

## News and Views.

THE Prime Minister is one of the all too rare administrators who fully appreciate the importance of the part played by science in modern life, and his sympathies in this connexion found expression in the address with which he opened the Optical Convention at South Kensington on April 12. In pointing out the vital rôle of optical science in the everyday life of peace no less than of war, he gave as a homely but arresting illustration the fact that even a glass of beer depends for its satisfactory manufacture on the use of at least three optical instruments—the microscope, the polarimeter, and the refractometer. He added that in the last century British optical work was predominant in the world's industry, but during its closing years the industry was nearly overwhelmed by foreign competition, especially on the part of Germany. In that country optical manufacturers at that time enjoyed three great advantages: (1) a stronger tendency amongst German than among British industrialists to invoke the aid of scientific research; (2) the demand for optical goods created by the existence of a large standing army; and (3) a protective tariff. At the end of the War, which demonstrated the danger of allowing this key industry to atrophy, the Government of the day decided that its fate must no longer be left to chance, and introduced the two remedies of 'safe-guarding' and a money grant allotted through the Department of Scientific and Industrial Research. Since the War, several new difficulties have had to be faced by the optical industry—a general depression of trade, large surplus stocks of optical material, and the abnormal rates of exchange which made foreign competition acute. In the Prime Minister's view, the Exhibition indicated that in spite of these difficulties the quality of British optical manufactures has again been raised to the highest level of achievement.

AMONG the varied topics touched upon by the Astronomer Royal in his presidential address to the Optical Convention, delivered on April 12, not the least interesting was the part which British optical designers and manufacturers have played in providing the instruments with which outstanding discoveries have been made in the history of astronomy. Thus the fact that cross-wires could be inserted in the Kepler telescope was first noted by Gascoigne; the possibility of making achromatic combinations of crown and flint glass was discovered by Chester Moore, and re-discovered and published by Dollond, and for a time the manufacture of these was an English monopoly; but in the earlier part of the nineteenth century the industry was crushed by an exorbitant tax on flint glass. In due course this was removed, however, and in the second half of the century British opticians played their part in the provision of objectives of increasing size. A 40-inch refracting telescope is now being constructed in England for Russia. As regards reflecting telescopes, the art of grinding and polishing mirrors was due to Newton, and the parabolic mirror to Hadley. The great development of the reflecting telescope in the second half of the

eighteenth century was the work of Sir William Herschel. The silvered mirror was a German invention, but was first constructed on a large scale by Dr. Common and Sir Howard Grubb. Good work by British firms was also described in connexion with astronomical photography: for example, an English amateur, Franklin Adams, with a lens made by H. D. Taylor, has photographed the whole sky in 206 exposures. As regards instruments for stellar spectrography, it is of interest to learn that the échelon spectroscope is made only by a British firm.

THE breakdown in the negotiations between Mr. John D. Rockefeller and the Egyptian Government over the terms of the proposed gift by the former of a sum of ten million dollars for the construction and maintenance of a new archæological museum and institute at Cairo does not come altogether as a surprise. For some time past the Egyptian public and its representatives have tended to become increasingly assertive of their prerogatives in relation to foreigners engaged in archæological research within their jurisdiction. The official action which interrupted the excavation of the tomb of Tut-ank-Amen, merely gave effect to a widespread and growing feeling among the Egyptians which was brought to a head by methods of securing publicity which many archæologists and others felt to be ill-judged. Undoubtedly among the extremists some would have wished to see Egyptian archæology for the Egyptians as the ruling principle.

IN the present case it has been stated that difficulty has arisen over the composition of the committee in whom control of the museum and institute is to be vested for a period of thirty years. While Mr. Rockefeller has explained that this provision is to allow time for a generation of trained Egyptians to grow up who would be fully qualified to take over the custody of the national treasures, the Egyptian Government objects to management by a committee on which two Englishmen, two Frenchmen, and two Americans would sit with two Egyptians only, even though one of these should be the chairman of the committee. Apart from the desire of every archæologist that the advantage to scientific research which must follow from Mr. Rockefeller's munificent gift should not be endangered, the importance of Egypt in the history of civilisation gives it a position which is unique and of universal moment. Its records and cultures justly demand the highest skill in investigation, in interpretation, and in preservation. To take measures to secure such skill is a duty incumbent on those in authority, which transcends the bounds of nationality.

THE airship *Norge* arrived at Pulham on April 11 from Rome, en route for Oslo, where a mooring mast is available, and Spitsbergen, where a mast and partial shelter are being prepared. From Spitsbergen an attempt will be made to transnavigate the north polar regions. The *Norge* was built to the designs of Col. Nobile, in the Italian State Airship Factory at Rome. It is a semi-rigid airship of displacement 20 tonnes, length 106 m., height 26 m., width 9.5 m.,

power  $3 \times 190$  kw., maximum speed 100 km. per hour. The direct distance from Rome to Pulham is about 1250 km., but the actual course through the Valley of the Garonne, between the Pyrenees and the extensive highlands of Southern France was about 2250. Thanks to favourable meteorological information, the airship did not re-fuel at Rochefort on the west coast of France, but continued the flight to Pulham, covering the 2250 km. without stop in 30 hours, giving an average speed of 75 km. per hour, a very satisfactory performance. The co-latitudes of the most northerly points of Spitsbergen and Alaska are about  $10^\circ$  and  $20^\circ$ , and the polar distances are therefore about 1000 km. and 2000 km. respectively. The transnavigation of 3000 km. of polar wastes without the possibility of intermediate landing and without meteorological information seems a bold undertaking; but it is not in the nature of pioneers to count risks in relation to the results obtainable, and it may be hoped that a combination of favourable circumstances will bring the maximum possible success to these adventurers in the most modern style.

ON April 8 Mr. S. Mavor read a valuable paper to the Institution of Electrical Engineers on the applications of machinery at the coal face. He pointed out that, in mining, labour accounts for 75 per cent. of the total costs of production. Many palliatives of the existing situation have been suggested, but, apart from increasing the number of working hours, the only way to effect a substantial increase of the output per man and a consequent reduction of costs is the systematic application of labour-saving machinery. In England the proportion of machine-cut coal to the total output is 14 per cent., but in Scotland the proportion is 47 per cent. The difference is due partly to economic pressure compelling a reduction in the costs of production, but mainly to the fact that electricity can be applied safely at the coal face in most of the Scottish mines. In Scotland more than 93 per cent. of the coal cutters in use are electric, the remainder being compressed air machines.

A VERY important factor in the rapid extension of machine mining in the United States is that the comparative freedom from gas in the mines renders electricity permissible. In Scotland, however, the rate of increase during recent years in the proportion of machine-mined coal has been even greater than in the United States. Mr. Mavor advocates intensive mining on the unit system. The methods must be standardised and a daily cycle of operations established, so that the work becomes comparable to repetitive processes in workshops. The principles which have so greatly increased the productivity of labour in other industries should be applied to mining organisation and operations. The output per underground worker is too low, therefore too many men are in the industry, and hence wages are low and costs are high. By mechanical and electrical aids to production the output per man can be increased, wages and the status of the miner can be raised, and the cost and price of coal can be reduced.

THE intimation that Mr. Alan A. Campbell Swinton is retiring from the electrical and general consulting engineering practice that he has carried on for the past thirty-seven years at 66 Victoria Street, Westminster, will not come as a surprise to those who are acquainted with his activities in other directions. Last year his failing health caused grave anxiety to his friends, and they will be glad to know that it is now restored sufficiently to enable him to continue his special consulting work and his electrical and engineering directorships. His address, as formerly, will be 40 Chester Square, S.W.1. There are few men who have maintained touch for so long and so intimately with so many learned societies, technical institutions, social clubs, and commercial administrations. It is of interest to recall that Mr. Swinton was one of the earliest workers with X-rays; and we believe that the X-ray photograph of a human hand, published in *NATURE* of January 23, 1895, with an article by Mr. Swinton and a translation of Prof. Röntgen's paper "On a New Kind of Rays," was the first radiograph reproduced in Great Britain. The lecture which Mr. Swinton gave at the Royal Society of Arts a few months ago upon persons of distinction in the world of science and engineering, will always be remembered as a valuable and amusing contribution to the history of the scientific men of his time. His own part in the advance of electrical science and electrical industry, as a liaison officer between scientific, engineering, and commercial enterprises, has been of considerable value, and good wishes from all these centres of progress will go with him in the comparatively restricted activities which he now contemplates.

THE problem of stage lighting, discussed at the meeting of the Illuminating Engineering Society on March 29, is one in which artistic perceptions and knowledge of scientific principles need to be carefully blended. Mr. H. Lester Groom, in an introductory paper, reviewed recent progress in the design of stage-lighting apparatus, referring particularly to the 'cyclorama' as one of the most important developments during recent years. By its aid the stage is provided with an artificial horizon, and clouds, storms and atmospheric phenomena can be imitated with a fidelity unrealisable in the past. It was mentioned that, on the Continent, cinema theatres are now beginning to introduce such apparatus as an auxiliary to the showing of films, and it forms a valuable aid, provided the dimensions of the stage enable a proper perspective to be obtained. The consumption of energy for the complete apparatus ranges from about 20 to 100 kw. according to the size of the theatre. Other interesting applications of scientific principles include the use of changing coloured light to bring about apparent transformations in scenery, the applications of ultra-violet light impinging on dresses of dancers impregnated with fluorescent solutions, and the possibility of projecting luminous stage scenery instead of using painted canvas. Recently devised apparatus enables the colours to be blended and graduated at will, and any design gradually built up to suit the scenic artist; in

addition, the method has the advantage that the contrasts are more vivid—in the same manner as occurs when a lantern slide is substituted for a photographic print. The discussion raised a number of interesting points, such as the desirability of promoting highly diffused illumination and 'soft' shadows, and the difference in the sharpness of definition of objects illuminated respectively by red and blue light.

IN view of criticisms levelled against the proposed expenditure of the Boxer indemnity on Chinese education, Mr. Harold Balme's account of educational progress in China under the Republic, in the *Nineteenth Century and After* for April, is opportune. Under the old regime the enthusiasm for learning which was characteristic of the Chinese, or at least such of them as had the leisure for its pursuit, was accompanied by a supreme contempt for the knowledge of the foreigner. Owing to several factors, and particularly to the influence of missionary schools and colleges and of such Chinese as have been trained abroad, this spirit has now disappeared. The old private school with its purely literary training was abolished in 1902. Its place has been taken by 200,000 Government and private schools of all grades, offering modern courses to some seven million scholars of both sexes, and staffed with teachers mostly trained along modern lines. Since 1912, when the new Republican Government reformed the educational system, education has gone forward by leaps and bounds. The difficulty of securing trained teachers has been one of the gravest of a number of causes of difficulty; but this is now being met by the output from the training colleges, of which Mr. Balme speaks highly from personal knowledge. Associations for the reform of education have been formed throughout the country, of which the most important is the National Association for the Advancement of Education. It is significant that these associations have welcomed and invited expert advice from outside China—a fact which augurs well for any system of co-operation between West and East on a permanent basis which it may be possible to set up in the future.

WHAT is described as the greatest live game collecting expedition ever attempted is being sent out by the Smithsonian Institution, in co-operation with Mr. Walter P. Chrysler, the motor car manufacturer, to British East Africa, for the primary purpose of obtaining living examples of African big game and other animals for exhibition in the National Zoological Park at Washington. The expedition will be under the leadership of Dr. William M. Mann, the Superintendent of the National Zoological Park; and other members of the party include Mr. Arthur Loveridge, of the Museum of Comparative Zoology at Harvard, who, as a former game warden in Tanganyika Territory for eight years, possesses a peculiarly intimate knowledge of the country; Mr. S. Haweis, and Mr. Frank Lowe, one of the keepers at the Washington Zoo, as well as artists, photographers, and a cinematograph operator. Among the animals to be sought for are giraffe, black rhinoceros, sable antelope, topi, hartebeest, zebra, guereza monkey, Syke's monkey, lion,

eland, and other antelopes and gazelles. Birds and reptiles will also be collected. Opportunity will be taken to make as extensive collections as possible, for scientific purposes, of the general fauna of the country, and valuable results from this point of view may be expected. The expedition will land at Dar-es-Salaam and proceed inland to Tanganyika Territory, and it is expected that at least five or six months will be spent in the field. Memories of the results obtained by the Roosevelt Expedition to Africa in 1909, sent out also under the auspices of the Smithsonian Institution, raise expectations of equally successful results from the Smithsonian-Chrysler Expedition.

IN February last it was decided that an address should be presented to Sir Howard Grubb in recognition of his skill and long-continued labours in the production of large objectives for astronomical instruments. Many of these are now famous: they include the 28-in. at the Royal Observatory, Greenwich, the 27-in. at Vienna, the 26.5-in. at the Union Observatory, Johannesburg, the 26-in. at Greenwich, the 24-in. at Cape of Good Hope and also at Oxford, and eight (of the eighteen required) 13-in. objectives for the Astrographic Catalogue and Chart, besides the reflectors—the 40-in. at Simeis, the 24-in. at Edinburgh, and the 24-in. at Daramona. Accordingly an address was drawn up congratulating Sir Howard Grubb on the approach of his eighty-second birthday, in which the signatories recalled "with admiration his devoted application of his resourcefulness and ingenuity to the development of the instrumental equipment of astronomers through more than sixty years." Especial reference was made to the service which Sir Howard Grubb's firm has rendered to science "in the provision of suitable object glasses, and of the refined clockwork needed for the accurate movement of the telescopes," in order to undertake the photographic survey of the heavens. The address was signed by the Astronomer-Royal and the leading representatives of astronomy and astrophysics in Great Britain.

THE council of the Royal Anthropological Institute has awarded the Huxley Memorial Medal to Dr. Aleš Hrdlička of the Smithsonian Institution, Washington, and has invited him to deliver the Huxley Memorial Lecture of the Institute for 1927. This invitation Dr. Hrdlička has now accepted. Of the wisdom of the award there can be no two opinions. Dr. Hrdlička has a world-wide reputation as one of the foremost physical anthropologists of the day, and is one of the outstanding men of science in America. His researches on the origin of the American Indian and on the antiquity of man in America are mainly responsible for the present position of our knowledge relating to these important problems, and it is due to his critical and careful examination of the evidence bearing upon the age of the ancient human remains found in America that the extravagant claims for high antiquity which have been put forward from time to time have been demolished. During last year Dr. Hrdlička visited the principal sites in India, Java, Australia, and South Africa on which remains

of early man have been discovered, and gave an account of the results of his tour to the Royal Anthropological Institute while passing through England on his return to the United States.

MR. F. W. LANCHESTER has been awarded the gold medal of the Royal Aeronautical Society in recognition of his pioneer work in aviation, and has also been elected an honorary member of the Society.

PROF. CHARLES FABRY, professor of physics at the Sorbonne, Paris, will deliver the eleventh Guthrie Lecture of the Physical Society of London on April 23. The title of the lecture will be "The Absorption of Radiation by the Upper Atmosphere."

SIR JOHN ROSE BRADFORD, formerly professor of medicine at University College, London, has been elected president of the Royal College of Physicians, in succession to Sir Humphry Rolleston, who retires after four years of office.

THE sixteenth annual May Lecture of the Institute of Metals will be delivered on May 19 at the Institution of Mechanical Engineers, Storey's Gate, Westminster, London, S.W.1, by Prof. H. C. H. Carpenter, professor of metallurgy at the Imperial College of Science and Technology, South Kensington, who will take as his subject, "Single Metallic Crystals and their Properties."

AMONG the changes in place-names announced in recent years by the Soviet Government we notice, in the *Weekly News Bulletin*, No. 34, of the U.S.S.R. Society of Cultural Relations with Foreign Countries, that Nicholas Land, which was discovered in 1913 to the north of Cape Chelyuskin, in future is to be known as Northern Land and the adjoining Tsarevich Alexis Island is to be Little Taimir.

THE Council of the Iron and Steel Institute has awarded the Bessemer Gold Medal for 1926 of the Institute to Sir Hugh Bell, Bart. The medal, the award of which is made in recognition of outstanding services in the advancement of the art of the manufacture of iron and steel, will be presented to Sir Hugh Bell at the annual meeting of the Institute on May 6, by the incoming president, Sir W. Peter Rylands.

It is stated in *Science* that the John Fritz Medal Board of Award, representing the American Society of Civil Engineers, the American Institute of Mining and Metallurgical Engineers, the American Society of Mechanical Engineers, and the American Institute of Electrical Engineers, has presented the John Fritz gold medal to Edward Dean Adams, "engineer, financier, scientist, whose vision, courage and industry made possible at Niagara Falls the birth of hydro-electric power."

THE annual meeting of the British Science Guild will be held at the Mansion House, London, E.C.4, on April 29, at 4.30 P.M., under the presidency of Lord Askwith. Addresses will be delivered by Sir Richard Redmayne on the future of the coal mining industry; by Dr. E. F. Armstrong, managing director of the

British Dyestuffs Corporation, Ltd., on dyestuffs; and by Capt. P. P. Eckersley, chief engineer of the British Broadcasting Company, on broadcasting and the electrical industry in Great Britain.

THE Academy of Natural Sciences of Philadelphia announces that the 1926 Hayden Memorial Geological Award will be made to Dr. William Berryman Scott, professor of geology at Princeton University, in recognition of his "many researches and publications in the field of vertebrate paleontology." The award, which consists of a gold medal, is made once in three years, and was founded as a recognition of pre-eminent work by "publication, exploration, discovery, or research in the sciences of geology and paleontology."

WE have received from the British Museum (Natural History), South Kensington, London, S.W.7, some further series of picture post-cards which are admirably executed by the three-colour process. Set E. 39 portrays *Papilio dardanus* and its four remarkable forms of the female butterfly; E. 40 illustrates some exotic moths, E. 41 exotic beetles, and E. 39 some of the more interesting and striking Hymenoptera. Each of these sets comprises five cards and is priced at 1s. The cards are of very definite educational value, being prepared under the supervision of specialists in the subjects dealt with, who are also responsible for the explanatory letterpress. A great variety of other subjects are described and illustrated in the same manner, and the cards are obtainable from the Museum or from London booksellers.

His Majesty the King has approved the following awards of the Royal Geographical Society:—*Founder's Medal*: to Lieut.-Col. E. F. Norton for his distinguished leadership of the Mount Everest Expedition 1924 and his ascent to 28,100 feet; *Patron's Medal*: to Sir Edgeworth David for his work on the Funafuti atoll, and with Sir Ernest Shackleton's Antarctic Expedition of 1907-9, as leader of the first ascent of Mount Erebus and of the party which first visited the South Magnetic Pole. The Council has made the following awards:—*Victoria Medal*: to Dr. John Ball for his desert surveys and memoirs on the geography of Egypt; *Murchison Grant*: to Mr. Frank Debenham for his contributions to the scientific exploration of the Antarctic; *Back Grant*: to Afraz Gul for his surveys in Central Asia and Hunza; *Cuthbert Peek Grant*: to Major Kenneth Mason to assist his further exploration of the Himalaya; *Gill Memorial*: to Dr. H. Gordon Thompson for his journey on the Tibetan and Mongolian borders of China with Brig.-General George Pereira.

THE fifth report of the Executive Committee of the Universities' Library for Central Europe, covering the period April 1924 to March 1925, shows that there is a demand in every country in Europe for English books and a desire for information as to English culture and ideals. The Committee has striven with some success to satisfy the calls which have been made, but it is evident that it is hampered to some extent by want of funds. The most valuable service performed by this Committee appears to be in filling

gaps in serials occasioned by the breakdown of exchanges during the War period and the satisfaction of definitely ascertained wants—but a certain amount of forwarding and reciprocal exchange work was also undertaken. We read, for example, of 400 volumes of German classics being forwarded to Berlin. During the year under review gifts of books and periodicals valued at 1500*l.* were received by the Committee and sent abroad. The work of this Committee deserves increased support.

A USEFUL list of 138 atlases, maps, and books of geographical interest has just reached us from Mr. F. Edwards, 83A High Street, Marylebone, W.1. Its number is 480, and it supplements Catalogue 475—"Old Time Cartography." It can be obtained free upon application to the publisher.

APPLICATIONS are invited for the following appointments, on or before the dates mentioned:—Two laboratory assistants in the biochemical department of the Low Temperature Research Station, Cambridge—The Superintendent of the Station, Downing Street, Cambridge (April 24). An assistant bacteriologist at Queen Mary's Hospital for Children, Carshalton, for research work on acute rheumatism in children—The Clerk, Metropolitan Asylums Board, Victoria Embankment, E.C.4 (April 26). A principal of the South Staffordshire

Mining Schools—The Director of Education, County Education Offices, Stafford (April 27). An assistant inspector under the Ministry of Agriculture and Fisheries, in connexion with agricultural and horticultural education and research—The Secretary, Ministry of Agriculture and Fisheries, 10 Whitehall Place, S.W.1 (May 3). A lecturer in charge of the Economics and Commerce Department of University College, Southampton, and an assistant lecturer in geography in the same institution—The Registrar (May 3). A probationer naturalist and a technical assistant under the Fishery Board for Scotland—The Secretary, Fishery Board for Scotland, 101 George Street, Edinburgh (May 9). A male assistant superintendent of traffic (Class II.) in the London Telephone Service, and a male assistant traffic superintendent in the Provinces, G.P.O.—The Secretary, Civil Service Commission, Burlington Gardens, W.1 (June 2). A director of the Amani Institute, Tanganyika Territory—The Private Secretary (Appointments), Colonial Office, 38 Old Queen Street, S.W.1 (August 1). Two temporary research assistants under the Foot-and-Mouth Disease Research Committee—The Secretary, Foot-and-Mouth Disease Research Committee, Ministry of Agriculture and Fisheries, 10 Whitehall Place, S.W.1. A director of research for the Linen Industry Research Association—The Secretary, Research Institute, Lambeg, Belfast.

### Our Astronomical Column.

ENSOR'S COMET.—Mr. S. Seliwanow, of the Observatory of the Russian Society Mirovédiéni, Leningrad, writes to say that the Society organised an ascent in a captive balloon on the night of February 22-23 in which he took part. He passed low clouds at a height of 350 metres; above them the air was clear. Using a powerful binocular, the comet was located after a twenty minutes' search south-west of  $\epsilon$  Equulei. It appeared as a dim indistinct spot 8' to 10' in diameter, of about the fifth magnitude. The time was 3<sup>h</sup> 22<sup>m</sup> U.T., the height 700 metres. A faint tail, 20' long, was suspected. A later ascent by G. A. Langé and B. W. Okunev confirmed these results.

Search was made with a 175 mm. refractor on March 6 and 7 without result.

Dr. W. H. Steavenson notes that these results, combined with his own, appear to fix the collapse of the comet's light as having occurred between February 23 and 28.

A slide from the Bergedorf photograph of March 16 was shown at the meeting of the Royal Astronomical Society on April 9. It showed a tail 30' in length, forking into two branches about 20' from its eastern extremity. The tail made an angle of 80° with the radius vector.

BRILLIANT SOLAR OUTBURST.—At the meeting of the Royal Astronomical Society on April 9, Mr. Evershed showed some spectroheliograms of the sun taken by Dr. Royds at Kodaikanal on Feb. 22, which indicated that an extremely brilliant chromospheric outburst occurred over a sunspot during the course of the observations. It was photographed both in hydrogen and calcium light. Some similar outbursts in the past were referred to, including that observed by Hodgson and Carrington in 1859, another

observed by Young in 1872, and one observed by Mr. Evershed in Kashmer. Mr. Evershed suggested that the outburst resembled on a small scale those that occurred in novæ. There was the same reversal of lines, and the same indication of rapid radial motion. On some of the occasions quoted, magnetic fluctuations have been observed simultaneously with the outburst; he suggested that the magnetic traces should be examined on this occasion. Mr. Newton noted that there was a large magnetic disturbance on February 23, and promised to examine the record of the preceding day.

MEASURES OF THE SUN'S DIAMETER.—The facts that the curve of sunspot activity bears some resemblance to the Cepheid light curve, and that a widely held explanation of the variability of the latter stars is that their diameters pulsate, render it quite a pertinent inquiry whether any similar pulsation can be detected in the sun's diameter. G. Armellini, in *Astr. Nach.*, No. 5419, describes a research of this kind made at the Campidoglio Observatory, Rome, from 1877 to 1900, some six hundred measures being made each year by three different observers. The method of projection on a white screen was employed. The mean horizontal semidiameter of the sun for the whole series is 961".18, agreeing with that used for the bright limb in the "Nautical Almanac" (but not with that of Auwers, corrected for irradiation, which is 959".63). The measures when plotted by annual means lie on a sinuous curve with maxima in 1878 (961".46) and 1891 (961".76), minima in 1886 (961".00), and 1897 (960".70). The fluctuations are large enough to suggest a real change, but the period dealt with is too short to assert with confidence that it is connected with the sunspot variation. Results for the years following 1900 are promised shortly.