Section) on January 23, the chairman, Sir Robert Hadfield, discussed the use of the microscope in metallurgy, and its application to the study of the structure of metals. Special reference was made to the effects produced on the physical properties of various kinds of steel by what may be termed "cold treatment." If manganese steel (with which Sir Robert's name is so intimately associated) be stressed so as to cause deformation, some change of structure, probably a change of crystallisation, is

produced without any chemical action or heat treatment. As a result of this change a remarkable alteration occurs in the physical properties, the ball hardness of the metal rising from 200 Brinell ball number to about 600. Such a change in physical structure is not obtained in mild steel, carbon steel or other alloy steels when similarly treated; nor does it occur in these or in manganese steel when subjected to the stresses which must occur when the metals are brought to the lowest temperature obtainable, or put under extremely high hydrostatic pressure. In the study of such changes, which are not indicated in any way by chemical examination, the microscope has proved of the utmost service. In referring to high power photomicrography of opaque metallurgical specimens, Sir Robert disputed the idea that photomicrographs of higher magnification than 1500 are of little or no value, and directed attention to those taken in his own laboratory at a magnification of 8000, and more recent photomicrographs obtained at a magnification of 9000 by an American worker, F. F. Lucas, who has shown that good definition, resolution and penetration can be obtained at those high powers.

ON January 23, Mr. W. B. Hardy formally declared open a laboratory for research in colloid chemistry and physics which has been founded in the University of Manchester by the generosity of a number of Lancashire firms. This laboratory, which has been named after Thomas Graham, the founder of the science of colloids, consists of two large and three small rooms, and is being specially equipped for the proposed course of research. It has been put in the charge of Mr. D. C. Henry, of Trinity College, Cambridge, who has been for two years a lecturer in chemistry at the University of Manchester. Mr. Hardy's available time was unfortunately much curtailed by the disorganised train service, but he reviewed the life and work of Thomas Graham, pointing out that in his time, as in that of William Harvey two centuries earlier, there was no royal road to scientific research work; in the absence of scholarships, fellowships and grants, nothing short of a passion for knowledge would lead a man along the arduous path of research. Colloid chemistry was defined by Mr. Hardy as essentially a kinetic science, dealing with the slimes, amorphous jellies and non-crystallising precipitates which classic chemistry throws down the sink; "it faces, as no other science does, the material facts of existence, and for that reason it is of tremendous service to the biologist and to the industrialist." The laboratory was thrown open for inspection after the conclusion of Mr. Hardy's address.

PROF. C. G. BARKLA will deliver the seventh Silvanus Thompson Memorial Lecture of the Röntgen Society at the Institution of Electrical Engineers on Tuesday, April 1.

THE Marquess of Salisbury has consented to accept the office of president of the thirty-fifth Congress of the Royal Sanitary Institute, to be held at Liverpool on July 14-19.

THE annual dinner and reunion of the Institution of Electrical Engineers will be held at the Hotel Cecil,

Strand, W.C., on Thursday, February 21, at 7 P.M., under the presidency of Dr. Alexander Russell, supported by the Council.

THE Council of the Yorkshire Philosophical Society, York, has recently elected as honorary members of the Society Mr. Charles E. Keyser, president of the British Archæological Association, Prof. Percy F. Kendall of Leeds, and Mr. Arthur H. Smith, keeper of the Greek and Roman Antiquities in the British Museum, London.

THE sixth of the public lectures on "Physics in Industry" arranged by the Institute of Physics will be delivered on Wednesday, February 6, at 5.30 P.M., by Prof. C. H. Desch, who will take as his subject "The Physicist in Metallurgy." The lecture will be delivered in the rooms of the Chemical Society at Burlington House, Piccadilly, W.1.

THE forthcoming British Industries Fair, organised by the Department of Overseas Trade, Old Queen Street, Westminster, S.W.1, will be held at the White City, London, on April 28-May 9, and at the Castle Bromwich Aerodrome, Birmingham, on May 12-23. As in previous years, heavy products, such as engineering appliances and building materials, will be shown at the Fair to be held in Birmingham, the lighter commodities being displayed at the White City.

THE *Times* correspondent at Copenhagen announces that the International Education Board founded by Mr. John D. Rockefeller a year ago has made a grant of 8000*l.* to Prof. Niels Bohr for the development and equipment of his laboratory. The report refers to Prof. Bohr as having "lately discovered the new element 'hafnium,'" but this, of course, is incorrect. The discovery was made by Dr. D. Coster and Prof. G. Hevesy, though the actual work was done in Prof. Bohr's laboratory.

IN connexion with the forthcoming expedition of the *Discovery* for research into whaling and other scientific work, applications are invited for the posts of surgeon, zoologists, and of a person qualified in chemistry and physics. Forms of application are obtainable upon written application to the Secretary, *Discovery* Committee, Colonial Office, Downing Street, S.W.1. The forms should be returned by February 14, except in the case of candidates abroad, to whom an extension may be allowed.

ACCORDING to the Berlin correspondent of the *Times*, a violent explosion occurred on January 24 at the Leuna Works, a large chemical manufacturing concern near Merseburg, in Saxony. The works, which were producing synthetic ammonia and nitrate during the War, had been engaged on the preparation of artificial manures, and it is stated that the explosion took place in the department where ammonia products were manufactured, a high-pressure container having blown up. At least six men appear to have been killed and a number severely injured.

THE gold medal of the Royal Astronomical Society has been awarded by the council to Prof. A. S. Eddington, for his work on star-streaming, on the

internal constitution of a star, and on generalised relativity. In accordance with a decision of the council, the gold medal will in future be presented, not at the annual meeting, but at a later meeting. This will be in general in June. At the annual meeting this year, to be held on Friday, February 8, Sir Frank Dyson, Prof. Turner, and Mr. Evershed will speak on the progress of astronomy, and the president, Dr. J. L. E. Dreyer, will give a short address on the desirability of a new edition of Isaac Newton's works. After the annual general meeting Mr. F. W. Aston will give a short address on isotopes.

ON December 26, 1898, Pierre Curie, Madame Curie, and M. Bémont announced to the Academy of Sciences of Paris the discovery of radium, and in the issue of *La Nature* for January 19, M. Vigneron gives an account of the steps taken to celebrate in a fitting way the twenty-fifth anniversary of the event. Under the presidency of M. Poincaré, a meeting was held in the grand hall of the Sorbonne, and addresses were given by Profs. Perrin and Lorentz, M. Debierne and Dr. Réclère, with demonstrations of some of the principal properties of radium. The addresses constitute a complete history of radioactivity and an abstract is given by M. Vigneron.

ON Thursday and Friday, January 10 and 11, the seventh joint meeting of the Challenger Society and representatives of Marine Biological Stations was held in London under the chairmanship of Mr. W. B. Hardy and Prof. E. W. MacBride. The meeting was attended by about fifty representatives of various institutions, etc. Papers were read by Messrs. H. A. Baylis, W. T. Calman, F. M. Davis, E. Ford, H. W. Harvey, J. R. Lumby, H. G. Maurice, A. Meek, N. Mackintosh, and A. D. Ritchie; and specimens were exhibited by Messrs. H. A. Baylis and C. Tate Regan. Special attention was paid to recent investigations of the bottom fauna of the North Sea and Plymouth areas, and to the hydrography of the North Sea and the English Channel. An exhibition of sounding and other deep-sea instruments, some of which were loaned by the Telegraph Construction and Maintenance Co., was arranged at the Science Museum.

THE National Physical Laboratory, Teddington, undertakes the official testing of watches, and the highest number of marks awarded up to December 1923 has been given to a Solvil watch made by M. Paul Ditisheim, of La Chaux de Fonde, Switzerland. This watch, which gained 97 marks out of a possible total of 100, is a plain lever going barrel two-day "deck watch" of robust construction. It is considered that on account of variations in humidity and atmospheric pressure, and also in the recording instruments and the observers themselves, no watch could in practice gain more than 98.5 marks. The achievement of 97 per cent. is therefore noteworthy. In 1902 the highest figure attained was 92.7 marks. In 1903, M. Ditisheim was awarded 94.9 marks, and by successive stages the number of marks were increased until, in 1919, 96.9 was reached. With the new record, M. Ditisheim has thus for twenty-one

years secured the highest number of marks among more than 18,000 watches tested in the National Physical Laboratory trials.

THE first medical congress to be held in Australasia under the sole auspices of the British Medical Association met in Melbourne last November, and an account of the meeting is appearing in the *British Medical Journal*. The president was Mr. G. A. Syme, and the opportunity was taken to open the new anatomy department of the University of Melbourne, the ceremony being performed by Sir William Macewen, and to unveil the war memorial dedicated to the memory of the forty-three members of the Victorian Branch of the British Medical Association who lost their lives in the War. Many papers of scientific value were contributed, and the president in his address dealt in particular with the public health of the Commonwealth. It was announced that the Federal Committee of the British Medical Association had instituted a medal to be given for meritorious service to the Association, the profession, and the community, and the first two awards were made to Dr. W. T. Hayward and Dr. R. H. Todd.

AN international conference on applied mechanics is to be held on April 22-26 at Delft, Holland. Work will be divided among three sections: (1) mechanics, (2) theory of elasticity, and (3) hydro- and aerodynamics (including aeronautics). Two days of the meeting will be occupied by general sessions and two by sectional meetings for the reception of original communications. The following are among the subjects to be considered at the general sessions: stress problems, theory of rupture, friction and lubrication, fluid motion, turbulence and the dynamics of the atmosphere. The executive committee organising the conference consists of Profs. C. B. Biezeno, J. M. Burgers, and J. A. Schouten (Delft), and Dr. E. B. Wolff (Amsterdam), and among those who have signified their approval of such a conference are Profs. J. S. Ames, L. Bairstow, V. Bjerknes, E. G. Coker, P. Forchheimer, T. Levi-Civita, L. Prandtl, and G. I. Taylor. Those intending to participate in the meeting should communicate with Prof. J. M. Burgers, Delft, Nieuwe Laan 76, before February 15.

PROF. HARRY N. HOLMES, chairman of the Committee on Colloids of the United States National Research Council, informs us that the papers and discussions presented at the first annual Colloid Symposium, held at Madison, Wisconsin, in June 1923, have been published by the Department of Chemistry of the University of Wisconsin. Copies may be obtained at the cost of publication (2.75 dollars per copy, including postage), from the University Co-operative Company of Madison, Wisconsin.

A MEMORIAL publication to commemorate the centenary of the birth of Mendel, entitled "*Studia Mendeliana ad centesimum diem natalem Gregorii Mendelii a grata patria celebrandum adiuvante ministerio Pragensi edita*," is in preparation. The editorial part of the book is in Latin, the scientific treatises in the languages of the respective authors.

Scientific workers of all nationalities have contributed to the volume; the British contributors are Dr. W. Bateson and Prof. R. C. Punnett. The firm of "Typos," Brno, Czecho-Slovaquia, Rennergasse 22, is producing the volume.

THE fifth Report on Colloid Chemistry drawn up by a Committee of the British Association has been issued through H.M. Stationery Office by the Department of Scientific and Industrial Research at a price of 2s. 6d. It contains six papers: on surface tension, by Dr. A. Ferguson; on collagen and gelatin, by Prof. Procter and Mr. J. A. Wilson; on colloid phenomena in bacteriology, by Dr. E. K. Rideal; on wetting power, by Mr. W. H. Nuttall;

on ink, by Mr. C. Mitchell; and on artificial silk, by Mr. E. Wheeler. It also contains an index to the five Reports which have now been issued. The fifth Report appears to mark the completion of this series of reports, since it is stated to be "the last of the series."

UNDER the title of "A Romance of the Rostrum," Messrs. H. F. and G. Witherby will shortly publish by subscription a limited edition of a history of Stevens's well-known auction rooms and particulars of some of the sales there during the past hundred years. The volume has been compiled by E. G. Allingham, Lord Rothschild contributes a preface, and Mr. Henry Stevens personal reminiscences.

Our Astronomical Column.

ANOTHER EINSTEIN ECLIPSE RESULT.—Mr. G. F. Dodwell, of Adelaide Observatory, observed the total eclipse of September 1922 at Cordillo Downs in Central Australia. The station was difficult of access, the last 400 miles being traversed on camels across desert country. Yet Mr. Dodwell made two expeditions there, the second being some months after the eclipse, to obtain check plates of the stars after the sun had moved away. The photographic apparatus consisted of a doublet lens lent by Prof. Curtis; its scale was scarcely adequate for the problem, but the conditions of transport precluded very heavy instruments.

A check field was selected a few degrees distant from the eclipsed sun; an exposure was made on each plate on both the eclipse field and the check one; the same procedure was followed on the control plates taken some months later. It is thus possible to eliminate errors due to distortion of the field by the lens, and indeed all errors that can be presumed to follow the same laws on both occasions. The plates were measured at Greenwich by Mr. C. R. Davidson, who announced the results at the Royal Astronomical Society on January 11. The separate results for the different plates had a wide range for the shift at the sun's limb; the extremes were 0.7" and 2.4". The mean of all is 1.77", practically Einstein's value, but the probable error is 0.5". The result, taken alone, would scarcely be decisive as between the Einstein shift and the half shift, but it adds further weight to the values obtained by the Lick Observatory and the Canadian expedition.

THE COMPANION OF MIRA CETI.—It appears from *Pubns. Ast. Soc. Pacific* (Dec. 1923) that Dr. A. H. Joy suggested to Prof. Aitken on October 6 the search for this companion. He had noticed a sideways displacement of the peculiar spectrum of bright hydrogen and helium lines which comes up at minimum. He suspected that this might arise from a close companion star in P.A. 135°. October 19 was the first day on which seeing conditions permitted an examination with the 36-inch telescope. The companion proved to be an easy object, 0.90" distant in P.A. 130.3°, and $\frac{3}{4}$ mag. fainter than Mira, which was then at minimum (mag. 9.2). "According to Joy, the companion has a spectrum of early type with excessively strong H β and H γ and fairly strong λ 4471 and H and K of calcium." The companion is photographically brighter than Mira at minimum, which explains the almost total disappearance of the M-type spectrum at that time. Its discovery also necessitates the rediscussion of Mira's light curve. It must be half a magnitude fainter at minimum than was heretofore thought, as the joint light of the pair has been measured.

It is noted that the companion has presumably the same proper motion as Mira, since the latter is moving

0.23" per annum towards P.A. 186°, so otherwise the distance 10 years ago would have been more than 3". It remains a mystery why the companion was not seen during the many occasions in recent years when Mira was examined by Burnham, Barnard, Doolittle, and many others. It may be itself variable, but its spectral type does not make this likely.

Van Maanen found a negative parallax for Mira: it is suggested that distortion of the image by the presence of the companion may explain this. It will be seen that the discovery raises many interesting questions, and may be said to open a new chapter in our knowledge of this "wonderful" star.

OCCULTATION OF A STAR BY JUPITER.—Very useful predictions of occultations of stars by planets are made by Mr. L. J. Comrie.

That of B.D. -14° 4045 on May 7 last was observed at Johannesburg by H. E. Wood and W. M. Worsell (*Union Observ. Circ. No. 58*). The observations support the presence of an extensive cloud-laden atmosphere in Jupiter. Both disappearance and reappearance were gradual, and accompanied by well-marked fluctuations of light; at the last glimpse at disappearance and the first at reappearance the star appeared "embedded" in Jupiter's disc.

The disappearance was at a point in the South Tropical Belt, the reappearance just outside the Belt to the north. Mr. Worsell estimated both phases earlier than Mr. Wood, by 8 seconds at disappearance, and 14 seconds at reappearance. Jupiter was moving 0.3" per minute.

AN INTERESTING ALGOL VARIABLE.—The naked-eye star in Lynx, Boss 1607, R.A. 6^h 20^m, N.Decl. 56° 20', normal magnitude 5.75, was found by Adams in 1911 to be a spectroscopic binary showing only one spectrum. An article by K. F. Bottlinger and P. Guthnick (*Astr. Nach. 5263*) describes researches made on it with the photo-electric cell at the Babelsberg Observatory, Berlin, beginning February 6, 1923 (on which date a principal minimum occurred). They find that it is an eclipsing variable, the period being 9.944 days, according to the spectroscopic results; an addition of 0.0004 days to the period is suggested by a Potsdam observation of November 5, 1899, when the star was abnormally faint, and presumably near principal minimum. This minimum lasts at most 0.9 day and the loss of light is at least 0.36 magnitude. The secondary minimum has not yet been certainly detected; the loss of light is estimated to be at most 0.02 magnitude, so that there is great disparity in brightness. Further observations are necessary before the elements of light-variation can be accurately determined. Dr. Joel Stebbins had already directed attention to the hopeful field which spectroscopic binaries offer to students of light-variation.